Approaching Body Part Reflexives

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1. Introduction

Body Part Reflexives (BPRs) are common across languages (Schladt 2000), especially in certain language families represented in Africa, but as yet relatively little attention has been paid to them within generative approaches to binding and anaphora. Much of the generative literature deals only with SELF-anaphors, e.g. *himself* in English, *zichzelf* in Dutch and its cognates in Scandinavian. The present paper addresses the commonalities and differences between BPRs and SELF-anaphors. In particular it sketches a common framework for their analysis – based on Reuland (2008) and Reuland & Winter (2009) (henceforth R&W) - and discusses a number of open issues that require further investigation to be resolved.

As the data on African Body Part Reflexives provided by the Afranaph resources show, like SELF-anaphors, BPRs must be locally bound in canonical argument positions. Unlike complex anaphors such as Georgian *tav tavis* (e.g. Amiridze 2006) or modern Greek *o eaftos tu* (Anagnostopoulou and Everaert 1999) the BPRs in the present sample are not used in the subject position of finite clauses). There is no evidence for them being used as long-distance anaphors (roughly, allowing a binder in a higher clause), or logophors (Clements 1975, Sells 1987).

For this paper we are concentrating on the languages Ibibio, Urhobo and Yoruba, all belonging to the Benue-Congo subbranch of the Niger-Congo languages. All three of them use BPRs as reflexive strategies. All the data below is taken from the African Anaphora database, unless indicated otherwise.

2. Reflexivity and the analysis of SELF reflexives

2.1 The syntax of reflexive-marking

One of the questions any binding theory striving for explanatory adequacy has to address is why particular expressions have to be bound (roughly: are "anaphors"), and why certain of these anaphoric expressions must be locally bound. With the demise of indices as elements of grammar (see Chomsky 1995, Reuland 2001, Reuland 2011, in press) both the binding requirement and locality have to follow from properties available within (minimalist) syntax. Moreover, the notion "bound" has to be properly semantically interpreted.

We take the approach in Reinhart and Reuland (1991), and Reuland (2001) as our starting point. In this approach locality follows since the SELF-morpheme covertly head-moves onto the predicate head/verb. The resulting SELF-V is semantically interpreted as reflexive (see the next section for details). Although a role of specific morpho-syntactic triggers for SELF-movement cannot be excluded, for current purposes a general economy principle preferring an interpretive dependency to be encoded in the syntax if possible will suffice as a trigger.

Given the claim that a SELF-anaphor reflexive-marks a predicate by covert movement, SELF can only enforce binding if it is in a position from which movement is possible. In positions where syntactic constraints such as the CSC, or the CED – whatever their ultimate explanation – block movement, the SELF-anaphor cannot enforce reflexivity, hence – from a macro-perspective – is exempt from a binding requirement (Reuland 2008, 2011), as in the contrast illustrated in (1):

(1)   a. *Max was happy that the queen invited himself for a drink (*invite* → REFL → *)

    b. Max was happy that the queen invited [Mary and himself] for a drink (no REFL)

In general we assume that the binding behavior of an expression is determined by its morphosyntactic make-up in relation to its syntactic environment. In particular we assume that the internal structure of English SELF reflexives is as in (2), where *him* is in the specifier of a functional projection in the left periphery of the extended projection of the SELF-noun:

(2)   [$_{FP}$ him [$_{NP}$ SELF]]

2.2 What makes SELF a suitable reflexivizer?
There is a venerable tradition in the semantic literature (for instance, Keenan 1988) to analyze pron-self as an operator that applies to a two-place predicate R (=a relation between atomic entities) and generates a one-place predicate over sets A of atomic entities, formalizing the interpretation of themselves in (3a), as in (3b). For reasons explained in Reuland (2008), under syntactic reflexivization the arity of a predicate must be preserved. This is what requires the presence of a complex anaphor in the relevant environments. Hence (3c) is a better approximation than (3b). The question is what makes elements such as SELF suited for this role.

(3)   a.   The girls admire themselves.
        b.   REFL:= λR. λA. $\forall x \in A$ [R (x, x)]
        c.   REFL:= λR. λA. $\forall x \in A$ [R (x, f(x))]

The intuition pursued in Reuland (2008, 2011) and Reuland and Winter (2009) is that SELF is inherently relational: a SELF is intrinsically some individual's SELF. In this respect it differs from nouns such as *mountain*, *tree* or *cat*, but is similar to nouns such as *head*, *body*, or *soul*, but of course, also to *mother*, *father*, or *sister*. The core intuition is, then, that an expression such as (3a) has the logical syntax representation in (4):

(4)   The girls (λx (admire (x, SELF(x))))

Here SELF maps an x onto x's SELF , which, in turn, is such that it can stand proxy for x. Generalizing (4) as in (5), we can say that an inherently relational Noun is in principle suited as a reflexivizer if it can be interpreted as a functor f such that f(x) can stand proxy for x.

