Rigid and flexible quantification in Plural Predicate Logic

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Rigidity in Plural Predicate Logic (PPL)

- Inspired by Dynamic Plural Logic (DPII, Brasoveanu 2008, 2010; Henderson 2014) and Team Logic (Väänänen 2007, Dotlačil 2011), we propose Plural Predicate Logic (PPL) to formalize rigid vs. non-rigid quantification.

- In PPL, formulas are evaluated w.r.t. sets of assignments, or quantificational contexts \(G = \{g_1, \ldots, g_n\}\). PPL is static: only 1 set of assignments per formula.

- (8) a. \(g(x)h := \) for any variable \(v\) if \(v \neq x\), then \(h(v) = g(v)\)
  
  b. \(G[x]H := \forall g \in G \exists h \in H \mbox{s.t. } g[x]h\) and \(\forall h \in H \exists g \in G \mbox{s.t. } g[x]h\)
  
  c. \(G[x]H := \forall x \in G \exists h \in H \mbox{s.t. } h(x) = h'(x) \) for any \(h, h' \in H\).

- Flexible existential quantifiers: bare NPs

- Rigid existential quantifiers: indefinite/cardinal NPs

Adding distributivity

- As in DPII, we analyze every \(N\) as launching a separate quantificational context for each \(N\).

- (13) \(\forall y \in Mx : [N[y]](D(V(x)))\)

- Maximalization operator \(M\)

- (14) \(\forall y \in Mx : [\psi(x)y]^G\) iff \([\psi(x)y]^H\) for \(H\) s.t. \(G[x]H\) and there is no \(H'\) s.t. \(G[x]H'\) where \([\psi(x)y]^H\) and \(H'(x) \subseteq H(x)\)

- Distribution operator \(D\)

- (15) \([\psi(x)y]^G\) iff \([\psi(x)y]^{G_{s=0}}\) for each \(a\) s.t. \(\exists g \in G. g(x) = a\)

Example:

- John found a flea on his dog every day for a year.

A case study: for-adverbials

- Bare vs quantificational NPs

  - Bare nouns are compatible with for:
    1. John ate apples for 1hr.
    2. #John ate some/three apples for 1hr.
    3. #He found a flea on his dog for a year.

  - Similarly for spatial adverbials and indefinite quantity adverbials:
    4. Trees/some trees grow for miles.
    5. He read poetry/something a lot.

  - Habitual interpretations preferred with bare NPs:

  - (6) Li wrote copy/an article for NYT.

  - Every restores the ability to covary (a problem for standard wide scope story):

  - (7) He found a flea on his dog every day for a year.

- Adding distributivity

  - Compare Zucchi & White (2001), who stipulate that every day binds either the individual variable of a flea or a reference time variable introduced by a flea.

Outlook: application to all

- Bare vs quantificational NPs pattern similarly with all:

  - (17) All the guests are (#ten / #several) French.

  - All can be seen as an “unfurler” that spreads its host’s plural entity throughout a quantificational context.

References

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