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Default preferences in *donkey* anaphora resolution

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Abstract

I will present an experimental study on the interpretation of pronouns in donkey sentences, i.e. sentences such as "Every farmer who owns a donkey beats *it*" that admits of two interpretations: the *universal* (= Every farmer who owns a donkey beats all the donkeys he owns) or the *existential* interpretation (=Every farmer who owns a donkey beats one of the donkeys he owns). By means of two reaction time experiments I show: (i) that the distribution of the two interpretations is the one predicted by Kanazawa's generalization (1994): the interpretation of donkey pronouns seems to be sensitive to the left monotonicity properties of the head determiner (Experiment 1); (ii) that such interpretations seem to be a matter of preference, i.e. a default that comes about in relatively "neutral" contexts and that appropriate context manipulations can override (Experiment 2).

1 Introduction

I will present an experimental study conducted with Italian adults concerning the interpretation of pronouns in donkey sentences. Consider the standard example in (1):

(1) Every farmer who owns a donkey beats *it*

As is well known from the literature, the pronoun *it* in (1) admits of two interpretations, the *universal* (∀) one and the *existential* (∃) one, interpretations whose truth conditional import can be represented as in (2) and (3) respectively :

(2) ∀-reading:
∀x [[farmer (x) ∧ ∃y donkey(y) ∧has(x,y)]
→ ∀z [donkey(z) ∧ has(x,z) →beats(x,z)]]
= *Every farmer who owns a donkey beats all the donkeys he owns*

(3) ∃-reading:
∀x [[farmer(x) ∧ ∃y donkey(y) ∧ has(x,y)]
→ ∃z [donkey(z) ∧ has(x,z) ∧ beats(x,z)]]
= *Every farmer who owns a donkey beats one of the donkeys he owns*

There are many proposals as to how these readings come about. However, our concern here is not so much to choose among such proposals (though eventually, we believe that our results will be relevant to such an issue). Our immediate concerns here are rather to experimentally test an interesting generalization regarding the distribution of ∀- and ∃-interpretations, put forth in Kanazawa (1994). According to Kanazawa, the preferred interpretation of donkey pronouns is the one that preserves the monotonicity properties of the determiner. This makes the following predictions on the sample set given in (4).

(4)

Det.	Monotonicity	interpretation
Every	↓↑	∀
No	↓↓	∃
Some	↑↑	∃

Kanazawa's point, to whose work we must refer for details, is that the interpretations in the last column in (4) are the only ones that preserve (in a donkey anaphora context) the monotonicity properties of each lexical determiner, spelled out in the second column. While there has been some experimental work on how donkey pronouns are interpreted (cf., e.g. Geurts, 2002), no work has tried to experimentally probe Kanazawa's claim. Yet, if empirically supported, such a claim would be important, as it would show that the semantic processor must have access to an abstract formal property of an unprecedented kind (namely, monotonicity preservation in non C-command anaphora).

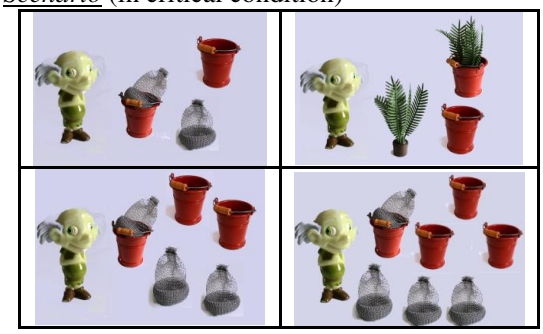
2 The experimental study

1.2 Material and Procedure

We carried out a reaction-time study with a total of 66 Italian-speaking adults. Subjects were asked to evaluate *donkey sentences* introduced by different types of quantifiers with respect to scenarios displaying four pictures. Sentences were presented in two critical conditions: in the absence of an extra-linguistic context (Exp.1) and after the addition of a biasing context (Exp. 2). In both cases, to avoid interferences from extra-linguistic knowledge, we used strange characters (introduced as aliens) with weird objects to which only fantasy names were given. A sample of critical sentences used is given in (5)-(7), and one of the scenarios proposed is presented next:

(5) *Every Flont that has a vilp keeps it in a bin*
(6) *No Flont that has a vilp keeps it in a bin*
(7) *Some Flont that has a vilp keeps it in a bin*

Scenario (in critical condition)



Note that, given that two alternative interpretations can be associated to each sentence (as shown is (2) and (3) above), the scenario above makes the critical sentences true under one interpretation, but crucially false under the other. In case of Exp. 2, a biasing context was added before the same scenario appeared, in the aim of inducing subjects to accept the *donkey sentence* under the reading predicted as dispreferred by Kanazawa's generalization.

2.2 Results

Subjects' answers in Exp. 1 seems to conform to the predictions derived from the generalization in (4), at least in case of *Some* and *No*: in both cases, the reading that emerged as preferred in the critical condition was the *existential* one (87% and 93% in case of *Some* and *No* respectively). In case of *Every*, instead, subjects split. However, this result is compatible with the results obtained in Exp. 2, which show that subjects do in fact access the alternative interpretation of the anaphora, but crucially that its availability varies in accordance with the initial head determiner: the dispreferred (∃) reading is very easily accessed in case of *Every* (a significantly higher proportion of subjects (i.e. 81%) judged sentence (5) TRUE in the scenario above in Exp. 2). Conversely, the access to the dispreferred (∀) interpretation of the anaphora is much harder in case of sentences (6) and (7), even in presence of a context that biases subjects towards this interpretation.

3 Conclusion

Two main points emerge from our results. First, Kanazawa's generalization does appear to be empirically supported. How donkey pronouns are interpreted seems to be sensitive to the monotonicity properties of the determiners involved along the lines indicated in (4). Second, such interpretations seem to be a matter of preference (i.e. a default that comes about in relatively "neutral" contexts). As Exp. 2 shows, appropriate context manipulations lead to the emergence of the alternative interpretation. These results illustrate several general points. For one thing, they show that speakers unconsciously and systematically compute abstract properties pertaining to entailment patterns, as they tend to choose the interpretation of the donkey pronouns that retains the lexical properties of the determiner. Work on negative polarity has arguably shown sensitivity to monotonicity patterns in determining the distribution of items like *any*. Here we detect a similar phenomenon in connection with a purely interpretive task (namely, how pronoun readings in non C-command anaphora are accessed). This paves the way for further research (e.g., with respect to figuring out *how* various readings come about, and with respect to testing the present claim with other determines and settings) and confirms the value of integrating theoretical claims in semantics with experimental work.

Selected References.

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