Lecture #7

24.979 Topics in Semantics

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Preview

Today:

- Exhaustification and disjunction
- Free choice occurrences of *any*
- Revision of the Condition

Future lectures:

- More on free choice
- Explanatory approaches to *any*

So-called free choice occurrences of any

Existential modal sentences

Any-DPs are unexpectedly acceptable in existential modal sentences:

(1) Mary is allowed to read any book.

1. Missing SERness

(2) a. $[\Diamond$ [any book $[\lambda x$ Mary read $x]]]$
 b. No constituent that is SER wrt [any book].

(3) John is allowed to read any book.
 $\not\Rightarrow_s$ John is allowed to read 5 books.
 $\not\Rightarrow_s$ John is allowed to read any book and magazine. (e.g., Link 1983)

2. Universal quantificational force

(4) a. Mary is allowed to read any book.
 b. $\approx$ Every book is such that Mary is allowed to read it.

(5) Every book is such that Mary is allowed to read it.
 $\not\Rightarrow_s$ Every publication is such that Mary is allowed to read it.
 $\not\Rightarrow_s$ Every book and magazine is such that Mary is allowed to read it.

Suggestive (apparent) entailment pattern

Replacement of NP complements only (cf. Kadmon & Landman 1993):

(6) a. Mary is allowed to read any book.
    b. $\Rightarrow_s$ Mary is allowed to read any long book.

(7) a. Every book is such that Mary is allowed to read it.
    b. $\Rightarrow_s$ Every long book is such that Mary is allowed to read it.

In light of these patterns, a revision of the Condition in which the pivot would be the domain of *any* (rather than *any*-DP) suggests itself ...

Preview of what is coming next

- Exhaustification & free choice with disjunction
- Exhaustification & free choice with *a(ny)*
- Revision(s) of the Condition, consequences
- Some extensions (generics, imperatives, subtrigging)

  (8) Any owl hunts mice.

  (9) Go ahead, take any apple.

  (10) John read any book that he found.

- Variation (between occcurrences, NPIs), open issues

Exhaustification and disjunction

Free choice disjunction

Disjunction under existential modals (may) give(s) rise to free choice inferences:

(11) John is allowed to read Anna Karenina or War and Peace.

   a. $\Rightarrow$ John is allowed to read Anna Karenina.
   b. $\Rightarrow$ John is allowed to read War and Peace.
   c. ($\Rightarrow$ John is not allowed to read Anna Karenina and War and Peace.)

(12) John read Anna Karenina or War and Peace.

   a. ($\Rightarrow$ John did not read Anna Karenina and War and Peace.)

These inferences behave like scalar implicatures (e.g., Alonso-Ovalle 2005):

(13) John is not allowed to read Anna Karenina or War and Peace.

(In some other respects, however, they appear to behave differently from scalar implicatures. But this need not argue against them being scalar implicatures – on certain assumptions, it may in fact be expected. See Bar-Lev & Fox 2017.)

Component 1: Alternatives

(14) a. John read Anna Karenina or War and Peace.
b. John is allowed to read Anna Karenina or War and Peace.

(15) a. ALT([A or W]) $=$ {[A or W], A, W, [A and W]}
b. ALT([$\Diamond$ [A or W]]) $=$ {[$\Diamond$ [A or W]], $\Diamond$A, $\Diamond$W, [$\Diamond$ [A and W]]}

Exercise: Closure under conjunction

(16) $\{[\![S]\!] \mid S \in$ ALT([A or W])$\}$ is closed with respect to $\wedge$:
for every x, y in this set, $x \wedge y$ is in this set.

(17) $\{[\![S]\!] \mid S \in$ ALT([$\Diamond$ [A or W]])$\}$ is not closed with respect to $\wedge$:
$[\![\Diamond A]\!] \wedge [\![\Diamond B]\!]$ is not in this set.

What about $\{[\![S]\!] \mid S \in$ ALT([$\Box$ [A or W]])$\}$?

What about closure under disjunction?

Component 2: Excludability

(18) Excl(S) = {S' | S' is in the intersection of all the maximal subsets X of ALT(S) that are such that the negation of all the alternatives in X is consistent with S}

Application to the examples under discussion:

(19) Excl([A or W]) = {[A and W]}

(20) Excl($\Diamond$ [A or W]) = {[$\Diamond$ [A and W]]}

One simple heuristic:

(21) Given [exh$_R$ S], alternative S' (to S) is not excludable if S and the negation of S' entails an alternative S' (to S) that is stronger than S.

