Against the Unaccusative Analysis of Reflexives

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1. Introduction

Over the last two decades the unaccusative approach to reflexives has become rather popular, particularly in works dealing with Romance reflexives. Under the unaccusative approach, the subject of reflexives is an underlying object just like the subject of unaccusative verbs. Although the starting point of most of these studies is Romance reflexives, one would a priori not expect reflexive entries to have a fundamentally different argument structure cross-linguistically.

We argue that the arguments that led linguists to the unaccusative approach can all be handled by a version of the more traditional view that takes reflexives to be unergative entries. Moreover, we show that when reflexives are submitted to syntactic tests of unaccusativity, they systematically fail the tests in a variety of languages. We believe that the morphological similarity often attested between reflexives and unaccusatives is not due to a common argument structure, but due to the basic operation at the heart of their derivation.

Reflexive verbs take different morphological instantiations across languages. While in French (and Romance in general) reflexive verbs are formed by reflexive clitics (1a), in English they are morphologically identical to their transitive alternate (1b). And while in Hebrew reflexives by and large appear in the so-called *hitpa'el* verbal from (1c), in Dutch, they are formed by the simplex anaphor *zich* (1d):

(1) a   Max se lave.
        Max SE(REFL$_{cl}$) washes

  b   Max washes.

  c   Max mitraxec.
      Max washes

  d   Max wast zich.
      Max washes ZICH

Furthermore, while in English, Hebrew and Dutch reflexives are lexically limited, in Romance the phenomenon is productive. Nonetheless, we argue that reflexivization is essentially the same phenomenon across languages.

We adopt the null hypothesis commonly assumed in works on argument structure that the different thematic instantiations of a verbal concept are derived from the same underlying thematic structure. Further, we argue that reflexives are derived from their transitive alternate by an operation reducing the internal argument. Finally, we attribute the somewhat different nature of reflexives in Romance vs. Hebrew (Dutch or English) to the distinct component of grammar in which the operation applies.

2. Against an Object Clitic Analysis

In Romance, reflexive verbs are formed by means of clitics similar to pronominal object clitics (compare (2a) with (2b)). A natural assumption is, therefore, that reflexive clitics, on a par with object clitics, are associated with the object position (2c):

(2)a   Jean se lave.
        Jean SE(REFL$_{cl}$) washes

   b   Jean le$_i$ lave t$_i$.
        Jean him$_{cl}$ washes

An object clitic analysis of reflexives:

   c   Jean se$_i$ lave t$_i$.

However, by now, there is considerable evidence against an object clitic analysis of Romance reflexives (2c). As already shown by Kayne (1975), reflexives do not pattern with transitive verbs. The reflexive clitic, then, cannot simply be the object clitic of a transitive entry. Various arguments lead to that conclusion. Consider first the context of expletive insertion in French illustrated in (3a). While transitive verbs are disallowed in this environment (3b), reflexive verbs do occur there (3c).[1] If reflexives were transitive entries, we would expect them to be completely impossible in the postverbal position of expletive constructions, just like transitive verbs:

(3)a   Il est arrivé trois filles.
        there is arrived three girls

   b   *Il les$_i$ a dénoncés t$_i$ trois mille hommes ce mois-ci.
        there them$_{cl}$ has denounced three thousand men this month-here

   c   Il s'est dénoncé trois mille hommes ce mois-ci.
        there SE is denounced three thousand men this month-here

Additionally, Kayne (1975) has observed that French causative constructions, too, treat transitives and intransitives differently and that reflexives pattern with intransitives. When the verb embedded under the causative verb *faire* ('make') is a transitive verb, its subject must be introduced by the preposition *à* ('to') (4a). When the lower verb is intransitive, its subject cannot be introduced by *à* (4b).[2] As is clear from (4c), when the direct object of the embedded verb is a pronominal clitic, the verb patterns with transitive entries. But when the lower verb is reflexive, its subject surfaces without the preposition (4d), just like the subject of

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[1] Judgments may vary among speakers. According to Kayne (1975), example (3c) is entirely grammatical. Some speakers judge it as marginal. Importantly, speakers agree that there is a clear difference in grammaticality between transitives (3b) and reflexives (3c).