(5)   a.   DP (λx (V (x, N(x))))
        b.   DP (λx (V (x, f(x))))

Common sense pragmatic restrictions on what are possible proxies entail that *SELF*, and body-part nouns such as *head*, *body*, *soul* will yield possible proxies, but kinship terms (though also relational) in general will not.
    This brings us to the question of how to represent the binding requirement of SELF-anaphors in a compositional semantics. Moreover the semantics of SELF should be such that it generalizes over exempt and non-exempt positions. A proposal to this effect is presented in R&W.

2.3 Interpreting SELF

R&W's analysis of reflexives is formulated in terms of Jacobson (1999)'s variable free semantics. The crucial factor allowing the generalization over exempt and non-exempt positions is that Jacobson analyzes pronominals as denoting the identity function. That is, they are expressions of type <ee> rather than type <e>. As observed by Safir (2004a,b) pronouns do allow as values proxies of their antecedents. Pursing this, R&W propose that pronouns are interpreted as functions mapping individuals to their proxies, where the proxy-set is contextually determined. More formally, they 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:

(6)   *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.*

The noun *self* composes with the Skolem function denoted by the pronoun through the binding mechanism, the Z-function in Jacobson's (1999) theory, as in (7). So the VP in (7a) (from Jackendoff 1992) is interpreted as in (7b):

(7)   a. (Upon a visit in a wax museum:) All of a sudden *Ringo* started undressing *himself*.
        b. Z^{self} (*undress*)(*him*) = Z^{self} (*undress*)(*f*) = λx. undress(x, f$_{self}$ (x))
           = λx.x undressed one of x's self proxies (by definition of *f* as a Skolem function)

Or if reflexive-marking is not possible (when the complex anaphor is in an exempt position), *self* composes with the Skolem function directly, (8).

(8)   himself = f$_{self}$ = a function mapping every entity x to one of its proxies in *self*(x)

In the case of (8), *himself* receives the same type interpretation (modulo the effect of discourse conditions) a non-reflexive pronoun would get; it can either be bound or free. Thus, R&W's account offers a unified semantics for the occurrence of reflexives in different syntactic environments, i.e. reflexive-marking of the predicate on the one hand and the exempt reflexives on the other hand.

      Interestingly, simplex anaphors such as Dutch *zich* in *Ringo waste zich* 'Ringo washed' do not allow the statue interpretation. As argued in Reuland (2001), *zich* in these cases enters a syntactic chain with its antecedent. In R&W this chain relation is interpreted as follows: the *zich*-function composes directly with the chain head.

3. Understanding BPRs

As already indicated above, inherent relationality, a core property of SELF, is also a property of body part expressions. It should come as no surprise, then, that typological studies (e.g. Faltz 1977, Schladt 2000, Heine 2000) show that many languages use BPRs, reflexives that are derived from the noun *body* or terms denoting body parts, e.g. *head, bone, skin, face*. BPRs usually consist of a (possessive) pronoun and the respective body part noun and are the most frequent reflexive markers (85%) in African language families according to Schladt (2000).

      Data from the African Anaphora database shows that BPRs in our selection pattern with SELF reflexives in their distribution over different syntactic environments. They are locally bound as an argument of a predicate, in line with the Condition A, (9a), are able to be bound by a quantificational antecedent, (9b) and do not allowing long-distance binding, (9c).

(9) a. Ịjọni mrẹ   oma-rẹ-ọyen   **[Urhobo]**
         John see.PST body-AM-him
         'John saw himself'
     b. Emeshare na ọvuọvo   ni   oma-rẹ-ọyen
         boys   the each.one looked body-AM-him
         'Every/each boy looked at himself'
     c. * Ijini ta nẹ Imeri oma-re-ọyen   vwo ẹguọnọ kẹ
         Jean said that Mary body-AM-him has love   for
         'Jean said that Mary loves him'

Besides Urhobo, data on Yoruba, (10) and Ibibio, (11), in the African Anaphora database exemplify this distribution.

(10) a. Olú wẹ   ara rẹ̀   **[Yoruba]**
         Olu like body his
         'Olu likes himself'
     b. Ọmọkùnrin kọ̀ọ̀kan wo   ara   rẹ̀.
         Boy   each-one look body his
         'Every boy looked at himself'
     c. * Olú fura   pé   Màríà fẹ́ràn ara rẹ̀
         Olu suspect that Mary likes body his
         'Olu suspected that Mary likes him'

(11) a. Okon á-má   ídém ọ́mọ́   **[Ibibio]**
         Okon Agrs-love body his
         'Okon loves himself'
     b. àfitówò   é-mà-é-sé   ídém ọmmộ
         All.person/everybody SM-TM-SM-look body   their
         'Everybody looked at himself'
     c. * Okon á-diọ́ngọ ké edem á-ma   ídém ọ́mọ́
         Okon Agrs-know that edem Agrs-like body his
         'Okon knows that edem like himself'

The BPRs in our selection of African languages are not allowed to appear in subject positions, e.g. in Yoruba in (12), and the same holds for Urhobo and Ibibio.

