

Semantic Composition in Reflexivization

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Abstract

It has been commonly assumed since Chomsky (1981) that the distribution of reflexive pronouns is subject to Binding Condition A. Reinhart and Reuland (1993) formulate Condition A in terms of the notion of “syntactic predicate.” The proposal I will develop in this paper is to factor out semantic and syntactic conditions on the occurrence of reflexive pronouns and to reduce them to independently motivated semantic and syntactic mechanisms. The semantic part is attributed to a theory of semantic composition recently developed by Chung and Ladusaw (2004), while the syntactic residue falls into the proper characterization of syntactic chains, as proposed by Reinhart and Reuland (1993) and Reuland (2001). To the extent that this approach is successful, Binding Condition A is rendered superfluous.*

1. Introduction

It has been commonly assumed since Chomsky (1981) that the distribution of reflexive pronouns is subject to Binding Condition A. Reinhart and Reuland (= R&R) (1993) formulate Binding Conditions A and B as follows:

- (1) *Conditions* (= R&R’s (41))
A: A reflexive-marked syntactic predicate is reflexive.
B: A reflexive semantic predicate is reflexive-marked.

Note that while Condition B is defined in terms of “semantic predicate,” Condition A is defined in terms of “syntactic predicate.” One might wonder why the semantic notion of “reflexivity” needs to be characterized in two different terms. If “reflexivity” is about predicates, then Condition B seems natural. But the same thing cannot be said about Condition A; “predicate” is essentially a semantic notion, which R&R redesign in syntactic terms.

The proposal I would like to develop in this paper is to factor out semantic and syntactic conditions on the occurrence of reflexive pronouns and to reduce them to independently motivated semantic and syntactic mechanisms. The semantic part is attributed to a theory of semantic composition recently

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developed by Chung and Ladusaw (2004) (= C&L). The syntactic residue falls into the proper characterization of syntactic chains, as formulated by R&R (1993) and elaborated by Reuland (2001). To the extent that this approach is successful, Condition A can be rendered superfluous.

This paper is organized in the following manner. In Section 2, I will outline the interpretive mechanism proposed by C&L. In Section 3, I will discuss the core case of reflexive anaphora and provide an analysis in terms of the mode of composition Restrict. In Section 4, I will discuss the other cases of reflexive anaphora and provide an analysis in terms of the mode of composition Specify, while reducing the syntactic residue to a syntactic chain formation. In Section 5, I will extend the empirical domain to cover a range of phenomena other than reflexive anaphora to show that the proposal has a wider applicability. The discussion concludes in Section 6.

2. Chung and Ladusaw (2004)

The work by Kamp (1981) and Heim (1982) has shown that definite and indefinite NPs in languages like English are interpreted as free variables whose domain is restricted by the semantic content of the common noun. C&L propose an alternative and argue that indefinite NPs compose with a predicate in two different manners, i.e. either via the nonsaturating mode of “Restrict” or the saturating mode of “Specify.”

The basic question addressed by C&L is whether the predicate-argument relation is necessarily captured in terms of saturation, i.e. by reducing the degree of incompleteness of a predicate by one. Consider a sentence like (2), where the transitive verb, semantically of type $\langle e, \langle e, t \rangle \rangle$, takes an indefinite NP, semantically of type $\langle e, t \rangle$, as one of its arguments.

(2) John fed a dog.

Since the type of argument here is not the one that the predicate looks for, there is a type mismatch. C&L argue that there are two ways to resolve the tension. One is to invoke type-shifting in the sense of Partee (1986), whereby the semantic type of an expression can be shifted into an appropriate one. C&L propose to formulate it in terms of a choice function that takes a property-denoting expression and maps it into an entity that has that property (cf. Reinhart 1997, Winter 1997, Kratzer 1998). Reinhart (1997: 372) defines choice function as follows:

(3) A function f is a choice function (CH (f)) if it applies to any non-empty set and yields a member of that set.

Once a choice function applies to a property-denoting expression and yields an entity, the composition proceeds in the usual manner. The mode of composition in terms of choice function is what C&L call “Specify”; the

logical representation of (2) is given in (4).¹

$$(4) \quad \exists f[\text{feed}'(f(\text{dog}'))(j)]$$

The use of a choice function is represented by a function variable, which is existentially closed; the formula represents the proposition that there is a choice function f such that the dog it picks is fed by John. C&L follow Reinhart (1997) and Winter (1997) in assuming that existential closure of function variables applies at any compositional level, which accounts for a variety of scope behavior of indefinites.²

The other way of resolving the type mismatch noted above is to interpret the indefinite NP as a predicate modifier. In this mode of composition which C&L call “Restrict,” the property-denoting expression directly composes with a predicate, without saturating any of the predicate’s argument positions.³ (2) is translated into the formula in (5), and applying λ -conversion and existential closure yields a representation like (6).

$$(5) \quad \lambda y \lambda x [\text{feed}'(y)(x) \wedge \text{dog}'(y)] \quad (= \text{C\&L's (12)})$$

$$(6) \quad \exists y [\text{feed}'(y)(j) \wedge \text{dog}'(y)] \quad (= \text{C\&L's (13)})$$

(6) says that there is an individual y such that it is fed by John and it is a dog.