[2] The subject of intransitives is an accusative argument; when it is cliticized, the accusative clitic is used:
(i)   Je le ferai courir.
       I him$_{cl}$ will+make run

intransitive verbs. Notice that the different positioning of pronominal clitics and reflexive clitics in the causatives of (4) suggests in itself that they deserve a different syntactic treatment.

(4)a Je ferai laver Max à Paul.
   I will+make wash Max to Paul

 b Je ferai courir Paul.
   I will+make run Paul

 c Je le ferai laver à Paul.
   I him$_{cl}$ will+make wash to Paul.

 d Je ferai se laver Paul.
   I will+make SE wash Paul

Further, as is well known, transitive verbs use the auxiliary *avoir* ('have') to form complex tenses. Reflexives, in contrast, employ *être* ('be'). As is the case when the auxiliary *être* is used, agreement is always obligatory on the past participle of the reflexive verb (5b). Past participle agreement with direct object clitics is, in contrast, optional at least in certain French dialects (5a). As noted by Sportiche (1998), if reflexive clitics were simply object clitics, this difference would, a priori, be unexpected.

(5)a Marie les a décrit(es).
   Marie them$_{cl}$ has described

 b Marie s'est décrit*(e).
   Marie SE is described

Finally, additional evidence against the object clitic analysis of reflexive verbs is suggested by Marantz (1984) on the basis of the Icelandic data below (due to Andrews 1982). (6a) is an Exceptional Case Marking construction. The accusative subject of the subordinate clause is the simplex anaphor *sig*. As expected, the predicative adjective *sterkan* ('strong') must bear accusative Case in agreement with its subject *sig*. (6b) is a paraphrase of (6a), containing a reflexive verb, which is formed by the reflexive suffix *-st*. If *-st* were a reflexive object clitic, one would expect its predicative adjective to also appear in accusative Case. However, as shown in (6b), the adjective must surface in nominative in agreement with *Hann*, the subject of the reflexive verb. The reflexive suffix, then, is not the clitic version of the anaphor *sig*, and cannot be associated with the object position.

(6)a Hann telur sig vera sterkan.   (Icelandic)
   he(NOM) believes himself(ACC) to+be strong(ACC)

 b Hann tel-st vera sterkur.   (Icelandic)
   he(NOM) believes-REFL to+be strong(NOM)

Indeed, the object clitic analysis of reflexive clitics is not promising, and two alternative trends of research have consequently been developed. On the one hand, it has been argued that reflexive verbs are the output of a lexical operation of absorption or reduction, which applies to a transitive entry, targeting its internal argument and producing an intransitive verb.

Among proponents of this lexical approach are Grimshaw (1982), Wehrli (1986), Chierchia (1989) and Reinhart (1996). Under this view, the reflexive clitic is associated with the internal θ-role, but in the lexicon, not in syntax. On the other hand, it has been proposed that the reflexive clitic is, in fact, associated with the external θ-role, and the reflexive verb is therefore an unaccusative verb, as its internal argument is the derived subject. Among the defenders of the unaccusative approach, some argue in favor of lexical absorption of the external argument (Bouchard 1984, Grimshaw 1990 and Marantz 1984), while others believe that the external argument is present in syntax via *se* (Kayne 1988, Pesetsky 1995, Sportiche 1998). In section 4 and 5 we argue against the unaccusative analysis of reflexives in its lexical or syntactic version. Prior to that, in the subsequent section we adopt the proposal that reflexives are products of reduction of the internal argument. In the last section, we further refine the proposal, suggesting that reduction may have a syntactic as well as a lexical mode of application.

3. Reduction

If the reflexive clitic is not the internal argument in syntax, it is only natural to explore the possibility that it is nonetheless associated with the internal θ-role, but in the lexicon, not in syntax. Indeed, Grimshaw (1982) suggests that the reflexive clitic is a marker of lexical reflexivization, which is a lexical operation binding the internal argument by its external coargument, rendering the former syntactically inaccessible. Similarly, according to Wehrli (1986), reflexive *se* absorbs the internal argument, which is consequently unavailable to syntactic processes.

