Gaps in the interpretation of pronouns

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Overview. Donkey sentences are known to give rise to a *universal* reading (1) and an *existential* reading (2).

(1) Every farmer who owns a donkey treats it well. $\rightsquigarrow$ treats **all** of his donkeys well

(2) Every client who had a credit card paid with it. $\rightsquigarrow$ paid with **one** of his credit cards

In a recent proposal, Champollion et al. (2017) contends that quantifiers like *every* in (1) and (2) creates trivalent propositions. The way this trivalence is resolved in context results in the $\forall/\exists$ ambiguity.

In this presentation, we present two arguments (very low pseudo-scope and $\forall$-reading of conjunctions) that show that the pronoun is the real source of the trivalence, not the quantifier. We derive this by assuming an E-type approach where the uniqueness presupposition of the definite article projects according to some flavour of Strong Kleene logic. This is shown to derive Champollion et al. (2017)'s trivalency without generating wrong predictions for the environments described below.

Very low pseudo-scope. In the paraphrases of (1) and (2), the pronoun is translated as either $\exists$ or $\forall$. By design, Champollion et al. (2017) and any approach that places the source of the ambiguity in *every* will always generate paraphrases where the quantifier in the paraphrase receives the largest scope within the nuclear scope of *every*, because the denotation of *every* does not have access to the internal structure of its scope.

This prediction is falsified by (3): the weakest reading predicted by a vague/ambiguous quantifier approach is one where a citizen always use the same ID (3b). The more natural reading (3a) where a citizen may use different IDs on different occasions, is weaker than (3b).

(3) Every citizen$_i$ that has a valid ID shows it to the officer whenever she$_i$ enters the building.

a. **Observed:**
every $\gg$ whenever $\gg$ an ID of hers

b. **Weakest predicted:**
every $\gg$ an ID of hers $\gg$ whenever

$\forall$-readings of conjunctions. One reason to locate the ambiguity of (1) and (2) in the quantifier comes from the fact that the ambiguity is commonly taken to not extend to conjunction/cross-sentential cases. However, speakers seem to access universal truth-conditions when evaluating the bets in (4a) and (5a) against the scenarios in (4b) and (5b). (We used bets to avoid interferences with a potential uniqueness implicature coming from the indefinite.)

(4) a. **Context:** *I claimed that Mary is very absent-minded, you disagreed.*
I bet you that Mary has an umbrella and that she left it at home.

b. Mary has 10 umbrellas, brought one, left the others.
$\Rightarrow$ I lost my bet.

(5) a. **Context:** *I claimed that Eva is a poor writer, you disagreed.*
I bet you that Eva submitted a short story to this contest and that it lost.

b. Eva submitted two short stories, and one of them was the unique winner.
$\Rightarrow$ I lost my bet.

In the general case, cross-conjunction anaphora strongly prefer *existential readings*. While we do not have an explanation for the predominance of this reading, this pattern is consistent with the results of Kanazawa (1994) and Foppolo (2008), showing that one reading comes as a default and may be only be overriden by proper contextual set-ups.

Proposal. We assume an E-type structure of the pronoun (6a), along the lines of Cooper (1979).

(6) a. $\text{it}_\text{i} = [\textit{the}\ R\ i]$ (in (3) f. ex., $R = \lambda x.\lambda y.\ x$ is a valid ID owned by y)

b. $[\![\textit{the}]\!] = \lambda f.$ if f is a singleton, ιf ; # otherwise

The presupposition of *the* projects according to the rules of Strong Kleene logic (Fox, 2013; George, 2008) the meaning of a constituent of type t is evaluated with respect to every *correction* of its gappy elements, such as *the*. If all the evaluations give the same truth value to the constituent, the constituent receives this truth-value. The procedure is repeated for every constituent of type t.

We impose the following constraints on corrections of *the*: if t is a correction of *the*′, for every predicate p, $t(p)$ must belong to p. This condition is a natural extension of the notion of *conservativity* (Barwise and Cooper, 1981) to type $(et)e$ functions: an $(et)e$ function is *conservative* iff its Montague-lift is. With this natural condition, t is a correction of *the* if and only if t is a choice function. The interpretation of basic sentences then runs as follows:

(7) a. $[\![t_i \text{ shows } [\textit{the}\ R\ i]]\!]^{g[i\to x]} =$ **true** iff for all choice functions f, x shows $f(R(x))$,
$\leftrightarrow$ x shows all of her valid IDs.
false iff for no choice functions f, x shows $f(R(x))$
$\leftrightarrow$ x shows none of her valid IDs.

b. $$[\![\lambda_i\ t_i \text{ sign with } [\textit{the}\ R\ i]]\!]^g = \lambda x. \begin{cases} \textbf{true} & \text{if } x \text{ shows all of her valid IDs} \\ \textbf{false} & \text{if } x \text{ shows none of her valid IDs} \\ \# & \text{otherwise} \end{cases}$$

c. $$[\![\text{every citizen } [\dots] \text{ shows } [\textit{the}\ R\ i]]\!]^g = \begin{cases} \textbf{true} & \text{iff } \forall x,\ x \text{ shows all of her valid IDs} \\ \textbf{false} & \text{iff } \exists x,\ x \text{ shows none of her valid IDs} \\ \# & \text{otherwise} \end{cases}$$

This procedure derives the same readings as Champollion, in the basic cases such as monotonic quantifiers without intervening quantifiers. When a quantifier intervenes in the scope, as in (3), we correctly predict that the weakest reading available is the reading in (3a), since in Strong Kleene logics, corrections are computed for every constituent (Fox, 2013, fn. 10).

Finally, possible bridges between this projection behavior and the projection behavior of an overt *the* are explored: first, by looking at cases of possessive definites with no uniqueness presupposition (Barker, 1995), second, by noticing that paraphrases of donkey sentences with definites also yield an ambiguity (Elbourne, 2001, a.o.).

Conclusions and extensions. Our proposal derives the fact that the ∃/∀-ambiguity of donkey anaphoras is a general one ; it is a result of the projection of the pronoun's gappiness up the tree. We proposed to derive this gappiness from the semantics of a definite article located inside the pronoun.

This proposal, however, does not directly address the existence of a *preferred* reading ; nor does it predict how difficult it is to overcome it, depending on the monotonicity properties of the environment. We hypothesize that further research on the pragmatics of the resolution of truth-value gaps may provide insights into those questions.

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