

## ON THE TYPOLOGY OF PRONOUNS: TWO TYPES OF ANAPHORA RESOLUTION

**Core of the Proposal:** Current approaches to e-type pronouns (particularly *donkey sentences*, cf. Geach 1962) maintain at least two analyses. The pragmatic analysis dating back to Evans (1977) assumes that *it* in (1a) is expanded at LF into a definite description given in (1b), containing a relational variable filled in by the pragmatics. Alternatively, we find syntactic analyses going back to Heim (1990). Elbourne (2001) for instance, assumes that the pronoun *it* is the morphological realization of a determiner *the*, stranded by NP-deletion, as in (1c).

- (1) a. [Every person [who owns a donkey]] loves **it**.  
 b. [Every person<sub>7</sub> [who owns a donkey]] loves **the**  $R_{3,<e,et>}(x_7,e)$ . (*LF-Expansion*)  
 $g = [3 \rightarrow \lambda x.\lambda y.x \text{ is a donkey owned by } y]$   
 c. [Every person<sub>7</sub> [who owns a donkey]] loves **the donkey**. (*NP-Deletion*)

In this paper we claim that the language faculty employs both strategies of anaphora resolution; however, we propose that there is a qualitative difference between the two: NP-deletion structurally links the pronoun to its antecedent, whereas the pragmatic strategy involves extra-linguistic reasoning; this yields graded acceptability. We conclude the NP-deletion analysis takes priority whenever it is possible; the pragmatic resolution mechanism is used whenever it isn't.

**Background:** The problem with so-called donkey sentences is that they contain a pronoun (*it* in (1a)) that co-varies with a quantifier (*a donkey* in (1a)), which cannot c-command it at LF. Earlier accounts of donkey sentences such as (1b) fail to explain the so-called *formal link condition* (an e-type pronoun must have an overt NP antecedent, which cannot be a subpart of a word cf. Evans 1977, Kadmon 1987, Heim 1990, Elbourne 2001). This is illustrated in (2a) vs (2b) and in (1a) vs (3).

- (2) a. [Every man [who had a wife]] hugged **her**.  
 b.# [Every married man] hugged **her**. (intended: 'Every married man hugged his wife.')
- (3) # [Every donkey-owner] loves **it**. (intended: 'Every donkey-owner loves his/her donkey.')

Under a syntactic approach such as Elbourne (2001), illustrated in (1c), the formal link condition follows as a constraint on NP-deletion (in analogy to parallelism in VP-ellipsis).

**The Empirical Scope:** The literature on e-type pronouns commonly glosses over the graded, non-deterministic nature of the formal link condition, a topic that Patel et al. (2009) address in a recent experimental study. Their core finding is that examples violating the formal link condition are judged better if certain pragmatic conditions are satisfied, such as "uniqueness" of a potential referent (in the sense in which *fathers* are more unique than *friends*). This is illustrated in (4c-d).

- (4) a. Every man who was *without a father* had lost him in the war.  
 b. Every man who was *without a friend* had lost him in the war.  
 c. ? Every man who was *fatherless* had lost him in the war.  
 d. ?? Every man who was *friendless* had lost him in the war. (from Patel et al. 2009)

Furthermore, e-type pronouns that are *strong* (in the Cardinaletti & Starke 1999 sense) trigger stronger violations of the formal link condition than their *weak* counterparts. This is illustrated for German in (5) vs (6) (we treat the demonstrative *den* as strong) and for Kutchi Gujarati in (7).

- (5) Jede Frau, die keinen Mann mehr hatte, hat **ihn / den** im Krieg verloren.  
 every woman who no man anymore had has him / him in.the war lost  
 'Every woman who didn't have a husband anymore had lost *him* (her husband) in the war.'
- (6) Fast jede Frau, die 1918 eine Witwe war, hat <sup>?</sup> **ihn / \* den** im Krieg verloren.  
 almost every woman who 1918 a widow was has <sup>?</sup> him \* him in.the war lost  
 'Almost every woman who was a widow in 1918 had lost *him* (her late husband) in the war.'

(7) Ji penelo manas gare aave, tho i <sup>OK</sup> (*pro*) / \* **ene** bak bharave.  
 If married man home comes then he.nom <sup>OK</sup> her \* her.acc hug makes  
 ‘If a married man comes home, he hugs *her* (his wife).’