The lexical option was elaborated in Chierchia (1989) and Reinhart (1996). Following them, we assume that an operation labeled Reduction can operate in the lexicon on transitive entries to produce reflexive verbs. Reduction applies to a two place relation (predicate), identifies the two arguments, and reduces the relation to a property. Reflexive reduction turns a transitive entry such as *wash* (7a) into an intransitive entry whose single θ-role is the external θ-role (θ_1), as schematized in (7b). Reduction requires identification of two arguments, thereby capturing the interpretation of reflexive sentences. Thus the output is always interpreted as schematized in (7c). For a more precise analysis of the semantics see Chierchia (1989):

(7)a   wash $<\theta_1,\theta_2>$
    b   Reduction: R(wash)$< \theta_1>$
    c   (R(wash)(x)) $\leftrightarrow$ (x wash x)

3.1 A constraint on reduction

As reduction applies under identification of two θ-roles, a two place relation is required. In Romance, the argument to be reduced in reflexivization can be an accusative or dative argument, as illustrated in (8a) and (8b) respectively:

(8)a   Jean s'est introduit à Paul.
        Jean SE is introduced to Paul
        'Jean introduced himself to Paul'

b   Jean s'est acheté une voiture.
      Jean SE is bought a car
     'Jean bought a car to himself'

However, whether the reduced argument is accusative or dative, identification must take place with the external argument, even if the verb is a three place predicate. Thus, while it is possible for an anaphor in situ to be bound by an internal coargument, as illustrated in French (9a) or Hebrew (9b), reflexive reduction involving two internal coarguments is entirely inconceivable (9c):[3]

(9)a   ?Sur cette photo Jean n'a montré les enfants qu'à eux-mêmes.
         On this picture Jean not has shown the boys but to themselves

   b   dan her'a le-dina 'et 'acma ba-tmuna.
        Dan showed to-Dina herself in+the-picture

   c   * Jean s_i'est montré l'enfant$_i$.
        Jean SE is shown the boy

And for the same reason predicates that lack an external θ-role are incompatible with reflexive clitics, as already observed by Burzio (1981,1986) among others. (10a) contains a raising predicate with an embedded small clause complement and a dative argument. The predicate cannot occur in a reflexive form (10b), although the reflexive interpretation is possible when a nonclitic anaphor is used (10c):

(10)a   Jean leur semble intelligent.
         Jean to+them$_{cl}$ seems intelligent

   b   *Jean se semble intelligent.
        Jean SE seems intelligent

   c   Jean ne semble intelligent qu'à lui-même.
        Jean not seems intelligent but to himself

Likewise, reduction cannot apply when the external θ-role is not free, not available because it is subject to another operation. This explains Kayne's (1975) original observation that reflexive clitics are incompatible with passivization, as illustrated below by Italian examples (from Rizzi 1986). Again, while pronominal objects of passives may either surface in situ (11a) or cliticize (11b), reflexive sentences can be expressed by means of a nonclitic anaphor (11c), but not by means of a reflexive clitic (11d), as the subject in question is a derived subject, not the external argument:

(11)a   Gianni è stato affidato a lui.
         Gianni was entrusted to him

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[3] In French nonclitic anaphors, like other nonclitic pronominals, show restrictions that need not interest us here (often, stress on the anaphor improves the example). The important point here is the difference in grammaticality between (9a) and (9c). An example equivalent to (9c) cannot be constructed in Hebrew.

b   Gianni gli è stato affidato.
     Gianni to+him$_{cl}$ was entrusted

c   Gianni è stato affidato a se stesso.
     Gianni was entrusted to himself

d   *Gianni si è stato affidato.
     Gianni SI was entrusted

Reduction thus is a constrained operation. We propose it must obey the following constraint, (to which we return in section 4 and 6):[4]

(12)   Reduction can only apply to a pair of free θ-roles one of which is external.

3.2 Reduction of the external argument

It is known that in certain languages reflexive morphology can also appear on unaccusative verbs. In Romance, an unaccusative can occur with the same clitic that appears on reflexive verbs, as illustrated below by French examples:

(13)a   La branche s'est cassée.
         the branch SE is broken

b   Jean s'est évanoui.
     Jean SE is fainted

And in Hebrew, where there are several verbal forms an unaccusative verb can take, many occur in the same form as reflexive verbs, in the so-called h*itpa'el* verbal form.