What is interesting about C&L’s analysis is that they try to seek morphosyntactic correlates of these two modes of semantic compositions. Thus, C&L (p. 154) state that “NPs, which denote properties, can be composed via Restrict” and further that “the domain of Specify is restricted to DPs and...the fact that NPs cannot compose in this mode is principled.” C&L discuss cases involving object incorporation in Chamorro to illustrate the correlation. I believe that C&L’s insight has significant consequences in anaphora as well, a topic to which we will turn in the next section.

3. Predicate Restriction in Reflexive Anaphora

There is nothing intrinsic about the approach developed by C&L (and also by van Geenhoven 1998 and Farkas and de Swart 2003) that it is limited to the semantics of indefinite NPs. In fact, I will argue that by extending C&L’s proposal to the domain of reflexive anaphora, we gain a better insight into the phenomena. The basic idea is that reflexive anaphors are interpreted in three different ways depending on the manner in which they compose with a predicate. First, the N head SELF might incorporate into the verb overtly or

¹ C&L’s analysis is couched in the Davidsonian event semantics, which I gloss over here for expository purposes.

² See Kratzer (1998) and Matthewson (1999) for different views of choice function.

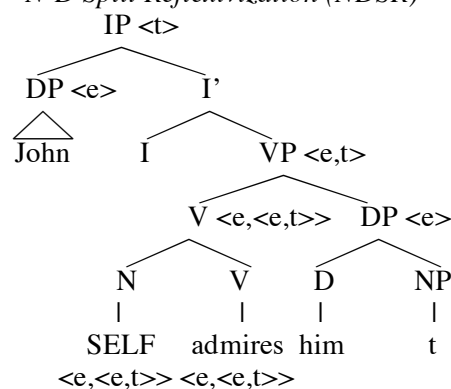
³ This is in contrast to van Geenhoven (1998) and Farkas and de Swart (2003), who assume that composition of a property-denoting expression with a predicate is basically saturating. See C&L (pp. 16-17) for discussion.

covertly (cf. R&R 1991, Safir 1996, Anagnostopoulou and Everaert 1999, Reuland 2001, this volume) and compose semantically with the predicate via the mode of Restrict, imposing an identity condition on the latter. Second, the DP as a whole might compose with a predicate via the mode of Specify. Third, the entire anaphor might be construed as an argument that enters into a chain with its antecedent (cf. R&R 1993, Reuland 2001).

3.1. The N-D Split Reflexivization

It has been pointed out by Pica (1987) and Keenan (1988) that complex anaphors in many languages are headed by a SELF morpheme, a relational expression of type $\langle e, \langle e, t \rangle \rangle$. Many researchers including R&R (1991), Safir (1996), Anagnostopoulou and Everaert (1999), and Reuland (2001, this volume) argue that the SELF morpheme undergoes head movement and incorporates into a verb, leaving behind a pronominal element. I adopt the head movement analysis of complex anaphors and propose that the syntactic operation of head movement is accompanied by the semantic composition via Restrict, whereby the incorporated item behaves as a predicate modifier and the composed predicate remains an expression of type $\langle e, \langle e, t \rangle \rangle$. Since the syntactic operation splits the DP argument into two parts, N and D, I call reflexivization in this configuration “N-D split reflexivization (= NDSR).”

(7) N-D Split Reflexivization (NDSR)



In this configuration, the reflexive morpheme and the pronominal remnant not only occupy distinct syntactic positions but behave as distinct semantic units as well—by behaving as a restrictive modifier in the case of the former and by behaving as an argument of the complex verb in the case of the latter. Since the pronoun saturates one of the argument positions of the composed predicate, the derivation completes without closing the formula by means of existential closure.

The N-D split configuration is not limited to the domain of reflexive anaphora. Consider object incorporation in Chamorro as discussed by C&L.

- (8) a. Hayi gäi-patgun? (= C&L's (1b))
who WH[nom].Agr.have-child
'Who has a child?'
b. Hayi gäi-patgun hao? (= C&L's (2b))
who WH[nom].Agr.have-child you
'Whose child are you (lit. Who has a child, namely, you)?'

C&L follow Mithun (1984) in analyzing this type of object incorporation as classificatory noun incorporation. A noun head is incorporated into a verb and acts as a restrictive (or classificatory) modifier. In (8b), there is a pronominal, or what C&L call “extra object,” which saturates one of the argument positions of the composed predicate. Existential closure therefore does not apply in (8b), although it does in (8a).