**The Analysis:** We propose that the language faculty employs two strategies of anaphora resolution for e-type anaphora: NP-deletion *and* a pragmatic analysis. We argue that the pragmatic analysis is a last resort, used whenever ellipsis is not licensed, cf. (8b) vs (8c).

- (8) a. Every man who was fatherless had lost him in the war.  
 b. \* *unlicensed*: Every man who was fatherless had lost [*him* = the ~~father~~] in the war.  
 c. *available*: ? Every man<sub>3</sub> who was fatherless had lost [*him* = the R<sub>7</sub>(x<sub>3</sub>)] in the war.

To explain the graded acceptability of the example in (8a), we propose that construing the relevant relation R ( $\lambda x.\lambda y.x$  is the father that  $y$  no longer has) is constrained by complex linguistic and extralinguistic factors. We propose that such factors include:

- (9) a. *Uniqueness* (“a father of  $x$ ” being more unique than “a friend of  $x$ ”)  
 b. *Saliency* (whether the relation is made salient by preceding or extra-linguistic context)  
 c. *Lexical Frequency* (e.g. *home-owner* is more frequent than *shark-owner*; *home-owner* is thus more opaque and less likely to make salient a *home-owned-by* relation)

Patel et al. (2009) observe that graded acceptability only emerges in the absence of an overt antecedent. We attribute this to the assumption that sentences with overt antecedents have both readings as illustrated in (10), but the more reliable deletion analysis warrants interpretability.

- (10) a. Every man who was without a father had lost him in the war.  
 b. *reading 1*: Every man who was without a father had lost [*him* = the ~~father~~] in the war.  
 c. *reading 2*: Every man<sub>3</sub> who was without a father had lost [*him* = the R<sub>7</sub>(x<sub>3</sub>)] in the war.

Finally, while the NP-deletion analysis is only possible when there is an overt antecedent for deletion, we argue that the pragmatic analysis is restricted to weak pronouns; this derives the contrasts in (6) and (7). We propose that *strong* pronouns (e.g. *demonstratives*) must be licensed by NP-deletion; this rules out sentences that contain *strong* e-type pronouns and do not satisfy the *formal link condition*. This correctly predicts for German that all e-type anaphor dependencies that violate the formal link condition require a pragmatic analysis and disallow demonstratives (this example is based on examples in Roelofsen 2008:122-123).

- (11) Wenn ich schwanger werde, werde ich <sup>OK</sup> **es** / ?\* **das** auf jeden Fall behalten.  
 if I pregnant get will I <sup>OK</sup> it ?\* that at every case keep  
 ‘If I get pregnant, I’ll definitely keep it.’

**Conclusion:** Natural language provides two ways of interpreting e-type pronouns, NP-deletion and pronoun-expansion. The former is blocked when there is no overt antecedent, whereas the later is not available for strong pronouns in languages that instantiate a weak-strong contrast.

**Cardinaletti**, A. and M. **Starke** (1999): ‘The typology of structural deficiency: A case study of the three classes of pronouns’, in H. van Riemsdijk (ed.): *Clitics in the languages of Europe*. Berlin: de Gruyter, 145-233 • **Elbourne**, P. (2001): ‘E-type Anaphora as NP-deletion’, *Natural Language Semantics* 9, 241-288. • **Evans**, G. (1977): ‘Pronouns, Quantifiers and Relative Clauses (I)’, *Canadian Journal of Philosophy* 7, 467-536. • **Geach**, P. (1962): *Reference and Generality*. Ithaca, NY: Cornell University Press. • **Heim**, I. (1990): ‘E-type Pronouns and Donkey Anaphora’, *Linguistics and Philosophy* 13, 137-177. • **Kadmon**, N. (1987): *On Unique and Non-unique Reference and Asymmetric Quantification*, PhD dissertation, University of Massachusetts at Amherst. • **Patel**, P., P. **Grosz**, E. **Fedorenko** and T. **Gibson** (2009): ‘Experimental evidence against a strict version of the Formal Link Condition on E-Type Pronouns’, poster presented at the 22<sup>nd</sup> CUNY conference on human sentence processing. • **Roelofsen**, Floris. 2008. *Anaphora resolved*. Doctoral Dissertation, Institute for Logic, Language, and Computation.