Nothing else for *something else*: A variable-free account

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Introduction Partee 1989 has observed that "implicit variables", i.e., syntactically covert semantic variables in expressions like *local*, *enemy* and *away* are pervasive in natural language. Although some authors (e.g. Stanley 2000 and Culicover and Jackendoff 1995 (C&J)) argue that the existence of implicit variables provides evidence for assuming variables in abstract semantic representations such as LF, we propose an analysis of implicit variables in Variable-Free Semantics (VFS; Jacobson 1999), which admits *neither* an abstract semantic representation *nor* variables, focusing on the expression *something else*. As pointed out by C&J, *something else* exhibits parallel behaviors with syntactically overt variables in almost all kinds of anaphoric contexts, which makes it an ideal test case for examining the empirical coverage of any semantic theory regarding the treatment of implicit variables. In this paper we show that the parallel between overt variables and *something else* falls out automatically in the general setup of VFS, by just introducing one assumption that is needed in any account, namely, a suitable lexical meaning for the word *else*. We argue that VFS thus provides an empirically adequate and the simplest treatment of implicit variables without recourse to any semantic representations.

Data and Analysis First, the bound variable reading of (1), namely, one that is equivalent to the bound variable reading of the paraphrase of the sentence with 'someone other than *him/her*$_i$', exemplifies the existence of an implicit variable in the expression *someone else*:

(1) Every American$_i$ loves *someone else*$_{j\neq i}$.

This bound variable reading receives an immediate account in VFS with the following lexical entry (we leave for the full paper how the meaning of *someone else* is derived compositionally):

(2) $\langle$ *someone else*; $(\mathrm{S}/_{\mathrm{R}}(\mathrm{S}/_{\mathrm{L}}\mathrm{NP}))^{\mathrm{NP}}$; $\lambda y\lambda P.\exists x[x \neq y \wedge P(x)]$ $\rangle$

(2) says that the denotation of *someone else* is a function (of type $\langle e, \langle et, t\rangle\rangle$) from an entity to a quantifier meaning (which is completely parallel to the treatment of pronouns in VFS where they are treated as functions of type $\langle e, e\rangle$; in both cases, the first argument slot of type e is for keeping track of the variable to be bound). Thus, applying the normal binding operation **Z** in (3) to the verb *loves*, the bound variable reading of (1) can be derived as in (4):

(3) $\mathbf{Z}$: $\langle \alpha$; $(B/\mathrm{NP})/A$; f $\rangle$ $\Rightarrow_{\mathbf{Z}}$ $\langle \alpha$; $(B/\mathrm{NP})/A^{\mathrm{NP}}$; $\lambda g\lambda x.f(g(x))(x)$ $\rangle$

(4)
$$\dfrac{\dfrac{\textit{Every American}}{\lambda P.\forall x[\mathbf{American}(x) \rightarrow P(x)]} \quad \dfrac{\dfrac{\dfrac{\textit{loves}}{\lambda f\lambda y.f(\lambda z.\mathbf{love}(z)(y))}\mathbf{Z} \quad \dfrac{\textit{someone else}}{\lambda y\lambda P.\exists x[x \neq y \wedge P(x)]}}{\lambda g\lambda z.g(z)(\lambda x.\mathbf{love}(x)(z))}\mathbf{A}>}{\lambda z.\exists x[x \neq z \wedge \mathbf{love}(x)(z)]}\mathbf{A}>}{\forall x[\mathbf{American}(x) \rightarrow \exists y[y \neq x \wedge \mathbf{love}(x)(y)]]}$$

Second, the existence of paycheck readings with *something/one else* falls out completely trivially in the current analysis. As noted by C&J, when preceded by sentences such as *every Englishman loves his daughter*, (1) can be interpreted as saying "every American$_i$ loves someone other than *his/her*$_i$ *daughter*." The application of **G** (defined as in (5)) to *someone else* as shown in (6) (which makes the interpretation of the expression dependent on a functional variable anaphoric to a discourse antecedent as well as on a type e variable bound by the subject quantifier) supplies the appropriate meaning for this paycheck reading (again, the analysis is completely parallel to that of corresponding paycheck readings of ordinary pronouns). The translation of the whole sentence in the paycheck reading is given in (7) (where g is contextually resolved as the function that maps each individual to his daughter).