3.2. SELF Incorporation at LF

The idea that the mode of composition *Restrict* is a fundamental operation that applies to reflexive anaphors is empirically supported. Notice that the composition of *SELF* with a predicate via *Restrict* is essentially a semantic operation and is independent of syntactic binding. This leads to the following prediction:

- (9) Reflexive anaphora is possible without coindexing.

That is, reflexivity can be independent of binding. Surprising though this claim may be, I will argue that the prediction is indeed borne out. I will draw some data from reflexive anaphora in Japanese to support the claim.

It is a well-known fact that personal pronouns in Japanese such as *kare* 'he' cannot be construed as bound variables (cf. Noguchi 1995, 1997 and references cited there).

- (10) *Daremo_i-ga kare_i-no titioya-o sonkeisi-teiru.
 everyone-NOM he-GEN father-ACC respect-PRES
 ‘Everyone respects his father.’

The pronoun *kare* might combine with a SELF anaphor *zisin* ‘self’ to form a complex anaphor *kare-zisin* ‘himself.’ The complex anaphor cannot enter into variable binding, however, even though it can enter into coreference.

- (11) a. *Daremo_i-ga kare-zisin_i-o sonkeisi-teiru.
everyone-NOM he-self-ACC respect-PRES
'Everyone respects himself.'
b. John_i-ga kare-zisin_i-o sonkeisi-teiru.
John-NOM he-self-ACC respect-PRES
'John respects himself.'

The contrast in (11) is significant: *kare-zisin* can be interpreted as a

(12) a. John-ga [_{DP} [_{NP} [_{DP} kare] [_N ti]]]-o zisin_i-sonkeisi-teiru.
 <e> <e> <e,<e,t>>
 b. λyλx[respect'(y)(x) ∧ y = x](him')(John')

That anaphora involved in (11) is not binding but coreference is supported by the fact that a proper name can occur instead of a pronoun.

- The same effect is observed in Malayalam as well (cf. Jayaseelan 1996).

- It is possible for a proper name to be coreferential if the predicate is restricted by a reflexive morpheme as in (14b). Thus, the Japanese case cannot be dismissed as something idiosyncratic, but needs to be treated as a viable option allowed in UG.

Theoretically, the above result has an important implication for a theory of anaphora. Consider R&R's (1993) version of the Binding Theory, with (16) repeated from (1).

- (15) *Definitions (= R&R's (40))*
- a. The *syntactic predicate* formed of (a head) P is P, all its syntactic arguments, and an external argument of P (subject). The *syntactic arguments* of P are the projections assigned θ -role or Case by P.
 - b. The *semantic predicate* formed of P is P and all its arguments at the relevant semantic level.

⁴ See Noguchi (1995, 1997), who argues that this follows from the N status of *kare*. The resulting configuration in (12a) thus illustrates an N-N split reflexivization rather than NDSR. The same remark applies to cases involving proper names we will see immediately.

- c. A predicate is *reflexive* iff two of its arguments are coindexed.
 - d. A predicate (formed of P) is *reflexive-marked* iff either P is lexically reflexive or one of P's arguments is a SELF anaphor.
- (16) *Conditions* (= R&R's (41))
- A: A reflexive-marked syntactic predicate is reflexive.
 - B: A reflexive semantic predicate is reflexive-marked.

Note that in order for a predicate to be reflexive to satisfy Condition A, the predicate's arguments need to be *coindexed*. However, this is not what happens in Japanese and Malayalam, where the reflexive-marked predicate's arguments can be coreferential pronouns or proper names, those items that cannot be coindexed.⁵ We are thus led to the following conclusion:

- (17) Reflexivity is independent of binding.

This is a natural result since reflexivity in our view is something that is ensured strictly by the semantic operation of predicate restriction.⁶

The above analysis in terms of SELF incorporation at LF is also supported by the fact that predicates in Japanese can be overtly SELF-marked.

- (18) John-ga [DP [NP [DP kare] [N t_i]]]-o ziko_i-hihan-si-ta.
 John-NOM he-ACC self-criticism-do-PAST
 'John criticized himself.'

Unlike the reflexive morpheme *zisin*, which incorporates into the verb at LF, the reflexive morpheme *ziko*- incorporates into the verb in the overt syntax.

- (19) *Ziko*- reflexivizes a predicate overtly, whereas *zisin* does so covertly.

That is, the reflexive morpheme is phonetically realized in two different positions in Japanese, i.e. either in N or as a prefix to a verb. But crucially, the predicate gets SELF-marked in either case by the time the derivation reaches LF, and a uniform treatment is available only if we assume (20).

- (20) Reflexivity is licensed by predicate restriction at LF.

When we turn to English, it is clear that the mode of Restrict is not of

⁵ See Partee (1978), Bach and Partee (1980), Reinhart (1983), and Grodzinsky and Reinhart (1993) for related discussions.

⁶ One might argue that the predicate with a proper name followed by a SELF morpheme in Japanese and Malayalam does not count as a *reflexive-marked* predicate (due to the definition in terms of "SELF anaphor") and that Condition A is not relevant. However, this misses an important generalization that covers both proper names and personal pronouns; as we saw in (13) and (11b), the behavior of *John-zisin* and *kare-zisin* is equivalent, and *kare-zisin* is clearly a SELF anaphor.

course limited to coreference.

