Reflexive and reciprocal determiners

R. Zuber

LLF, CNRS, Paris, France
Richard.Zuber@linguist.univ-paris-diderot.fr

Reciprocals and reflexives belong to the class of generalised NPs (GNPs) that is those elements which can serve as arguments of (transitive) VPs. They are generalised NPs because contrary to "ordinary" NPs (or DPs) genuine GNPs cannot occur in all argumental positions of a transitive VP, in particular they cannot occur in subject positions. Typical examples of such GNPs are the reflexive pronouns *himself/herself/themselves* and the reciprocal pronoun *each other*. These can can be Booleanly combined with other elements to give complex GNPs such as *each other but not themselves,, himself and most students, some teachers and most students including herself, ten students including each other and themselves*, etc. In this talk I analyse in a preliminary way formal properties of (1) *reflexive determiners* (RefDets) that is formatives which take a CN as argument and form a reflexive GNP and (2) reciprocal determiners (RecDets), that is formatives which take a CN as argument and give a reciprocal GNP as result. Both these classes form generalised determiners (GDets). in addition, GNPs formed by GDets considered here are anaphors. Thus NPs/DPs can be obligatorily anaphoric because of their determiner and not just because of their nominal phrase. Since I consider here only "simple" transitive sentences I will not discuss the possibility of long distance antecedents for such anaphors.

I am specifically interested in logical and semantic properties of functions denoted by RefDets and by RecDets. These properties will indicate formal similarities and differences between ordinary Dets (those forming "ordinary" DPs with a CN) and GDets considered here. Among these properties two, logically related, types of conservativity will be discussed.

RefDets and RFecDetds have been only scarcely discussed even if much more have been written about RefDets. Both these classes can be divided into possessive and non-possessive GDets. Some (but not all) languages have "marked" or morphologically simple possessive RefDets. The possessive anaphoric pronoun SVOJ in Slavic languages (as opposed to EGO) or *hans* in Norwegian (both meaning roughly *his/her own* are probably well-known (Zuber 2009). The Polish pronoun *swój* can in addition combine with virtually any other "ordinary" determiner to give a series of complex possessive RefDets which in English corresponds to the series like *all of his own, most of his own, ten of his own*, etc.

Concerning possessive RecDets we have the possessive form *each other's* and various Boolean combination of it with "ordinary" (non anaphoric) possessives (*each other's but not my, everybody's, including each other's* as in the following example:

(1) Leo and Lea help each other's/each other' s but not Bill's (students).

Not all languages have possessive RecDets. interestingly, Polish and other Slavic languages which have possessive RefDet seem to not have possessive RecDets.

Non-possessive RefDets are obtained by combining *self*-forms with "ordinary" determiners (or their parts). Thus the following are non-possessive RefDets: *no...except himself, most... including herself and Bill, every...but himself and Leo*, etc. as used in (2):

(2) Leo admires no monk, not even himself/ten monks, including himself and Bill.

Finally, non-possessive RecDets are obtained by combining *each other* with "ordinary" inclusive or exclusive dets. Thus we have *All... except each other, no... but each other and themselves, ten... including each other*, etc. as in (3) for instance:

(3) Leo and Lea admire no painter except each other and themselves.

Possessive (but not non-possesive) RefDets and RecDets can take many CNs as arguments as seen in (4) and (5);

(4) Leo burnt more of his own paintings than letters.
(5) Leo and Bill like each other's books and articles.

RefDets and RecDets form VPs by applying to CNs and transitive VPs. Thus functions they denote take a set and a binary relation as arguments. The output of functions denoted by RefDets is a set and the output of functions denoted by RecDets is a set of plural type $\langle 1 \rangle$ quantifiers (their type is "lifted"). For instance the determiner *no... but himself* denotes the function $F(X,R) = NO(X)$-BUT-$SELF(R) = \{x : X \cap xR = \{x\}\}$. In (6) we have the function denoted by the RecDet *no... except each other and themselves* as used in (3), where $Q \in PLR$ means Q is plural, $Li(Q,A)$ means Q that A is the smallest set on which Q lives and Q_{nom}, the nominal extension of Q, is $Q_{nom}R = \{x : Q(Rx) = 1\}$:

(6) $F(X,R) = \{Q : Q \in PLR \wedge Li(Q,A) \wedge Q_{nom}R \cap X = Dom((X \cap A) \times (X \cap A)) \cap R))\}$

Functions denoted by (possessive and non possessive) RefDets and RecDets are conservative in the sense of (7), where E is the universe::

(7) $F(X,R)$ is conservative iff $F(X,R) = F(X,(E \times X) \cap R)$

Functions denoted by non-possessive RefDets and RecDets satisfy even stronger notion of conservativity, they are a-conservative:

(8) $F(X,R)$ is a-conservative iff $F(X,R) = F(X,(X \times X) \cap R)$

The function $NO(X)$-BUT-$SELF(R)$ and the function in (6) are a-conservative.

One observes that functions denoted by non possessive RefDets satisfy (9a) and those denoted by RecDets satisfy (9b):

(9a) $F(X,R) \subseteq X$ (9b) If $Q \in F(X,R)$ then Q lives on X.

For instance in (2) Leo is a monk and in (3) Leo and Lea are painters. Conservativity (defined in (7)) and properties in (9a) and (9b) entail a-conservativity.

A-conservativity expresses reflexivity and reciprocity of (non possessive) RefDets and RecDets. The anaphoric character of possessive and non-possessive RefDets and RecDets can be technically expressed by *predicate invariance*(**PI**-invariance), which is independent of a-conservativity. **PI**-invariance of functions denoted by RefDets is defined in (10) and **PI**-invariance of functions denoted by RecDets - in (11):

(10) $F(X,R)$ is **PI**-invariant iff whenever $aR \cap X = aS \cap X$ then $a \in F(X,R)$ iff $a \in F(X,S)$
(11) $F(X,R)$ is **PI**-invariant iff $\forall Q$, $\forall R, S$, if Q lives on A if $\forall_{x \in A}(xR = xS)$ then $Q \in F(X,R)$ iff $Q \in F(X,S)$

(11) is a generalisation of (10). The function $NO(X)$-BUT-$SELF(R)$ and the function in (6) are **PI**-invariant.

References

Keenan, E. L. (2007) On the denotations of anaphors. *Research on Language and Computation* 5-1: 5-17
Keenan, E. L. and Westerståhl, D. (1997) Generalized Quantifiers in Linguistics and Logic, *in Handbook of logic and language*, Elsevier, Amsterdam, pp. 837-893
Zuber, R. (2010) Semantic Constraints on Anaphoric Determiners, *Research on Language and Computation* 8: 255-271