Competition among pronouns in the grammar of Chamorro reflexives

Safir (2014) proposes that all bound variable pronouns in natural language which are c-commanded by their antecedents realize a single dependent form, which he calls D-bound. In his system, D-bound—the "one true syntactically sensitive anaphor"—is the dependent element in bound anaphora whether the antecedent is local or long-distance. Principle A effects arise when a language's morphological spell-out of D-bound is sensitive to whether it is in the same phase as its antecedent. Principle B effects arise because ordinary, 'natural-born' pronouns with the same (bound) construal always lose in the competition with D-bound.

Safir's system predicts the existence of languages in which locally-bound ('reflexive') instances of D-bound have the same morphological spell-out as natural-born pronouns, although—as he observes—such languages are rare. He claims that the prevalence of morphological reflexives (e.g. English *themselves*) "is a form of morphological conservation reacting to functional pressure for local anaphora resolution where possible" (2014: 119).

When 'reflexive' D-bound is morphologically indistinguishable from natural-born pronouns, how do comprehenders navigate the task of construal? Chamorro, an Austronesian language of the Mariana Islands, provides a window onto this question. In Chamorro, (1) 'reflexive' D-bound generally has the same morphological spell-out as natural-born pronouns. However, (2) if 'reflexive' D-bound is a direct object, reflexivity can optionally be signaled with the postverbal adverb *maisa* 'self'. Further, (3) 'reflexive' D-bound, when an object, must be spelled out as an overt pro-form—it cannot be null. Finally, (4) clauses with a 'reflexive' D-bound object evade Chamorro's Person-Animacy-Hierarchy (PAH), which bans transitive clauses in which the direct object is a (natural-born) pronoun but the subject is a nonpronoun.

If D-bound universally outcompetes natural-born pronouns with the same (bound) construal, and Chamorro *maisa* signals locally bound anaphora resolution, then we make several predictions about how comprehenders will construe the overt object pro-form *gui'*, which could realize D-bound or a natural-born 3SG pronoun. (i) Comprehenders should more easily construe the pro-form as 'reflexive' D-bound when *maisa* is present than when it is absent. But (ii) given a functional pressure for local anaphora resolution, they might prefer to construe the pro-form as 'reflexive' even when *maisa* is absent and a disjoint construal is available to which the competition among pronouns does not apply. (iii) The preference for 'reflexive' construals should be strengthened when the disjoint construal would violate the PAH. Finally, (iv) comprehenders should interpret null objects as disjoint from the subject.

We tested these predictions with a picture-matching experiment on tablet computers. The screen showed two pictures depicting characters engaged in either a **reflexive** or a **disjoint** event, illustrated in Figure 1 by 'slap' (*patmåda*). Participants matched a target sentence to the best-fitting picture by moving a small icon, while we measured their swiping dynamics. Targets were embedded in carrier phrases like *Chonnik i puti'un guatu gi atyu na litråtu anai …* ('Push the star over to that picture where …'); they varied by a 3 × 2 design which crossed type of pronoun (+*maisa*, overt 3.PERS *pro*, null 3.PERS *pro*) and availability of an overt subject*. (5) illustrates a sample item set, which was paired with the pictures in Figure 1 (18 total; +12 fillers).

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* We couldn't naturally create the null pronoun/null subject condition. Instead we used an overt coargument, which could only plausibly be a theme disjoint from the subject, like *i fasun Felipe* ('Felipe's face').

Picture selection results are given in Figure 1 (right panel). The reflexive picture was picked almost exclusively for *pro + maisa*, regardless of whether the potential subject antecedent was overt. The reflexive picture was rarely picked for null *pro* conditions (although it was, non-trivially). For overt *pro* (without *maisa*), the reflexive picture was picked on a substantial number of trials: 88% for overt subjects; and 79% for null. Overt *pro* without *maisa* led to fewer reflexive interpretations (p < .001).

	Subject	
Pronoun	Overt	Null
+Maisa	99%	95%
Overt	88%	79%
Null	14%	8%

Figure 1   **Reflexive** slapping event (left) and **disjoint** slapping event (middle). *Right*: Reflexive picture selection rates (~246 obs. per cell; N=96 Chamorro speakers from Saipan & Rota).

Movement data from tablet-swipes suggest that a reflexive construal for overt *pro* is costly, even though it's a grammatical, freely-assigned meaning. Focusing here on initiation times, we found that swipes to reflexive pictures were initiated sooner when reflexivity was flagged by *maisa* than when it was not (by 774 ± 105 ms, p < .001). When there wasn't an overt potential subject (the PAH could not come into play), reflexive responses to *pro* with *maisa*, **and** disjoint responses to null *pro*, were both faster than the corresponding responses to overt *pro* without *maisa* (respectively, by: 389 ± 141 ms, p < .01; and 430 ± 240 ms, p <.10). In these conditions, disjoint and reflexive responses to overt *pro* were not significantly different.

The evidence from Chamorro sentence processing generally supports Safir's claim that local anaphora resolution is preferred where possible. In Chamorro, this pressure is manifested in two ways. First, the parser finds it easier to construe overt *pro* as D-bound when *maisa* is present. Second, and more surprisingly, the parser prefers to construe overt *pro* as D-bound even when a disjoint construal is available. This preference is strongest when disjoint construal is ruled out by the PAH (Overt Subject conditions), but still evident in other contexts. Yet, initiation times do indicate that, in the absence of *maisa*, the 'reflexive' construal is costly. One possible explanation stems from Chamorro's anaphor-before-binder order: only *maisa* allows the comprehender to predictively construct an appropriate logical form in advance of the binder; *gui'* may be left uninterpreted or underspecified until a binder can be identified.

Examples (*fa'gåsi* 'wash', *ha* '3SG AGR', *gui'* '3 SG PRO', *si* 'UNMARKED CASE'):

(1)   Ha fa'gåsi gui'.
       'He_i washed him_j/himself_i.'

(2)   Ha fa'gasin maisa gui'
       'He_i washed himself_i/*him_j.'

(3)   Ha fa'gåsi.
       'He_i washed him_j/it_k/*himself_i.'

(4)   Ha fa'gasi gui' si Juan.
       'Juan_i washed himself_i/*him_j.'

(5)   Ha patmåmada { **gui'** | **maisa gui'** | ∅ } ni panak lålu' { **si Felipe** | ∅ }
          slap   { OVERT +MAISA   NULL} OBL fly_swatter { Felipe   NULL.SUBJ }

References. Safir, K. (2014). One True Anaphor. *Linguistic Inquiry, 45,* 91-124.