(5) $\mathbf{G}$: $\langle \alpha$; A^B; f $\rangle$ $\Rightarrow_{\mathbf{G}}$ $\langle \alpha$; $(A^C)^{(B^C)}$; $\lambda g\lambda x.f(g(x))$ $\rangle$

(6) $\mathbf{G}((2)) = \langle$ *someone else*; $((\mathrm{S}/_{\mathrm{R}}(\mathrm{S}/_{\mathrm{L}}\mathrm{NP}))^{\mathrm{NP}})^{(\mathrm{NP}^{\mathrm{NP}})}$; $\lambda f\lambda y\lambda Q.\exists x[x \neq f(y) \wedge Q(x)]\rangle$

(7) $\lambda g\forall x[\mathbf{American}(x) \rightarrow \exists y[y \neq g(x) \wedge \mathbf{love}(x)(y)]]$

Third, following Jacobson 1999, by admitting **Z** but not **S**, the weak crossover (WCO) effect in sentences like **Someone else's$_{j\neq i}$ mother loves everybody$_i$* falls out; the variable in the higher argument of *loves* cannot be bound by the lower argument without an application of **S** (which, unlike **Z**, triggers binding from a lower argument position to a higher one) to *loves*. Since the relevant facts can be accounted for in VFS, we submit (contra Stanley 2000) that WCO does not qualify as empirical evidence for representing implicit variables at LF.

Furthermore, the ambiguity between entity/kind-antecedent readings of examples like (8) (also pointed out by C&J) is also properly predicted in VFS by employing the standard analysis of kind reference due to Carlson 1977. The kind-antecedent reading is obtained when the implicit variable in *something else* takes as its antecedent a kind-denoting expression (of type *e*). Specifically, with the lexical entry for the stage-level predicate *saw* in (9), and by not binding the implicit variable in *something else*, we get the translation for (8) shown in (10):

(8) John saw a red balloon, but Bill saw *something else* (=something other than *the balloon that John saw*/*a red balloon*). (C&J:257)

(9) $\lambda\mathcal{P}\lambda x.\mathcal{P}(\lambda y.\exists z[R(y)(z) \wedge \mathbf{saw}(z)(x)])$ (where R is the 'realization of' relation)

(10) $\lambda z.\exists y[y \neq z \wedge \exists w[R(y)(w) \wedge \mathbf{saw}(w)(b)]]$

In the context in which (8) is uttered, both the actual red balloon that John saw and the kind 'red balloon' (which is of type *e* in Carlson's ontology) are salient. The kind-antecedent reading is obtained simply by identifying the latter as the antecedent for the unbound variable z in (10).

The proposed account also makes correct predictions about a number of binding phenomena of (*something*) *else* in other anaphoric contexts such as functional questions, Bach-Peters sentences, cases involving the i-within-i effect, VP ellipsis and split-antecedent sentences, detailed illustrations of which will be given in the full paper.

Comparison with other approaches The parallel between pronouns and implicit variables in *else* (which the VFS analysis automatically predicts) is a complete accident in the standard, LF-based approach. Specifically, an application of the E-type analysis by Cooper 1979 adopted in Heim & Kratzer 1998 (H&K) must assume multiple lexical entries for *else* closely resembling the lexical ambiguity for pronouns: one containing a simple hidden variable, and a series of entries containing hidden complex relational variables with different arities. For example, in the Cooper/H&K-style analysis, (11) requires an E-type entry with a relational variable of type $\langle e, \langle e, e\rangle\rangle$ (whereas this kind of redundancy is eliminated in the VFS approach since a recursive application of **G** to (2) automatically takes care of it):

(11) Every novice instructor$_i$ thinks that every student$_j$ will complain about the grade that he$_i$ gives him$_j$, but every experienced instructor$_k$ knows that some students$_l$ will complain about *something else*$_{m\neq f(k,l)}$.

Elbourne's 2005 recent approach to anaphora, where pronouns are taken to *uniformly* denote disguised definites, avoids this ambiguity problem of the Cooper/H&K-style analysis. However, this approach, too, suffers from both empirical and conceptual problems. The empirical problem is that the Elbourne-style analysis cannot account for the existence of the kind-antecedent reading in (8). In the Elbourne-style disguised definite analysis, the hidden variable in (8) has to be represented as a definite description at LF. However, a paraphrase of *else* by 'other than *the* red balloon' yields only the entity-antecedent reading and there is simply no way of paraphrasing the kind reading of (8) using definite descriptions. The conceptual problem is that the analysis crucially relies on LF and a mechanism of NP-deletion, neither of which is present in our VFS analysis. Given these considerations, we conclude that the proposed VFS analysis fares better than conceivable LF-based alternatives on both empirical and conceptual grounds.

Selected references **Culicover, P. & R. Jackendoff**. **1995**. *Something else* for the Binding Theory. *LI* 26:249–275. **Elbourne, P**. **2005**. *Situations and Individuals*. The MIT Press. **Jacobson, P**. **1999**. Towards a Variable-Free Semantics. *L&P* 22: 117–185. **Partee, B**. **1989**. Binding implicit variables in quantified contexts. *CLS* 25: 342–365. **Stanley, J**. **2000**. Contexts and Logical Form. *L&P* 23: 391–434.