- (21) a. Everyone_i admires himself_i.
b. *Everyone_i admires him_i.

(21b) is excluded by R&R's (1993) Condition B. (21a), on the other hand, undergoes NDSR.

- (22) [Everyone_i [self_j-admires [_{DP} him_i [_{NP} t_j]]]]

Here, *everyone* and the bound pronoun *him* saturate the argument positions of the complex predicate. Note that the predicate is reflexive-marked by SELF, satisfying Condition B. Thus, variable binding is also mediated through the mode of composition Restrict.

3.3. SELF Incorporation in the Lexicon

3.3.1. Lexical Reflexives in Japanese

The claim that reflexivity does not have to be ensured by coindexed arguments is further confirmed by the following fact in Japanese. Japanese has another reflexive morpheme *zi-*, which lexically incorporates into a verbal-nominal or nominal stem of Chinese origin.⁷

- (23) a. Verbal-Nominal Stems:
 zi-ei 'self-defense' *zi-satu* 'suicide'
 zi-metu 'self-destruction' *zi-tyoo* 'self-mockery'
b. Nominal Stems:
 zi-den 'autobiography' *zi-sya* 'one's own company'
 zi-isiki 'self-awareness' *zi-taku* 'one's own home'

The process of deriving these forms is hardly productive and thus bears the hallmarks of lexical derivation. As such, they might undergo further lexical processes such as derivation and compounding.

- (24) a. *ziei-tai* 'self-defense forces' *ziga-zoo* 'self-portrait'
 zidoo-sya 'automobile' *zisyu-sei* 'self-reliance'
b. *ziga zisan* 'self-praise' *zikyuu zisoku* 'self-sufficiency'

Significantly, these items are in no way associated with coindexed arguments. Take *zi-ei tai* 'self-defense forces,' for example.

- (25) [_N [_{V/N} [_N *zi*] [_{V/N} *ei*]] [_N *tai*]]

⁷ The verbal-nominal stems need to be supported by the light verb *suru* 'do' to take arguments in a clause; with the nominal stems, this is not a possibility.

The predicate *ei* ‘defense’ is reflexive-marked in (25), but there is no way for it to be ‘reflexive’ in the sense of R&R (1993). Notice first that *tai* ‘forces’ is not an argument of the complex predicate *zi-ei* ‘self-defense’; the compound does not mean ‘forces that defend themselves,’ but rather ‘forces for people’s self-defense.’ Positing an empty pronoun within the compound does not help, given Postal’s (1969) observation that words are anaphoric islands. The only remaining possibility is to assume that an empty pronoun occupies a position outside the compound, say, [Spec, DP]. This again is not plausible, given that the expression does not have a place for such an argument to fill; thus, ‘self-defense forces’ is not semantically equivalent to ‘one’s self-defense forces.’ One is led to conclude that in a case like this, the predicate is reflexive-marked without having coindexed arguments, contra the prediction made by R&R (1993). Note that the lexical process of SELF incorporation discussed above is not accompanied by the semantic process of saturation; the mode of composition Restrict is thus independent of saturation (cf. C&L).

3.3.2. Lexical Reflexives in English

This analysis carries over to the analysis of *self*-compounds in English. Consider the following examples from Chomsky (1970):

- (26) a. John sent a self-addressed envelope.
b. John’s actions are self-destructive.

The NP *self-addressed envelope* is translated into the following formula:

$$(27) \lambda y \lambda z \exists x [\text{address}'(y)(z)(x) \wedge z = x \wedge \text{envelope}'(y)]$$

That is, the NP denotes the set of envelopes such that someone addresses those envelopes to himself. The SELF morpheme simply acts as a restrictive modifier that imposes an identity condition on the predicate.⁸ Note that it does not denote the set of envelopes such that someone addresses those envelopes to themselves (= envelopes). Thus, there is again no way for the reflexive-marked predicate to be reflexive.

One might argue that these cases do not represent the regular compositional pattern that needs to be captured in any systematic way. It is true that there is something idiosyncratic about the way these cases are interpreted (cf. footnote 8), but this type of criticism leaves no room for an account of cases like the following, which certainly needs to be captured in a compositional manner:

⁸ It is not entirely clear how to interpret the sentence in (26b), where the compound adjective *self-destructive* is predicated of the subject *John’s actions* and therefore the argument positions of *self* remain unsaturated.

(28) the city's self-destruction

One might argue that there is an empty pronoun in the complement position.