(12) a. * Ara rẹ̀ lo sí ọjà   ní   àná   **[Yoruba]**
         body his go to market at   yesterday
         'Himself went to the market yesterday'
     b. * Òpọ̀ ènìyàn kò   fẹ́ràn Alóńgẹ́, ṣùgbọ́n ara   rẹ̀ fẹ́ràn wọn
         many people NEG like Alonge but   boby his like   them
         'Many people do not like anchovies, but he likes them'

BPRs are also allowed to occur in non-co-argument positions (locative PPs) as shown in (13a-c). We can see from the database that also a pronominal can be used in these positions in Urhobo, (13a), and Yoruba (13b), but for Ibibio judgments on the acceptance of the pronominal in these positions is not provided.

(13) a. Isali mrẹ ọrodeko kere oma-re-ọyen / re-ọyen **[Urhobo]**
Sally see.PST snake near body-AM-her / AM-her
'Sally saw a snake near her'

b. Òjó rí ejò ní ẹ̀gbẹ́ ara rẹ̀ / rẹ̀ **[Yoruba]**
Ojo see snake at side body his / his
'Olu saw a snake besides him'

c. Mary á-má-kít wèd ké èdém ọ́mọ̀ **[Ibibio]**
Mary SM-TM-see book LOC body her
'Mary saw a book behind her'

Proxy readings are available with BPRs, e.g. Yoruba in (14a) and Ibibio. Some languages don't appear to allow this reading, for instance Urhobo in (14b).

(14) a. Olú rọra wẹ ara rẹ̀ kí amọ̀ nà má ba à bàjẹ́ **[Yoruba]**
Olu carefully wash body his COMP clay the NEG damage
'Olu washed himself carefully, so as not to damage the clay.'

b. ọ mre oma-rẹ-ọyen kasa-kasa **[Urhobo]**
3SG saw body-AM-3SG everywhere
'He saw himself everywhere' (no 'his statue' interpretation possible)

c. Me mre oma-mẹ vwẹ oma-wen
1SG see myself LOC body-2SG.POSS
'I see myself in you'

To properly interpret this difference, it is important to have more information. For instance, what is the range of proxy-interpretations of pronominals in Urhobo in general? Does Urhobo allow proxy-readings at all? Are there restrictions on proxy-readings specific to reflexive predicates? Are these perhaps pragmatically conditioned limitations on the range of admissible proxies ('proxies must be sufficiently similar', as suggested by (14c)) or is the restriction syntactic, due to chain formation as with Dutch *zich*? These are all questions that come up, but require more extensive investigation for an answer.

4. Syntactic and Semantic Analysis

As noted in section 2, body part nouns are intrinsically relational, just like SELF. This entails that just like SELF they are amenable to composition with the Skolem function denoted by the pronoun. So, the generalization from SELF-anaphors to BPRs is trivial. As BPs are combined with (possessive) pronouns to more complex noun phrases, the BP can be interpreted through the Z-function in case of reflexive-marking.

(15) Z^{BP} (V)(Pron) = Z^{BP} (V)(f) = λx. V(x, f^{BP}(x))
= λx.x V-ed one of x's body's proxies (by definition of f as a Skolem function)

In cases where due to some syntactic constraint no reflexive-marking is possible, the interpretation is as in (16):

(16) his body = f_{body} = a function mapping every entity x to one of its proxies in $body(x)$

Generalizing the analysis of SELF-anaphors to BPRs in this manner leads us to expect similar exemption effects as found in English. The question is then, are the equivalents of (1b) in the languages under investigation well-formed? So far, we don't know whether this is the case, and further research is needed.

Note, that whether exemption is expected or not does not only depend on the nature and position of the head, but also on the nature of the specifier/POSS element. For instance, in Dutch exemption is limited to SELF-anaphors with 1st and 2nd person pronominals. Unlike English *him*, the canonical 3rd person anaphor in Dutch, *zich*, carries its own dependency requirement. So, where *pron-zelf* is exempt in the relevant contexts in Dutch, for independent reasons *zich-zelf* never is (see Reuland 2011 for discussion).