   Chierchia (1989) argues that the fact that reflexives and unaccusatives can share the same morphological form can be explained if unaccusatives are also derived from a two place verb, by some sort of reduction. That is, reflexive morphology is found when reduction takes place. The actual reduction operation Chierchia proposes is rather different from reflexive reduction. Retaining his insight, Reinhart (1996) nonetheless assumes that there is just one reduction operation, which derives a one place predicate (a property) from a two place predicate. It operates on a pair of θ-roles and reduces either one (14). Reflexive entries are the output of reduction of the internal role, and unaccusatives are the output of reduction of the external role:

(14)a   V (θ_1, θ_2)
    b   Reduction: R(V) (θ_n)

Technical details aside (see cited references for extensive discussion), the basic idea is that *se casser* in (13b) is derived from its transitive alternate *casser* by reduction that targets the external argument. When there is no transitive alternate, as in the case of *s' évanouir* (13b), reduction applies to an abstract transitive alternate. Thus, when reduction applies to the internal role, the

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[4] Reduction is further constrained. Reinhart (1996) argues that it cannot reduce a θ-role that is specified [+mental state]. This constraint is not directly relevant for our purposes; see Reinhart (1996) for discussion.

external role is syntactically realized, and a reflexive verb is obtained. When the external role is reduced, the internal argument is syntactically realized, resulting in an unaccusative entry. [5]

Under this view, then, reflexives and unaccusatives can, in principle, bear the same morphology because they are subject to the same kind of operation. They do not, however, share the same argument structure. Reflexives, unlike unaccusatives, are unergative entries; their subject is the external argument. This view is in contradiction with the unaccusative approach to reflexives, which takes reflexives to be unaccusative entries, whose subject is the internal argument. The unaccusative analysis of reflexives has become very popular in the last two decades starting with Marantz (1984) (see Bouchard 1984, Grimshaw 1990, Kayne 1988, Pesetsky 1995, Sportiche 1998). Under the unaccusative approach, the fact that reflexives and unaccusatives can share the same verbal form would simply follow from the fact that reflexives are unaccusatives. Interestingly, however, what initiated this line of research was not so much the form shared by reflexives and unaccusatives, but other arguments, which are examined below.

4. On the Unaccusative Analysis

According to the unaccusative approach, the subject of reflexives is an underlying object which has to raise to subject position for Case reasons, because the reflexive morphology absorbs its Case. The approach has two major variants: lexical and syntactic. While under the former, the external argument is absorbed in the lexicon (Bouchard 1984, Grimshaw 1990 and Marantz 1984), according to the latter, the external argument is present in syntax via the reflexive clitic *se* (Kayne 1988, Pesetsky 1995, Sportiche 1998). As the arguments that led linguists to the unaccusative approach are basically the same whether the approach is lexical or syntactic, we abstract away form this difference in our discussion below.

Recall first that the starting point of most studies defending the unaccusative path is Romance reflexive clitics. However, the analysis should a priori hold across languages, or else the hypothesis is weakened as we end up claiming that reflexive verbs are not one single phenomenon cross-linguistically. It is worth noting immediately that among our sample languages here, Dutch reflexives are hardly analyzable as unaccusatives. Dutch *zich* is not a clitic, and surfaces in the object position. It would be extremely hard to explain how it gets there if it is to be associated with the external θ-role. According to Reinhart (1996), it is a residue of the internal argument affected under reflexive reduction.

4.1 Morphological evidence

Although proponents of the unaccusative analysis do not really discuss the fact that unaccusatives and reflexives can share the same verbal from, the morphological angle does play a role in their argumentation. Marantz (1984) mentions that in Albanian for example, reflexives and passives share the same form (15), arguing that the morphology in question appears when the subject is an underlying object. The same argument can be made in French, where in addition to unaccusatives (see (13) above), also middles (16a) and a limited set of passives (16b) can be formed by means of 'reflexive' clitics:

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[5] Wehrli (1986) has already suggested without elaborating that unaccusative *se* occurs when lexical absorption of the external argument takes place.

