Existential Dependency: Holes, flaws and problems

Rachel Szekely*

LSA Annual Meeting, Boston, January 3–6, 2013

1. Introduction. This paper proposes that a relation, EXISTENTIAL DEPENDENCY, defines a class of nouns and accounts for the infelicity of its members as subjects of locative copular sentences and for related definiteness restrictions. This relation is distinguished from others, such as (in)alienable possession, on conceptual and empirical grounds.

In certain environments, words such as "hole" and "flaw" behave differently than nouns denoting "ordinary" objects: They may appear as the postverbal NP in the *there*-sentence (1) but not as subjects of the "related[1]" locative copular sentence (2)[2]. Example (2) becomes acceptable if you substitute for "hole" an "ordinary" noun such as "coat" (3), or if the noun phrase is definite (4).

(1) There is a hole in my pants
(2) #A hole is in my pants
(3) A coat is in the closet
(4) The hole is in the pants

Previously unnoticed, to my knowledge, is the fact that valid inferences between sentences containing nouns denoting "ordinary" entities with locative prepositions (5) do not hold when the noun is existentially dependent (6–8). For these nouns, the location denoted by the PP *must* pick out the (location of the) host. It is not possible to locate an existentially dependent object with reference to a larger enclosing region. That is, it is not possible to use "There is a hole in the garden" to mean, "There is a hole in the bucket in the garden"[3].

(5) There is a ball in the box.
The box is in the closet.
⊨There is a ball in the closet.

(6) There is a hole in the bucket.
The bucket is in the closet.
⊭There is a hole in the closet.

(7) The hole is in the bucket.
The ball is in the bucket.
⊭The hole and the ball are in the bucket.

(8) There is a hole in a bucket.
The bucket is in the garden.
⊭ There is a hole in the garden.

2. Existential dependency: Conceptual or grammatical? Although it is tempting to say that our conceptual insecurity about entities such as holes, rather than a grammatical

* Rachel Szekely, Long Island University (rachel.szekely@liu.edu)

[1] I put "related" in quotes because these facts were originally part of an argument against a transformational analysis relating these two sentence types.

[2] cf. Chomsky 1981; Higgenbotham 1981; Hornstein, Rosen and Uriagereka 1994; Kimball 1973; McNally 1998; Milsark 1974; Shafer 1995

[3] Notice that even locations corresponding to subparts of the host only marginally allow the transitive inference:

i. The hole is in the pocket.
The pocket is in the pants.
⇒?The hole is in the pants.

difference, accounts for the facts in (1–4)—after all, it is possible to count holes, compare them and demonstratively identify them in the same way as ordinary entities such as coats and tables—I believe these facts have a grammatical basis. The hypothesis explored here is that explanation for these facts derives from the lexical semantics of this class of noun. The meaning I assign this class of nouns incorporates insights about the metaphysics of these entities as explored in Casati and Varzi (1994), namely, these entities' existential dependency on a host entity. This relation determines, for these entities, essential properties such as existence and (co-)location. By definition (9), a hole (flaw, dent, etc.) is *in* or *through* something, and the existence of a hole entails the existence of a host:

(9) $\mathrm{H}x =_{\mathrm{df}} \exists y \mathrm{H}xy$
Where H*xy* is read as "*x* is a hole (flaw, dent, etc.) in (or through) *y*"

The relation of existential dependency in (9) imposes conditions on the felicitous use of these nouns. These conditions say that H*xy* expresses a location-dependent property, defined in (9). That is, the relation of existential dependence entails the location dependence of the dependent noun with respect to the host, as in (10).

(10) The 2-place relation α expresses the location dependence of an entity *x* on an entity *y* at interval *t*: $\forall xy[\boldsymbol{\alpha}(x, y) \leftrightarrow \forall l[\Box[\mathbf{in}(x, l, t) \rightarrow [\mathbf{in}(y, l, t)]]]]$ where *l* is a variable over locations.

3. Location (in)dependence. The relation in (9) and the conditions in (10) recall Chierchia's (1995) semantics for individual-level predicates (ILPs), which include contextually specified felicity conditions on their use. These felicity conditions consist of a locative relation Chierchia labels "in", which captures the tendency of ILPs to hold of an individual regardless of his location in space or time. In other words, individual-level properties are location *in*dependent. For example, the ILP "know" is formalized as in (11):

(11) $\mathrm{Know} \Rightarrow \lambda x_1\, \lambda x_2\, \mathbf{Gen}\ s\ [\mathbf{in}(x_1, x_2, s)]\ [\mathbf{know}(x_1, x_2, s)]$
"A situation s, in which x_1 knows x_2 holds at any location"

This semantics for ILPs also captures their infelicity with locative modifiers, as in (12): If John knows French at any location, he knows French in the garden, but also elsewhere—in fact, everywhere.

(12) #John knows French in the garden.
=#John knows French (only/when) in the garden.

Existentially dependent nouns share a number of characteristics with ILPs, and the conditions in (10) account for the restrictions on existentially dependent entities and their hosts. Existentially dependent entities depend on a host for their location and *must* be located in wherever location the host occupies. Conversely, being a host to the hole is a location-*in*dependent property and therefore subject to restrictions on locative modification like the ILP "know" in (12): If pants have a hole in the kitchen, they will have that hole in any location. This is illustrated in (13–14):

(13) #My pants have a hole in the kitchen.
(14) #There is a hole in my pants in the kitchen.