(29) [_{DP} the city_i']s [_{NP} self-destruction [_{DP} pro_i]]

Since the predicate is reflexive-marked and two of its arguments are coindexed, R&R's Condition A is satisfied. There is a problem for this solution, however: there is not much evidence to posit pro for a language like English, let alone evidence to license pro in a postnominal position as in (29). Under the current proposal, the SELF morpheme composes with the predicate via Restrict and acts as a restrictive modifier of the nominal *destruction*; the compound is translated into the following formula:

(30) $\exists y \lambda x [\text{destruction}'(y)(x) \wedge y = x]$

In (28), the DP *the city* saturates the x argument, as desired.

To summarize, the behavior of SELF inside words poses a problem for an approach that tries to capture reflexivity in terms of syntactic binding. An alternative approach in terms of semantic composition is preferable on empirical grounds.

4. Elsewhere in Reflexive Anaphora

The interpretation of a SELF anaphor in terms of the mode of composition Restrict captures the core cases of reflexive anaphora. It not only captures those cases involving the syntactic operation of head movement, i.e. those cases I call "NDSR," but also captures those cases involving lexical reflexives as long as the predicate is SELF-marked. This cannot be the whole story, however, and we now turn to the other cases in reflexive anaphora.

The basic idea I would like to pursue is the following. It is not always the case that the SELF morpheme of reflexive anaphors plays such an active role as in the case of NDSR. The entire anaphor, say, *himself*, may act as a syntactically inseparable unit, even if complex anaphors are morphologically complex and consist of two morphemes, i.e. a pronominal and SELF, two elements that are associated with distinct features, [+p] and [+a], respectively.⁹ The proposal I would like to develop is summarized in (31).

(31) The features of complex anaphors [+p] and [+a] compete with each other. If [+p] wins out, the expression behaves as a pronominal; the SELF morpheme provides an argument structure instead. If [+a] wins out, the expression behaves as an anaphor; the SELF morpheme does not provide an argument structure.

⁹ See Reuland (2001), who suggests that features like [+/-a] and [+/-p] can be derived from Φ -feature composition.

- (32) a. him+self => [himself]_[+p]
 [+p] {+a}
 b. him+self => [himself]_[+a]
 {+p} [+a]

The intuition behind this proposal is that language tries to make the fullest possible use of morphological resources available; thus, if one item provides an intrinsic feature like [+p], then the other item provides an argument structure, and vice versa. In what follows, I will argue that the [+a] case in (32b) represents reflexive anaphors in syntactic chains and that the [+p] case in (32a) represents those cases where a choice function applies to the complex anaphor as a whole. I will keep the discussion to the minimum due to space limitations, and focus on some of the basic cases to show an outline of the proposal.

4.1. An Anaphor in A-Chain

A complex anaphor with a [+a] feature is an anaphoric element on a par with SE anaphors in many languages, and as such it occupies an argument position and forms an A-chain with its antecedent. This is the case which R&R (1993) try to capture in terms of the Chain Condition.¹⁰

- (33) *General condition on A-chains* (= R&R's (80))
 A maximal A-chain ($\alpha_1, \dots, \alpha_n$) contains exactly one link— α_1 —that is both +R and Case-marked.

As R&R have shown, the contrast in Dutch in (34) follows because the A-chain is tailed by a [-R] element in (34a) but by a [+R] element in (34b). The ECM and raising cases in English in (35) are well-formed because the A-chain is tailed by a [-R] element.

- (34) a. Jan_i hoorde [zich_i zingen]. (= R&R's (84a))
 Jan heard SE sing
 b. *Jan_i hoorde [hem_i zingen]. (= R&R's (84b))
 Jan heard him sing
 (35) a. John_i believes [himself_i to be smart].
 b. John_i seems to himself_i [t_i to be smart].

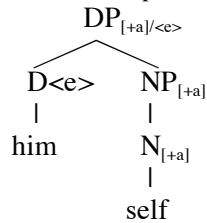
Note that the SELF morpheme in (35) cannot undergo head movement and incorporate into the verb since the entire anaphor is not an argument of the predicate in the matrix clause; thus, the anaphor cannot semantically compose with the matrix predicate. In a language like Dutch where a SE-anaphor is available, this option is what is invoked as in (34a).

This is suggestive in that the Dutch anaphor is an expression of type e and is not associated with an argument structure. The English anaphor in (35) is

¹⁰ See Reuland (2001), who elaborates on the status of chains in terms of checking chains. I will abstract away from this implementation.

represented in the following way in accordance with the proposal in (31):

(36) *A-chain Anaphor*



Since the DP is an argument of type *e*, it can create an A-chain (John, himself). This is a legitimate chain since the anaphor is associated with a [+a] feature.

Now, the question arises as to why the anaphor in (34a) and (35) must be locally related to another argument by being encoded in an A-chain. Reuland (2001) derives the locality effect from an interpretive condition.

(37) *Rule BV: Bound variable representation* (= Reuland's (50))

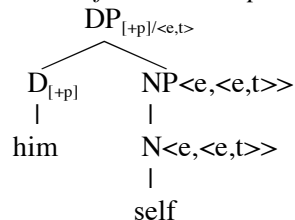
NP A cannot be A-bound by NP B if replacing A with C, C an NP such that B heads an A-CHAIN tailed by C, yields an indistinguishable interface representation.