(15)   Agimi lahet.   (Albanian)
         Agim wash(3Sg)
   i.   'Agim washes himself'
   ii.   'Agim is washed'

(16)a   Ces tomates se vendent bien.
         these tomatoes se sell well
         'These tomatoes sell well'

   b   Le crime s'est commis ce matin.
         the crime se is committed this morning
         'The crime was committed this morning'   (Zribi-Hertz 1982)

     Moreover, in French (and Italian) reflexives and unaccusatives select *être* ('be') and not
avoir ('have') as their auxiliary (17), just like passives or middles.[6] The choice of *être*,
according to the unaccusativity defenders (e.g. Grimshaw 1990, Pesetsky 1995), signals that
the subject position hosts a derived subject. Sportiche (1998) makes the same point on the
basis of the behavior of participle agreement. Assuming that in sentences with the auxiliary
être, participle agreement is always with the underlying object, he concludes that the subject
of reflexives must be a derived subject as it triggers agreement on the participle (again just
like unaccusatives, passives or middles):

(17)a   La voiture est passé-e.
         The car is passed-AGR

   b   Marie s'est lavé-e.
         Jean se is washed-AGR

     The morphological arguments, however, are not very strong. The fact that different diatheses
of a verb may appear in the same morphological guise does not mean that their derivations are of
the same nature, nor that they share the same type of grammatical subject. The behavior of
participle agreement is a consequence of the choice of auxiliary. And auxiliary selection, in turn,
is an intricate matter, which is not yet well-understood, although it has received much attention in
the literature (e.g. Ackema 1995, Everaert 1996, Friedemann and Siloni 1997, Hoekstra 1984,
Reinhart 1996). Note incidentally that neither reflexives nor unaccusatives consistently choose *be*
cross-linguistically. At any rate, clearly, the simplest procedure to determine whether reflexives
in French and Italian use *be* due to their unaccusative character or due to different factors is first
to submit their subject to syntactic tests that discriminate between external and internal
arguments. Section 5 is devoted entirely to that purpose. As will become clear in the course of the
section, there is robust evidence that the subject of reflexive verbs systematically patterns with
the subject of unergatives; it is the external argument unlike the subject of unaccusatives. Yet,
defenders of the unaccusative analysis did not base their argumentation solely on morphological
grounds.

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[6] More precisely, unaccusatives tend to choose the auxiliary *être*, but there are instances of unaccusatives with
avoir.

A popular syntactic argument in favor of the unaccusative analysis is the incompatibility of reflexive clitics with verbs lacking an external argument (Bouchard 1984, Grimshaw 1990, Kayne 1988, Pesetsky 1995, Sportiche 1998). Neither raising predicates nor verbs in passive can take a reflexive clitic, as shown in (10-11) above. This follows particularly well from the view that the reflexive clitic absorbs or bears the external θ-role. If the latter is not available, due to the nature of the predicate or due to passivization, the reflexive clitic cannot appear.

However, the same generalization easily follows also from the constraint (12) imposed on reduction: reduction can only apply to a pair of free θ-roles one of which is external. As discussed in section 3.1, with both raising predicates and passives, there is no free external θ-role for reduction to be possible.

Furthermore, the empirical coverage of the constraint in (12) is larger than that of the account offered by the unaccusative approach. Dutch impersonal passives present a case where the latter fails, while the former works. Impersonal passives in Dutch are possible with transitive (18a) as well as unergative entries (18b), but, they do not allow reflexives (18c) nor unaccusatives (18d):

(18) a   Er werd een kind gewassen.
         there was a child washed

     b   Er werd gedansd.
         there was danced

     c   *Er werd zich gewassen.
         there was zich washed

     d   *Er werd gegroied.
         there was grown

Reflexives and unaccusatives, then, seem to cluster together. However, as mentioned in the beginning of the section, Dutch *zich* cannot be argued to be associated with the external argument and *zich gewassen* to be an unaccusative entry. Thus, while under either approach, (18d) is impossible, because passivization is incompatible with unaccusative entries as there is no external argument available, (18c) remains unexplained under the unaccusativity view, as the impersonal passive rules out the reflexive entry, although *zich* cannot be associated with the external argument, and *zich gewassen* cannot be an unaccusative. Under the reduction view, in contrast, the impossibility of (18c) as well as (18d) and (9-11) above is due to one and the same reason: their derivation involves reduction, which is impossible due to the constraint in (12), which limits reduction to predicates with external and internal free θ-roles.