=#(Only/when) In the kitchen, there is a hole in my pants.
=There is a hole in my pants that are in the kitchen. ✓

4. Definiteness and specificity. Indefinite subjects of ILPs and indefinite existentially dependent NP subjects both run afoul of these felicity conditions, for different reasons. An ILP such as "tall", inherently generic on Chierchia's view, prevents an existential reading for the indefinite in (17). An indefinite existentially dependent subject of a locative predicate (15) is incompatible with the felicity conditions in (10), by suggesting that the relation of the hole to the host is not necessary but contingent, thereby implying that holes can move around independently of their hosts.

(15) #A hole is in my pants.
(16) The hole is in my pants.
(17) #A woman is tall.
(18) The woman is tall.

5. NP classes: Possession. The dependency relation between guests and hosts strongly resembles that between inalienably possessed entities and their possessors, and that relation has been invoked to explain the distribution of this class (Kimball 1973). An important result of the semantics in (9), however, is that it distinguishes the relation of existential dependency from inalienable possession. This captures a conceptual difference between the two kinds of entities. Alienable and inalienable possession are often distinguished as contingent and necessary relations, respectively. The hole–host relation is contingent from the perspective of the host, because the hole developed or was made there, and not somewhere else. The relationship is necessary from the perspective of the hole, because without the host it would neither exist nor have location.

And in fact, it is possible to have existentially dependent entities which are inalienably possessed. A donut, for example, is characteristically associated with a single hole, and as a result can stand as a complement to a *hole*-NP in a genitive *of*-phrase (19). (In this case, the *of*-phrase is infelicitous when it is indefinite because we know donuts have just one [characteristic] hole [cf. 20]). When the hole is not a characteristic part of the host, the *of*-phrase is infelicitous (21).

(19) The hole of the donut
(20) #A hole of the donut
(21) #The/#A hole of the cupboard

When the *hole*-NP is combined instead with a locative PP headed by "in", on the other hand, the head of the PP need not be relational (24)[4]. In this case, it is left open whether or not the hole is characteristic or not, but it will tend to be interpreted as an uncharacteristic hole. The hole in (23) could, for example, be a hole other than the characteristic hole of the donut.

(22) The hole in the donut
(23) A hole in the donut

[4] Possessive structures with "with" (e.g. A donut with a hole in it) and *have*-sentences (e.g. The donut has a hole in it) also suggest uncharacteristic holes. Compound nouns pattern with "of", requiring a characteristic hole–host relation (e.g. the donut hole/#the cupboard hole).

(24) A hole in the closet

6. Nominal interpretation in copular and existential *there*-sentences. Finally, consider (1) and (2). It has been argued on independent grounds in much recent work on existential *there*-sentences that the relationship between the existentially dependent NP and the locative is different in these examples. In (1), the locative PP can be analyzed as an NP modifier of the postverbal NP or as an adjunct predicate (cf. Barwise and Cooper 1981; Francez 2007; Hazout 2004; McNally 1998; Williams 1984, 1994). Importantly, the relationship between the existentially dependent NP and the locative in (1) is, arguably, not that of subject and predicate, as it is in the infelicitous (2); also, the source of the existential import in these cases is different. McNally (1998), among others, has argued that there is no existential quantification in existential *there*-sentences—an analysis that receives new support from the facts presented here.

References

Barwise, Jon, and Robin Cooper. Generalized Quantifiers and Natural Language. *Linguistics and Philosophy* 4. 158–219.

Casati, Roberto and Varzi, Achille. 1994. *Holes and Other Superficialities*. Cambridge, MA: The MIT Press.

Chierchia, Gennaro. 1995. Individual Level Predicates as Inherent Generics. In G. Carlson & F. J. Pelletier (Eds.), *The Generic Book*. 176–223. Chicago: University of Chicago Press.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris Publications.

Francez, Itamar. 2007. *Existential Propositions*. Ph.D. dissertation. Stanford University, Stanford, CA.

Hazout, Ilan. 2004. The syntax of existential constructions. *Linguistic Inquiry* 35. 393–430.

Higginbotham, James. 1981. "On Semantics". *Linguistic Inquiry*. 16, 547–593.

Hornstein, Norbert, Sarah Rosen and Juan Uriagereka. 1994. Integrals. *University of Maryland Working Papers in Linguistics* 2. 70–90.

Kimball, John. 1973. The grammar of existence. In: C. Corum, C. T. Smith-Stark & A. Weiser (eds.). *Chicago Linguistics Society (CLS 9)*. Chicago, IL: Chicago Linguistic Society, 262–270.

McNally, Louise. 1998. Stativity and Theticity. In Susan Rothstein (ed.) *Events and Grammar*. Kluwer, Dordrecht, 293–307.

Milsark, Gary. 1974. *Existential Sentences in English*. PhD dissertation, MIT.

Schafer, Robin. 1995. The SLP/ILP Distinction in *have*-Predication. In Mandy Simons and Teresa Galloway (Eds.) *SALT V*. 292–309. Ithaca, N.Y: Cornell University.

Williams, Edwin. 1984. *There*-insertion. *Linguistic Inquiry* 15, 131–153.