Scoping out free choice or: How to choose a donkey?

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~~Le~~ tre cime di Gennaro

Binding

Indefinites

Strengthening

Universal strengthening

Universal strengthening of an existential quantification sentence is possible when the universally strengthened meaning is not among the sentence's alternatives.

$$\mathrm{STR}\ (\ S_{\exists x_P}\ ) \Rightarrow \forall x_P{:}S_x \text{ only if } \forall x_P{:}S_x \notin \mathrm{ALT}(S_{\exists x_P})$$

Giulia is allowed to read a(ny) book. universal strengthening

$\Rightarrow \forall x_{book}{:}\Diamond(\text{Giulia reads x})$

Fact: $\forall x_{book}{:}\Diamond(\text{Giulia reads x}) \not\Leftrightarrow \Diamond(\exists x_{book}{:}\text{Giulia reads x})$

$\forall x_{book}{:}\Diamond(\text{Giulia reads x}) \notin \text{ALT}(\Diamond(\exists x_{book}{:}\ \text{Giulia reads}))$

Giulia is required to read a(ny) book. ~~universal strengthening~~

$\not\Rightarrow \forall x_{book}{:}\Box(\text{Giulia reads x})$

Fact: $\forall x_{book}{:}\Box(\text{Giulia reads x}) \Leftrightarrow \Box(\forall x_{book}{:}\text{Giulia reads x})$

$\forall x_{book}{:}\Box(\text{Giulia reads x}) \in \text{ALT}(\Box(\exists x_{book}{:}\ \text{Giulia reads x}))$

Special scope

Some indefinites allow for a special scope construal that is not available to other quantifiers (cf. semantic scope of indefinites outside of their host islands).

If someone smiles, Giulia is happy.

can = ($\exists x_{person}$ if person x smiles, Giulia is happy)

via unary CFs: ($\exists f$ if f person smiles, Giulia is happy)

If everyone smiles, Giulia is happy.

can<u>not</u> = ($\forall x_{person}$ if person x smiles, Giulia is happy)

A consequence of special scope

A sentence with a special scope indefinite lacks a special scope universal quantifier alternative (but it does have a low scope universal quantifier alternative).

$$
\begin{array}{l}
(\exists \mathrm{f}\ \mathrm{OP} \ldots \mathrm{f} \ldots) \\
\mathrm{OP}\ (\exists \mathrm{f} \ldots \mathrm{f} \ldots) \\
\mathrm{OP}\ (\forall \mathrm{f} \ldots \mathrm{f} \ldots) \\
\cancel{(\forall \mathrm{f}\ \mathrm{OP} \ldots \mathrm{f} \ldots)}
\end{array}
$$

$$\in \mathrm{ALT}(\exists \mathrm{f}\ \mathrm{OP} \ldots \mathrm{f} \ldots)$$

Special scope and alternatives:

If someone smiles, Giulia is happy.

($\exists$f if f person smiles, Giulia is happy)
if ($\exists$f f person smiles), Giulia is happy
if ($\forall$f f person smiles), Giulia is happy
~~($\forall$f if f person smiles, Giulia is happy)~~

$\in$ ALT($\exists$f if f person smiles, Giulia is happy)

Still, no strengthening under special scope:

($\forall$f if f person smiles, Giulia is happy)

$\Leftrightarrow$ if ($\exists$f f person smiles), Giulia is happy

$\in$ ALT($\exists$f if f person smiles, Giulia is happy)

If someone$_i$ smiles, they$_i$ are happy.

$= (\forall x$ if person x smiles, person x is happy$)$

Every farmer who owns a donkey$_i$ pets it$_i$.

$= (\forall y\ (\forall x$ farmer x owns donkey $y \rightarrow$ farmer x pets donkey $y))$

Special scope with E-type pronouns:

If someone$_i$ smiles, they$_i$ are happy.

