Evidence for non-existential readings of locative indefinites

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Iatridou [2] points out contrasts between indefinites in locatives, as in the following examples.

(1) We are close to a gas station. (2) We are far from a gas station.

While (1) only requires that there exists a gas station nearby, the prominent interpretation of (2) is that **all** gas stations are far away. We examine two accounts of this kind of contrast. Under one possible explanation, *far from* decomposes into its negated antonym (henceforth *Implicit Negation*, or IN, cf. in another context Heim [1]). Under an alternative account, indefinites denote properties which are associated with *eigenspaces* – the spatial regions inhabited by the entities in the extension of the property (*Property Eigenspace Hypothesis*, or PEH, see [3,4]). We present new evidence, with experimental support, for the PEH and against IN: sentences containing indefinites with *projective* locatives like *left of, south of* have a salient *false* interpretation also in situations where the existential reading is true. IN cannot explain these interpretations, whereas they are directly predicted by the PEH. Our results imply that indefinites uniformly denote properties, and only indirectly, through derivational ambiguity, existential quantifiers.

Contrasts as in (1)-(2) show that locative indefinites may give rise to a salient non-existential and a less salient existential interpretation. However, this is so only for *far from* in (2) but not for *close to* in (1). Another example [3,4] is the contrast between (3) and (4), where (3) only requires that Fido be inside of some doghouse, but (4)'s prominent interpretation is that Fido is outside of all doghouses:

(3) Fido is inside a doghouse. (4) Fido is outside a doghouse.

IN explains this without introducing mechanisms different from existential quantification: *far from* decomposes into *not close to* and *outside of* into *not inside of*; scope ambiguity then provides both the existential and the non-existential reading. In contrast, under the PEH indefinites denote properties, and eigenspaces of properties consist of the *union of eigenspaces* of entities in the extension of the property. Given the PEH, (1) and (2) require that we be close to/far from the *union region* of the gas stations. This makes (1) true if we are close to the the nearest gas station, and (2) true if we are far from the nearest gas station. And if we are far from the nearest gas station, we are far from every gas station. A possible (though contextually hard) existential interpretation of (2) is assumed to be derived as well, via derivational ambiguity between the PEH and existential quantification (every property may be mapped to an existential quantifier, depending on context, cf. [5, 6]). Similar reasoning holds for (3) and (4).

Initial problems with IN: One problematic point with IN is the lack of a principle governing which prepositions (or parts of PPs) should be decomposed and which ones should not, i.e. why decompose *far from* but not *close to*, and why *outside of* but not *inside of*? Another problem has to do with measure phrases. For example, *five meters outside a doghouse* should decompose into *five meters not inside a doghouse*. But you are either inside a doghouse or not – you cannot be five meters *not* inside of it. These are general concerns, but perhaps not enough reason for abandoning IN.

Projective Prepositions: A more serious problem is that IN cannot account for certain judgments involving projective locative relations like *left of, south of*, etc. Take sentences (5) and (6),

which illustrate this problem with indefinites in parallel to referential definites that more directly refer to regions:

(5) The dot is left of the line. (6) We are south of a forest.

(5) involves a definite and is true just in case the dot is left of the *nearest point* in the eigenspace ϕ of the line. This is regardless of whether there is some other point in ϕ such that the dot is right of it, as is the case in Figure 1. A similar phenomenon occurs with locative indefinites, as in (6). If we are north of the nearest forest, it possible to interpret (6) as false even if there is some forest such that we are south of it. This is the case in Figure 2, where the two gray shapes are forests and our position is marked by the cross. IN cannot explain this non-existential effect, but the PEH can: we are north and not south of a forest because we are north of the nearest point in the eigenspace of *a forest*. Crucially, this explanation of (6) is simply obtained by extending, via the PEH, the standard treatment of locative definites as in (5). No additional principle is needed on top of the PEH. The situation with IN is quite different. There is no reason we know of to think that *south of* in (6) can be decomposed, and even if it is decomposed into *not north of*, the symmetric effect with *north of* would not be accounted for. We conclude that IN has to postulate another explanation for the non-existential interpretation of (6), with unknown consequences. It is therefore of great importance that our intuitions for sentences like (6) are secure.

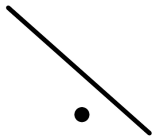

Figure 1

Experiment: To test these intuitions more thoroughly, we ran an experiment with 21 native speakers of Dutch (mean age $\approx$ 22.5). Acceptability judgments were elicited on sentences containing locative indefinites. In block one of two, subjects had to provide judgments on sentence-picture pairs. For example, one stimulus consisted of a picture similar to Figure 2 together with a textual context meant to make accessible the non-existential reading. Subjects then gave an acceptable-unacceptable judgment on sentence (6). In block two, trials were similar to those from block one, but subjects now had to provide judgments on pairs consisting of pictures and judgments, made by a fictitious referee, about the content of the picture. Referee judgments were introduced to more directly elicit subject judgments on the possible *falsity* of (non-)existential interpretations in more vivid scenarios.

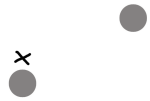

Figure 2

Results and Conclusion: About two thirds of answers given for *left of, north of* and *south of*, and about half of answers given for *east of* are consistent with a non-existential reading. The acceptance of the non-existential interpretation with these projective PPs cannot be explained by IN, which does not have any non-existential strategy for such cases. By contrast, the PEH expects the non-existential interpretation, as well as insecure judgements that follow from the (additionally derived) standard existential reading (cf. [5, 6]). More generally, the PEH offers theoretical continuity from the treatment of locative definites to locative indefinites. This theoretical elegance gives further new support to an old idea: some indefinites (bare or with *a*, but not necessarily *some* indefinites) denote properties first and, due to derivational ambiguity, existential quantifiers second.

References: [**1**] Heim 2008: "Decomposing antonyms?" *Proceedings of Sinn und Bedeutung. Vol. 12.* [**2**] Iatridou 2003: "Two constructions in Greek and what we can learn from them". *Proceedings of the 6th International Conference of Greek Linguistics.* [**3**] Mador-Haim & Winter 2007: "Non-existential indefinites and semantic incorporation of PP complements". *Proceedings of SALT. Vol. 17.* [**4**] Mador-Haim & Winter 2012: "Locating Sets: Spatial Semantics of Indefinites and Collective Descriptions". *Unpublished Manuscript* [**5**] McNally 1998: "Existential sentences without existential quantication". *Linguistics and Philosophy, 21.4, 353-392.* [**6**] Partee 1987: "Noun phrase interpretation and type-shifting principles". *Studies in discourse representation theory and the theory of generalized quantifiers, 8, 115-143.*