This in effect puts a heavier restriction on variable binding and coreference in favor of relating two expressions in a syntactic chain. Reuland argues that (37) does not have to be stipulated as such, but follows from general properties of the language design. If we adopt this proposal, then the locality effect of Condition A can be reduced to an independently motivated condition on syntactic chain formation.

4.2. Choice-Function Anaphors

The other way of looking at the complex anaphor in English is to use the intrinsic feature of the pronoun and the argument structure of SELF.

(38) *Choice-function Anaphor*



Semantically speaking, the determiner head denotes an entity of type *e* and the reflexive morpheme a two-place relation of type *<e,<e,t>>*. The determiner saturates one of the argument positions of the predicate, with the

result that the entire expression becomes a one-place predicate and denotes a set of individuals. Recall Reinhart's (1997) definition of choice function in (3), repeated here as (39).

- (39) A function f is a choice function (CH (f)) if it applies to any non-empty set and yields a member of that set.

Since the DP as represented in (38) denotes a set of individuals, a choice function can apply to it and the DP composes with a predicate via Specify. The question is: is this option realized? I argue that it is. I will discuss two cases, although the second will be postponed until 4.3. Here, I would like to suggest in a tentative manner that the complex anaphor in question is what is involved in the logophoric use of reflexive pronouns.

As Clements (1975: 141) states, a language might employ a particular series of pronouns "to distinguish reference to the individual whose speech, thoughts, or feelings are reported or reflected in a given linguistic context." I suggest that the logophoric use of reflexive pronouns indicates that their reference is determined by way of a choice function. It is revealing to note that Kratzer (1998: 167) characterizes choice functions as "contextually determined, often intended by the speaker, but not revealed to the audience." This characterization, I suggest, applies to logophoricity as well. Thus, I take logophoricity to be a type of specificity that arises from the use of pronouns as function variables.

Recall Reinhart's (1997) and Winter's (1997) claim that existential closure of choice function variables occurs at any compositional level. This accounts for the three-way scope ambiguity in a sentence (40).

- (40) Most linguists have looked at every analysis that solves some problem.
(= Reinhart's (21a))

Here, the indefinite *some problem* takes widest scope, intermediate scope, or narrow scope with respect to the quantified expressions *most linguists* and *every analysis*. The ambiguity arises as to the level at which the choice function variable is bound by an existential operator (cf. Matthewson 1999).

- (41) a. $\exists f[\text{for most linguists}'(x), \forall y[(\text{analysis}'(y) \wedge \text{solve}'(f(\text{problem}'))(y)) \rightarrow \text{looked-at}'(y)(x)]]$
 b. $\text{For most linguists}'(x), \exists f[\forall y[(\text{analysis}'(y) \wedge \text{solve}'(f(\text{problem}'))(y)) \rightarrow \text{looked-at}'(y)(x)]]$
 c. $\text{For most linguists}'(x), \forall y[(\text{analysis}'(y) \wedge \exists f[\text{solve}'(f(\text{problem}'))(y))] \rightarrow \text{looked-at}'(y)(x)]$

I suggest that the situation is parallel in the case of the logophoric use of reflexive pronouns.

- (42) a. He_i sat down at the desk and opened the drawers. In the top right-hand one was an envelope addressed to himself_i. (Zribi-Hertz 1989: 716)
 b. I told Albert that physicists like himself were a godsend. (Ross

1970: 230)

- c. John thought that Mary liked a picture of herself.

The reference of the reflexive pronoun in (42a) is established extra-sententially, while the pronoun in (42b) has its antecedent in the matrix clause. (42c) represents the usual case in which the pronoun takes its antecedent in the same clause. If, as Kratzer (1998) suggests, the referential use of indefinites (cf. Fodor and Sag 1982) can be captured through a choice function, then the reference of reflexive pronouns can be established by a choice function as well. Thus, those cases in (42) differ only as to the level at which existential closure of a choice function applies, i.e. at the highest level in (42a), intermediate level in (42b), and lowest level in (42c).¹¹

I cannot do justice to the wealth of knowledge reported in the literature, however, and the discussion of logophoricity must remain programmatic. Especially, the problem needs to be addressed concerning a variety of opacity factors (syntactic, semantic, and pragmatic) and crosslinguistic variations involved. But a much longer paper would be needed to address that issue.

4.3. Reflexive Anaphors in Ellipsis

Let us return to ECM and raising cases in (35), repeated here as (43).

- (43) a. John_i believes [himself_i to be smart].
b. John_i seems to himself_i [t_i to be smart].