($\exists$f if f person smiles, f person is happy)

notoriously weak truth-conditions

Special scope and alternatives:

($\exists$f if f person smiles, f person is happy)
if ($\exists$f f person smiles), f person is happy
if ($\forall$f f person smiles), f person is happy
~~($\forall$f if f person smiles, f person is happy)~~

$\in$ ALT($\exists$f if f person smiles, f person is happy)

Strengthening under special scope:

($\forall$f if f person smiles, f person is happy)

$\not\Leftarrow$ if ($\exists$f f person smiles), f person is happy

$\notin$ ALT($\exists$f if f person smiles, f person is happy)

STR($\exists$f if f person smiles, f person is happy) =

($\forall$f if f person smiles, f person is happy)

[= strong reading of donkey anaphora]

At least 2 farmers who own a donkey_i pet it_i.

$$\neq \forall x_{donkey}\text{: } |\{y \mid \text{farmer } y \text{ owns donkey } x \wedge y \text{ pet } x\}| \geq 2$$

Most farmers who own a donkey_i pet it_i.

$$\neq \forall x_{donkey}\text{: } |\{y \mid \text{farmer } y \text{ owns donkey } x \wedge y \text{ pet } x\}| > 1/2 \times |\{y \mid \text{farmer } y \text{ owns donkey } x\}|$$

Binary choice functions:

At least 2 farmers who own a donkey$_i$ pet it$_i$.

$\exists f \ \ |\{y \mid \text{farmer } y \text{ owns } f\ y\ \text{donkey} \wedge y \text{ pet } f\ y\ \text{donkey}\}| \geq 2$

[= weak reading of donkey anaphora]

Strengthening?

$\forall_D f \ \ |\{y \mid \text{farmer } y \text{ owns } f\ y\ \text{donkey} \wedge y \text{ pet } f\ y\ \text{donkey}\}| \geq 2$

[= strong reading of donkey anaphora]

Few people who own a donkey$_i$ pet it$_i$.

$\neq \forall x_{donkey}$: $|\{y \mid \text{person y owns donkey x} \wedge \text{y pet x}\}| < n_{few}$

$\# \exists f / \forall f \ \ |\{y \mid \text{person y owns f y donkey} \wedge \text{y pet f y donkey}\}| < n_{few}$

Intermediate existential closure:

few_n ($\exists f \ \ |\{y \mid \text{person y owns f y donkey} \wedge \text{y pet f y donkey}\}| \geq n$)

Choice functions vs other scope-shifting strategies:

Everyone$_k$ [who inherited a donkey$_i$ of their$_k$ uncle's] pets it$_i$.

$\forall$f $\forall$x x inherit f donkey of x's unc $\rightarrow$ x pets f donkey of x's unc

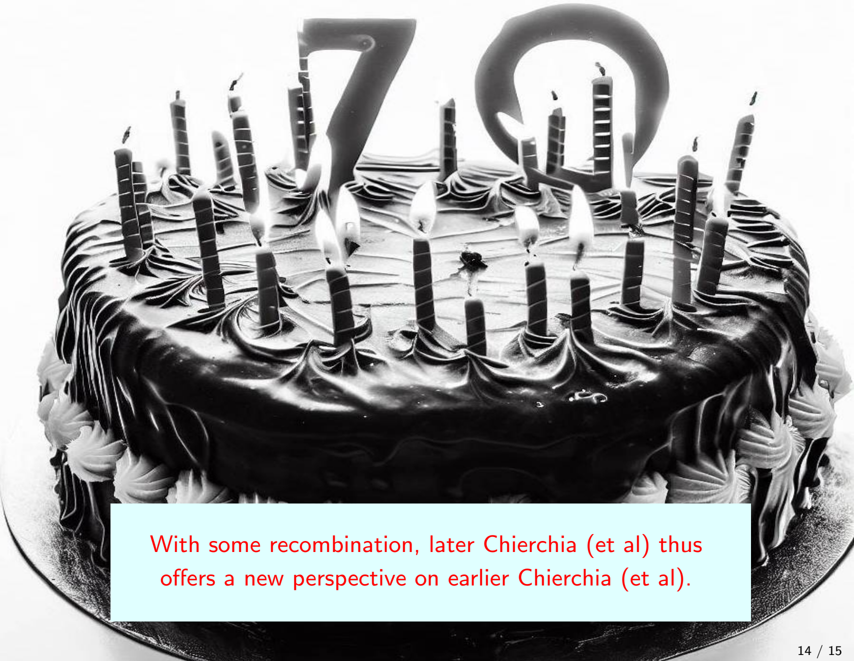
Complex indefinites as antecedents:

If more than two people smile, Giulia is happy.

$\exists$f if more than 2$_n$ f n-many people smile, Giulia is happy

If more than two people$_i$ smile, they$_i$ are happy.

they $= \lambda$w. the more than two people who smiled in w



With some recombination, later Chierchia (et al) thus offers a new perspective on earlier Chierchia (et al).

Selected references

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