

Binding without Identity: reference by proxy and the functional semantics of pronouns

One of the well-known properties of reflexive pronouns is their ability to have “proxy readings”. This is illustrated in (1) (Jackendoff 1992):

(1) (Upon a visit in a wax museum:) All of a sudden Ringo started undressing himself.

Himself in (1) can refer to the “real” Ringo, but also to a statue of the Ringo denoted by the subject. We show that such “proxy reference” can appear with all pronouns, not only with reflexives, and study the implications for the combinatorics of anaphora and the reflexivizing element *self/zelf* in Dutch and English. Basing ourselves on Jacobson’s (1999) variable-free semantics, we propose that: (i) the context specifies a reflexive *proxy relation* that defines possible “proxies” for the entities referred to; (ii) pronouns denote *Skolem functions* that take proxy relations as their argument; (iii) elements like *self/zelf* are ordinary relational nouns, and their only special property is their ability to compose as lexical proxy relations with pronouns and binding operators. We show that these assumptions mesh well with the syntactic conditions on locally bound versus exempt SELF-anaphors, and the observed absence of the proxy reading (1) with simplex anaphors such as Dutch *zich* (Reuland 2001).

As Jackendoff argues, proxy interpretations of reflexives (1) must be related to a general property of language: the ability to refer to various “proxies” of an individual concept. In that respect, the reflexive in (1) is not different from non-anaphoric NPs, which can also refer to “non-canonical” proxies (cf. “Ringo/the man is made of stone, whereas Yoko/the woman is made of wax”). The following generalization emerges (pace the asymmetry claimed by Jackendoff – to be discussed in the full paper).

(2) **Generalization:** *The range of available proxies for a bound pronoun is the same range of proxies as for its antecedent.*

Thus, while strict identity between the referents of a pronoun and its antecedent is not mandatory even under binding, identity of the *candidate proxy referents* for the two expressions is mandatory. This generalization reflects a new observation: also non-reflexive bound pronouns allow a proxy interpretation. For instance:

(3) All of a sudden, every *pop icon* started taking off the shirt *he* was wearing.

In the wax-museum context of (1), sentence (3) has a bound reading where the pop icons took the shirts off their respective statues. To capture this effect, we propose that the context provides a reflexive proxy relation *PR*, describing the possible proxies $\lambda y.PR(x,y)$ of any entity *x* referred to. The reflexivity of *PR* guarantees availability of the standard, “strict identity”, interpretation also in cases like (1) and (3). In (3) we assume that non-reflexive pronouns like *he*, instead of simply denoting the identity function on entities, as in Jacobson (1999), denote a *Skolem function*: a function from entities to entities that takes a relation as a parameter. This parameter determines the range for each possible entity argument. Formally:

A function f of type (ee) with a relational parameter PR is a Skolem function if for every entity x: PR(x, f_{PR}(x)) holds.

Note that when *PR* is assumed to be a reflexive relation, there is a Skolem function *f* such that *f_{PR}* is Jacobson’s identity function. Sentence (3) is now analyzed as (3’):

(3’) $\forall x[pop_icon(x) \rightarrow take_off(x, the_shirt_f_{PR}(x)_was_wearing)]$

Thus, for every pop icon *x*, the Skolem function *f* picks up one of *x*’s proxies, possibly *x* itself. Derivation of this analysis is straightforward within Jacobson’s framework.