In 4.1, we saw that the reflexive anaphor might suppress the [+p] feature and enter into an A-chain. The other possibility, i.e. suppressing the [+a] feature, is prohibited from entering into an A-chain since such an A-chain would be tailed by a pronominal, i.e. an element with a [+R] feature. Or in Reuland's (2001) system, this option is blocked because the cheaper option of relating two expressions in a syntactic chain is available. This possibility would be equivalent to the following examples:

- (44) a. *John_i believes [him_i to be smart].
b. *John_i seems to him_i [t_i to be smart].

However, with an anaphor associated with a [+p] feature, forming an A-chain with its antecedent is not the only possibility. Since such an anaphor would denote a property, we might expect it to be interpreted in terms of a choice function and to establish its own reference. Thus, the anaphor in (43) should be interpreted in two ways in principle—by means of an A-chain or a choice function, but only if the latter option contributes to a distinguishable interface representation.

¹¹ Note that this particular implementation is not allowed in Kratzer's (1998) system, in which the value of choice function variables is only provided by the context.

I believe that this is precisely what accounts for the ambiguity in VP ellipsis cases like the following (cf. Sag 1976, Kitagawa 1991):

- (45) John considers himself to be smart, and Bill does too.
a. Bill does [_{VP} consider himself_{[+a]/<e>} to be smart]. (Sloppy reading)
b. Bill does [_{VP} consider himself_{[+p]/<e,t>} to be smart]. (Strict reading)

In (45a), the anaphor retains the [+a] feature and as such forms an A-chain with its antecedent. In (45b), however, the anaphor retains the [+p] feature and carries over its reference from the first conjunct, giving rise to the strict identity reading.

One might wonder what accounts for the difference in grammaticality between (43) and (44), given that the reflexive anaphor in (43) can be associated with a [+p] feature. What is crucial here is the role played by the SELF morpheme of the complex anaphor, which, as we have seen, provides an argument structure for the DP. Thus, the entire DP behaves as a one-place predicate and is interpreted by way of a choice function, dissociating itself from an A-chain and establishing its own reference, and hence circumventing Rule BV. This is not a possibility with the personal pronoun *him*, which denotes an entity of type *e*. Note that Condition B is not relevant, since, as R&R (1993) have shown, it only applies to a semantic predicate. Thus, both (45a) and (45b) are available as well-formed representations.

Note that a similar effect can be observed in coargument cases like the following discussed by Fiengo and May (1994):

- (46) Bush voted for himself, and Laura did too.

Although the mismatch in ϕ -features makes the pronominal use of an anaphor a favorable option, this is not the whole story. Consider the following example (cf. Sells, Zaenen, and Zec 1987, Hestvik 1992):

- (47) John defended himself better than Bill did. (= Hestvik's (3b))

This example is ambiguous and allows both the sloppy identity and the strict identity reading at the VP ellipsis site. Compare this example with the following, which is not ambiguous:

- (48) John's self-defense is better than Peter's.

Since the predicate is overtly SELF-marked, the SELF morpheme can only act as a restrictive modifier and imposes an identity condition on the predicate; thus, only the sloppy reading is possible at the ellipsis site. The reason why (47) can be interpreted ambiguously is that the entire anaphor can be associated with a [+a] or [+p] feature. The latter option, however, is made possible by the use of a choice function, which, as we saw, can be influenced by pragmatic factors. This is why the sloppy identity is the default option under normal circumstances.

Hestvik (1992) argues that the fact that a strict identity reading is available in (47) should be explained in syntactic terms. The representation for (47) would be roughly the following:

- (49) [John [himself_i T [_{VP} [_{VP} defended t_i] better than Bill did [_{VP} defended t_i]]]]

Here, the reflexive pronoun as a whole undergoes movement at LF, whose landing site need not concern us here. Note that the reflexive c-commands both the original trace and the trace inside the VP copy. Since the reflexive pronoun itself is bound by the subject *John*, the strict reading arises. What is crucial for Hestvik is that the comparative clause is subordinated to the matrix clause, enabling the reflexive pronoun to c-command the trace inside the VP copy. Hestvik argues that this is why a strict identity reading is not readily available in coordination cases like the following:

- (50) John defended himself well, and Bill did too. (= Hestvik's (3a))

However, we already saw that even in a coordination case like (46), the strict reading is available or even preferred. Clearly, pragmatic factors influence the readings. In this respect, the strict identity reading in VP ellipsis has a lot in common with the logophoric use of reflexives: they are both governed by the lexical choice and pragmatic factors. Under the current proposal, this is quite natural since the pronominal use of a complex reflexive determines its reference through the context-sensitive choice function.

5. Some Consequences

The proposal I have developed so far is that reflexive anaphors are interpreted in three different ways, i.e. by means of (i) a predicate restriction based on SELF incorporation (NDSR), (ii) a choice function applying to the entire DP denoting a set of individuals, and (iii) an A-chain formation. Each of the mechanisms invoked here is independently motivated. C&L show that the behavior of two indefinite articles in Maori, *he* and *tētahi*, is captured in terms of the two modes of composition Restrict and Specify. Reuland (2001) has shown rather persuasively that a generalized version of syntactic chain formation can be derived from the fundamental properties of C_{HL}.