Exercise: Adding disjunctive alternatives (built on) A, W, and *Catch-22*, etc?

Component 3: Includability (Bar-Lev & Fox 2017)

(22) Incl(S) = {S' | S' is in the intersection of all the maximal subsets of ALT(S) that are consistent with the negation of all the alternatives in Excl(S)}

Application to the examples under discussion:

(23) Incl([A or W]) = {[A or W]}

(24) Incl([$\Diamond$ [A or W]]) = {[$\Diamond$ [A or W]], $\Diamond$A, $\Diamond$W}

Exhaustification and disjunction

Putting the pieces together: exhaustification operator (and optional pruning)

(25) $[\![\text{exh}_R\ \text{S}]\!](\text{w}) = 1$ iff (Bar-Lev & Fox 2017)

(i) $\forall$S'$\in$Excl(S) $\cap$ R: $\neg[\![\text{S'}]\!](\text{w}) \wedge$

(ii) $\forall$S'$\in$Incl(S): $[\![\text{S'}]\!](\text{w})$

Some other formulations (perhaps surprisingly, the choice between them may matter for our purposes, at least given the characterization of Includability above)

(26) $[\![\text{exh}_R\ \text{S}]\!](\text{w}) = 1$ iff

(i) $[\![\text{S}]\!](\text{w}) \wedge$ (ii) $\forall$S'$\in$Excl(S) $\cap$ R: $\neg[\![\text{S'}]\!](\text{w}) \wedge$

(iii) $\forall$S'$\in$Incl(S): $[\![\text{S'}]\!](\text{w})$

(27) $[\![\text{exh}_R\ \text{S}]\!](\text{w}) = 1$ iff (Katzir 2014)

(i) $[\![\text{S}]\!](\text{w}) \wedge$ (ii) $\forall$S'$\in$Excl(S) $\cap$ R: $\neg[\![\text{S'}]\!](\text{w})$

(28) $[\![\text{exh}_R\ \text{S}]\!](\text{w}) = 1$ iff

(i) $\forall$S'$\in$Excl(S) $\cap$ R: $\neg[\![\text{S'}]\!](\text{w}) \wedge$

(ii) $\forall$S'$\in$Incl(S): $[\![\text{S'}]\!](\text{w})$ is undefined $\vee$ $[\![\text{S'}]\!](\text{w})$ etc.

Application to the examples under discussion *(depending on R)*

(29) $[\![\text{exh}_R\ [\text{A or W}]]\!] = \lambda w.\ [\![\text{A or W}]\!](w)\ \big(\wedge \neg[\![\text{A and W}]\!](w)\big)$

(30) $[\![\text{exh}_R\ [\Diamond\ [\text{A or W}]]]\!] = \lambda w.\ [\![\Diamond\ [\text{A or W}]]\!](w) \wedge$
$[\![\Diamond\ \text{A}]\!](w) \wedge [\![\Diamond\ \text{W}]\!](w)\ \big(\wedge \neg[\![\Diamond\ [\text{A and W}]]\!](w)\big)$

Exhaustification and any

Exhaustification and existential quantification

(31) a. John read a book.
b. [a_D book [λx [John read x]]]

(32) a. $\lambda w.\ \exists x\ (D(x) \wedge book(x) \wedge read(w)(x)(John))$
b. $\lambda w.\ read(w)(A)(John) \vee read(w)(W)(John)$

(33) ALT([a_D book [λx [John read x]]]) =
$\{$[$a_{D'}$ book [λx J. read x]], [$every_{D'}$ book [λx J. read x]] | $[\![D']\!] \in D_{et}\}$

(34) Excl([a_D book [λx [John read x]]]) =
$\{$[$a_{D'}$ book [λx J. read x]],
[$every_{D''}$ book [λx J. read x]] |
$[\![D']\!] \cap [\![D]\!] = \emptyset$, $card([\![D'']\!] \cap [\![book]\!]) > 1\}$

(making some simplifying assumptions throughout)