What do these considerations imply for reflexive pronouns? Our answer is based on decomposing the meaning of pronouns like English *himself* or Dutch *zichzelf*. First, we treat *self (zelf)* as a relational noun, denoting a proxy relation. This requirement amounts to assuming that *self* denotes a reflexive relation: an entity *x* can have more than one “self” in

addition to x . A noun phrase like *Ringo's better self* is not substantially different from any other NP with a relational noun (e.g. *Ringo's better parent*), where the former NP may refer to one of Ringo's "better" proxies in the context of utterance. Also similarly to other relational nouns, *self* can semantically incorporate (Van Geenhoven and McNally 2005) with nominalized transitive verbs. For instance:

- (4) *self-hater* denotes the predicate $\lambda x.hate(x, \uparrow self(x))$
 (x is a self-hater if x hates the property coupled with x's proxies)
parent-hater denotes the predicate $\lambda x.hate(x, \uparrow parent(x))$
 (x is a parent-hater if x hates the property coupled with x's parents)

The only substantial difference we assume between *self* and other relational nouns is a syntactic one. The noun *self* is able to combine with Skolem functions denoted by non-reflexive pronouns independently of genitive case (viz. *his self/himself* vs. *his parent/*him parent*). There are two ways in which this can occur:

i. *The unmarked option* – the noun *self* composes with the Skolem function through the binding mechanism. The noun *self* is covertly attached to the transitive predicate (as happens overtly in *self-hater*) and contributes a proxy relation to the non-reflexive pronoun through Jacobson's Z function in its "proxied" version: $Z^{PR} = \lambda R.\lambda f.\lambda x.R(x, f_{PR}(x))$. In this version of the Z function, it provides the Skolem function f with its parameter. The denotation of a VP like *undress himself* in (1) is obtained using the structure *self-undress him*, analyzed as follows: $Z^{self}(\mathbf{undress})(\mathbf{him}) = Z^{self}(\mathbf{undress})(f) = \lambda x.\mathbf{undress}(x, f_{self}(x))$

= $\lambda x.x$ undressed one of x 's *self* proxies (by definition of f as a Skolem function)

ii. *A marked option* – the noun *self* composes with the Skolem function directly. We assume that this marked option can only occur in exempt positions (Pollard & Sag 1992, Reuland 2001), when incorporation with the predicate is syntactically blocked, e.g. *Max boasted that the queen invited [Lucie and himself] for a drink*. When formation of *self-V* is syntactically disallowed – in this case, because of the Coordinate Structure Constraint (Reuland 2001) – direct composition with the Skolem function leads to the analysis:

himself = f_{self} = a function mapping every entity x to one of its proxies in $\mathbf{self}(x)$.

Unlike the unmarked option, now there is no binding that is made necessary by *self*'s composition. As a result, the exempt reading of *himself* allows it to be interpreted as either bound or free, similarly to the non-reflexive pronoun *him*.

In Dutch, a critical difference between the reflexive pronouns *zich* and *zichzelf* is that *zich* does not allow a proxy reading (5a) whereas *zichzelf*, like English reflexives, does:

- (5) a. Jan waste zich. ("Jan washed" – only *de se*; no proxy reading)
 b. Jan waste zichzelf. ("Jan washed himself" – proxy reading possible).

We follow Reuland's (2001) syntactic account of this contrast, assuming that bare *zich* forms one syntactic object (a chain) with the subject. Thus, our analysis of the intransitive usage of *waste* ("washed") in (5a) interprets the chain [*Jan, zich*] as $f_{PR}(\mathbf{jan}) =$ one of Jan's proxies. This interpretation is indistinguishable from the "simple" denotation \mathbf{jan} of the name *Jan*, given the generalization (2) that any referential NP can be interpreted as any member of the relative set of proxies. By contrast, in (5b), similarly to (1), the reflexive pronoun fills in a separate (object) argument position of a transitive verb (here, the transitive reading of *waste*). As a result, the analysis of (5b) is similar to the binding with the English sentence *Jan washed himself*.

References: Jackendoff 1992: "Mme Tussaud meets the binding theory", *NLLT* 10. Jacobson 1999: "Towards a variable-free semantics", *L&P* 22. Van Geenhoven and McNally 2005: "On the property analysis of opaque complements", *Lingua* 115. Pollard and Sag 1992: "Anaphors in English and the scope of the binding theory", *LI* 23. Reuland 2001: "Primitives of Binding", *LI* 32.