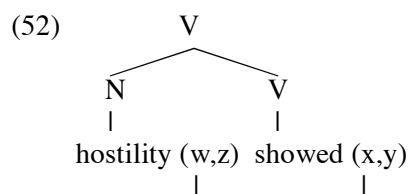
The above consideration naturally leads us to look for phenomena other than reflexive anaphora that might fall under the same scheme. In this section, I will discuss phenomena involving bare nominals, control, and body-part nominals to provide some independent empirical motivation for the basic approach I have taken.

First, consider the following examples involving a bare nominal *hostility*:

- (51) a. John showed hostility.
b. John showed hostility to be immoral.

In (51a), hostility is attributed to John, whereas in (51b), there is no such relation between the subject and the bare nominal: (51a) is like obligatory control, whereas (51b) like optional control.¹²

This discrepancy in interpretation of the bare nominal falls under the present account. Suppose first that the bare nominal *hostility* is a relational noun of type $\langle e, \langle e, t \rangle \rangle$: one can be hostile to another. The bare nominal in the object position incorporates into the predicate at LF and composes with it via the mode of Restrict. Unlike the SELF morpheme, the bare nominal does not impose an identity condition on the predicate, although it acts as a predicate modifier. Suppose that the external argument of the nominal is θ -identified by one of the verb's arguments by being linked to it (cf. Higginbotham 1985).



The apparent obligatory control effect obtains as a result of θ -identification. It is quite natural to assume that θ -identification is limited to a local morphosyntactic domain and therefore that it does not apply to the ECM subject case like (51b). The external argument of the bare nominal in (51b) cannot therefore be saturated by any of the arguments of the matrix verb.

A similar remark can be made about gerunds and infinitives.¹³

- (53) a. We considered going abroad.
 b. We considered going abroad to be important.
- (54) a. I don't want to flagellate myself in public.
 b. I don't want to flagellate oneself in public becomes standard practice in this monastery. (Aoun and Lightfoot 1984: 466)

¹² This observation is due to Kinsuke Hasegawa in his class lectures at the University of Tokyo in the late 1980's. Examples in (51) are variations of those discussed by Wasow (1977: 332), albeit in a different context. Ivan Sag (personal communication) points out that the following example exhibits obligatory control effect as well:

- (i) John's activity showed hostility.

The current proposal predicts that anaphora in this case is established in a different manner from that in (51a), but the question of exactly how needs to remain open.

¹³ Examples in (53) are due to Yuki Ishihara (personal communication), who points out that the work by Ross (1972: 74-76) contains a discussion that hints at the distinction.

One needs to be careful in extending the current proposal to these cases, however, since it is not likely that the syntactic operation of head movement is at work in (53a) and (54a). But if we assume with Chierchia (1984, 1989) that obligatory control complements denote properties rather than propositions, then the complement and the verb directly compose via the mode of Restrict. This option is not available with the ECM subject in (53b) and (54b).

Finally, consider the behavior of body-part nominals (cf. Safir 1996).

- (55) a. John opened his eyes. b. Mary batted her/*his eyes.

Body-part nominals like *eyes* are typical relational expressions and their behavior is similar to that of bare nominals we observed above. Thus, the nominal in (55a) undergoes head movement, creating a configuration similar to NDSR.

- (56) John eyes_i-opened [_{DP} his [_{NP} t_i]]

Here, the possessive pronoun does not play an active role in interpretation and might be considered an expletive. The body-part nominal acts as a restrictive modifier of the verb, with its possessor argument being θ -identified with the external argument of the verb. Another way of interpreting the body-part nominal in (55a) is to interpret it in situ. If this option is taken, the possessor plays an active role because the body-part nominal is not in a configuration where its external argument is θ -identified by an argument of the verb, hence the interpretation ‘John opened someone else’s eyes.’ This option is subject to pragmatic conditions, however. It is not pragmatically incoherent that someone opens someone else’s eyes as when an ophthalmologist examines his patient, but the situation is rather different in (55b): one can only bat one’s own eyes, but not someone else’s, hence the lack of ambiguity in (55b).

This now leads to the following prediction: if the body-part nominal in question can be interpreted in a pragmatically coherent situation, then it does not have to be in a complement of the verb. As Safir (1995) shows, this prediction is borne out.

- (57) a. Mary expected her eyes to be opened.
 b. *Mary expected her eyes to be batted.

The contrast is due to the fact that the possessor can play an active role in (57a) and establish its own reference in the domain of discourse, while this option is not available in (57b).

6. Conclusion

The semantic mechanism proposed by C&L for indefinite NPs turns out to

have a wider application than suggested and a wider range of anaphora facts now falls into place, without resorting to Condition A. To the extent that the present approach is successful, Condition A has been factored out into independently motivated semantic and syntactic conditions and can therefore be eliminated from the grammar. This is a welcome result in view of the general nature of the mechanisms involved.

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