Exhaustification and existential quantification

Interpretation *(depending on R)*

(35) $[\![[\mathrm{exh}_R\ [\mathrm{a}_D\ \text{book}\ [\lambda x\ [\text{John read x}]]]]]\!] =$

$$\lambda w.\ \exists x\ (D(x) \wedge book(x) \wedge read(w)(x)(John)) \wedge$$
$$\Big(\neg\forall x\ (D(x) \wedge book(x) \rightarrow read(w)(x)(John)) \wedge \ldots \wedge$$
$$\forall D':D\cap D'=\emptyset \rightarrow \neg\exists x(D'(x) \wedge book(x) \wedge read(w)(x)(John))\Big)$$

(on the assumption of no pruning of alternatives)

Paraphrase

(36) John read a book in D

($\wedge$ $\neg$John read every book in D)

($\wedge$ $\neg$John read two books in D)

($\wedge$ $\neg$John read a book not in D)

(on the assumption of no pruning of alternatives)

Exhaustification and existential quantification and existential modals

(37) a. John is allowed to read a book.

b. [exh$_R$ [$\Diamond$ [a$_D$ book [λx [John read x]]]]]

Excludable and includable alternatives

(38) Excl([$\Diamond$ [any$_D$ book [λx [John read x]]]]) =

$\{$[$\Diamond$ [any$_{D'}$ book [λx [John read x]]]],

[$\Diamond$ [every$_{D''}$ book [λx [John read x]]]] |

$[\![D']\!] \cap [\![D]\!] = \emptyset$, card($[\![D'']\!] \cap [\![book]\!]$)$>1\}$

(39) Incl([$\Diamond$ [a$_D$ book [λx [John read x]]]]) =

$\{$[$\Diamond$ [a$_{D'}$ book [λx [John read x]]]] | $[\![D']\!] \subseteq [\![D]\!] \cap [\![book]\!]$, $[\![D']\!] \neq \emptyset\}$

Interpretation *(depending on R, shortened version)*

(40) $\Diamond_w(\exists x(D(x) \wedge book(x) \wedge read(w)(x)(John)) \wedge$
$\forall D' \subseteq D$: $book \cap D' \neq \emptyset \rightarrow \Diamond_w(\exists x(D'(x) \wedge book(x) \wedge read(w)(x)(John)))$
$(\wedge\ \forall D'$: $card(D' \cap book) > 1 \rightarrow \neg\Diamond_w(\forall x(D'(x) \wedge book(x) \rightarrow read(w)(x)(J)) \wedge$
$\forall D'$: $D' \cap D = \emptyset \rightarrow \neg\Diamond_w(\exists x(D'(x) \wedge book(x) \rightarrow read(w)(x)(J)))$

Back to any

Exhaustification and *any*

(41) a. #John read any book.
b. [exh_R [any_D book [λx John read x]]]

(42) John read a book in D
($\wedge$ $\neg$John read every book in D) *(depending on R)*
($\wedge$ $\neg$John read a book not in D)

Any-DP

(43) [exh_R [any_D book [λx J. read x]]] is not SEP/SER wrt [any_D book].
(and SEP on a specific choice of R)

Domain restriction of *any* (or NP complement)

(44) [exh_R [any_D book [λx John read x]]] is SEP wrt D/[book].

Back to any

Exhaustification and *any*

(45) a. John is allowed to read any book.

b. $[\text{exh}_R\ [\Diamond\ [\text{any}_D \text{ book } [\lambda x \text{ John read } x]]]]$

(46) $\Diamond_w(\exists x(D(x) \wedge \text{book}(x) \wedge \text{read}(w)(x)(\text{John})) \wedge$
$\forall D' \subseteq D: \text{book} \cap D' \neq \emptyset \rightarrow \Diamond_w(\exists x(D'(x) \wedge \text{book}(x) \wedge \text{read}(w)(x)(\text{John})))$
$\wedge\ \forall D': \text{card}(D' \cap \text{book}) > 1 \rightarrow \neg \Diamond_w(\forall x(D'(x) \wedge \text{book}(x) \rightarrow \text{read}(w)(x)(\text{John}))$

Any-DP

(47) $[\text{exh}_R\ [\Diamond\ [\text{any}_D \text{ book } [\lambda x \text{ J read } x]]]]$ is not SEP/SER wrt $[\text{any}_D \text{ book}]$.

Domain restriction of *any* (or NP complement)

(48) $[\text{exh}_R\ [\Diamond\ [\text{any}_D \text{ book } [\lambda x \text{ J read } x]]]]$ is not SEP/SER wrt D/[book].

(For example, take D' $= \emptyset$, which obviously means D' $\Rightarrow_s$ D.)