5. A Comparative Perspective
BPRs in African language families also raise interesting issues from a comparative perspective. While the BPRs in the Afranaph data base all appear to exhibit a local binding requirement (that is, they all obligatorily reflexive the predicate they are construed with), this does not hold for all BPRs cross-linguistically. A language reported to have BPRs with no binding enforcement is Peranakan Javanese (PJ), illustrated in (17) (Cole et al. 2008). In PJ the reflexive *awake dheen* 'body his' can be used in local contexts to license reflexivity (informally, it keeps the arguments distinct, thereby preventing the forbidden arity reduction), (17a), but does not obligatorily enforce reflexivity (17b). From the current perspective, to be able to license reflexivity it is sufficient that *awake dheen* is syntactically and semantically complex (see Reuland 2008, 2011 for discussion), which seems straightforward. To account for the fact that it does not enforce reflexivity, it would be sufficient to show that *awake* cannot move onto the verb. Note next, that there is another complex anaphor in PJ, *awake dheen dhewe* 'body his self'. As (17c) shows, this anaphor is obligatorily locally bound.

(17) a. Tono_i ketok awake dheen_i nggon kaca.   **[Peranakan Javanese]**
         Tono see   body-3 3sg   in   mirror   (Cole et al. 2008)
         'Tono saw himself in the mirror'
     b. Ali_j ngomong nek   aku pikir [Tono_i ketok awak-e $\text{dheen}_{i/j/k}$ nggon kaca]
         Ali N-say   COMP 1sg think Tono see   body-3 3sg   in   mirror
         'Ali said that I thought that Tono saw himself/him in the mirror'
     c. Bowo_j ngomong nek   aku pikir [Tono_i ketok awake dheen $\text{dhewe}_{i/*j/*k}$ nggon
         Bowo N-say   COMP 1sg think Tono see   body-3 3sg   self   in
         kaca]
         mirror
         'Bowo said that I thought that Tono saw himself in the mirror'

In (17c) SELF appears to be in a canonical head position of the NP. If so, SELF-movement is expected to be available. In the case of *awake dheen*, no overt element is in the canonical head position of the NP; if *awake* is merged in a specifier position in the left periphery, one may expect that left branch condition effects might prevent movement onto the verb. A similar binding behavior cannot be found in African Anaphora resources. No standardly exempt uses are reported, (18a).

Given what we said about PJ, the internal structure of anaphoric expressions in the African languages discussed merits attention. In Yoruba, for instance, the BPN is also in the left periphery. There are a variety of options that require sorting out. They all depend on the details of the structure. For instance, if in Yoruba *ara* ends up in its PF position by head-movement, further – covert – movement into the verbal domain would indeed be expected to be as fine as it is, and thus long-distance binding is ruled out, (18).

(18) * Olú fura   pé Màríà fẹ́ràn ara   rẹ̀   **[Yoruba]**
      Olu suspect that Mary likes body his
      'Olu suspected that Mary loved him'

Consider also the following binding phenomenon, referred to as inclusive reference anaphora, which is reported with BPRs in some African languages e.g. Hausa (Newman 2000).

(19) Laadì$_1$ taa   soòki   káàn-sù$_{1+x}$.   **[Hausa]**
      Ladi   3SG criticize head-3PL
      'Ladi criticized themselves'

Of interest for further investigation is if the pronominal in these cases is ruled out. Note that the syntactic predicate in (19) is not reflexive (if it were forced to be reflexive, the sentence should be ill-formed, since subject and object don't match in features). The first question is why special marking is necessary. The answer is that one of the instantiations of the predicate is reflexive (assuming a distributive reading). That is, in terms of licensing we have the same case as in ***John*** *admired [Mary and* ***him*(self)]***, where *self* is required since otherwise the reflexive instantiation of the predicate would not be licensed. This fact will follow if there is a syntactic factor blocking reflexivization (for instance, since the head is in an XP on a left branch), and the conditions for chain formation are not met either (*sù* is fully specified for Φ-features and mismatches with the antecedent in number). Clearly, in order to evaluate the viability of such an approach further investigation both of the binding patterns in Hausa and of its DP structure is required.

Note that BPRs in Yoruba cannot be used with inclusive reference, see (20), which is consistent with general local binding obligation of *ara won*, as discussed above.

(20) * Olú fẹ́ràn ara   won   **[Yoruba]**
      Olu likes body their
      'Olu likes themselves'

6. Conclusion

In this paper we saw how a number of minimal assumptions about the syntax and semantics of complex reflexives allow us to generalize over SELF-anaphors and BPRs. By using data of the Afranaph database we provided a more detailed analysis of BPRs in selected African languages and their binding behavior. Looking at the different syntactic environments, different readings and possible differences in the internal make-up of the BPRs provides a good starting point to arrive at a further understanding of the patterns found.

As is to be expected if one sets out to generalize from patterns in well-described languages to patterns in less-well described languages, crucial data points are lacking. The goal of this contribution is therefore three-fold; i. to show that a number of basic properties of the anaphoric systems in the languages discussed follow from the theory as developed so far; ii. identify issues that require further investigation, but also iii. provide a perspective on what we will have to look for in order for these issues to be resolved.

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