Finally, the strongest argument against deriving reflexives through a lexical operation targeting the internal argument is offered by Marantz (1984). His argument is based on the Icelandic example in (6b) above, but the same can be illustrated in French. Consider the Exceptional Case Marking construction in (19a) and its reflexive equivalent in (19b). The matrix predicate *considère* does not take a DP as its internal argument. *Max* in (19a), to which *considère* assigns accusative Case, is the subject of the small clause, receiving its θ-role from the adjective *intelligent*. As it is not an argument of *considère*, a lexical operation on the argument structure of the verb cannot affect it. Marantz concludes that reflexivization absorbs

the external argument, and that the subject of reflexives is therefore the underlying object, *Jean* in (19b). This is schematized in (20):

(19) a   Jean considère Max intelligent.
         Jean considers Max intelligent

    b   Jean se considère intelligent.
         Jean SE considers intelligent

Marantz' analysis of (19b):

(20) a   DS: e se considère [Jean intelligent]
    b   SS: Jean$_i$ se considère [t$_i$ intelligent]

But, in fact, reflexivization into ECM complements poses a problem to any lexical analysis, whether it reduces the external or internal argument. Reflexivization entails linking two arguments, identifying them in our terms. If it takes place in the lexicon, only two coarguments (arguments of the same predicate) can be involved. In ECM constructions, the two relevant arguments are not coarguments; in (19b) the two arguments the operation applies to are not coarguments. Hence, they cannot be linked in the lexicon. To link the two arguments, lexical analyses à la Marantz, which absorb the external argument, have to impose a syntactic condition on an element (the external argument) which is no more available in syntax as it was absorbed in the lexicon; such a condition is ad hoc and implausible. This may be what led other linguists to prefer the syntactic version of the unaccusative analysis, under which the two arguments in question are present in syntax, and can therefore be in syntactic binding relations. In the subsequent section, however, we provide decisive evidence that the subject of reflexive verbs is an external argument, unlike the subject of unaccusatives. This evidence, we believe, refutes any unaccusative approach to reflexives.

Note, in addition, that reflexivization into ECM complements is not a phenomenon that holds across languages. We do not find anything of the sort in Hebrew (21a) or English (22a). A SELF-anaphor must be used in these languages to obtain the relevant interpretation (21b, 22b):

(21) a   *dan mitxašev 'intiligenti.
        Dan self-considers intelligent

    b   dan maxšiv 'et 'acmo 'intiligenti.
        Dan considers himself intelligent

(22) a   *Dan considers intelligent.

    b   Dan considers himself intelligent.

After presenting cross-linguistic evidence against the unaccusative analysis, we propose our solution to the ECM puzzle, arguing that the different behavior of French-type reflexives and Hebrew-type reflexives follows from the distinct component of grammar in which the reduction operation applies.

5. Against the Unaccusative Analysis

So far, then, there does not seem to be evidence in favor of the unaccusative analysis of reflexives. Moreover, as mentioned above, the unaccusative hypothesis is hardly extendable to Dutch reflexives. This already weakens the hypothesis considerably, as it implies abandoning the natural assumption that reflexives are one single phenomenon cross-linguistically. The next obvious move is to check whether reflexives in languages other than Dutch have the characteristics of unaccusatives (which was, surprisingly, not really done in the literature cited above). As will become clear below, reflexives systematically fail tests of unaccusativity. This is true for a variety of languages, such as Hebrew, Russian, English and even the Romance family itself, which was the starting point for most studies defending the unaccusative approach.

It is well known that the French quantitative clitic *en* can cliticize only out of the object position. It can thus serve as diagnostics for unaccusativity, as it discriminates between the internal and external argument in postverbal position. (23a) contains an unaccusative entry; *en* cliticization is possible (24a). (23b-c) constitute a minimal pair: (23b) is a reflexive verb, and (23c) is an unaccusative with 'reflexive' morphology. While the latter allows *en* cliticization (24c), the former disallows it (24b).[7] This is straightforward if the subject of reflexives is an external argument, unlike the subject of unaccusatives.

(23) a   Il est arrivé trois filles hier soir.
         there is arrived three girls yesterday evening

   b (?)Il s'est lavé beaucoup de touristes dans ces douches publiques, récemment.
         there SE is washed many tourists in these public showers recently

   c   Il s'est cassé beaucoup de verres dans ce lave-vaisselle.
         there SE is broken many glasses in this dish-washer

(24) a   Il en est arrivé trois hier soir.
         there of+them$_{cl}$ is arrived three yesterday evening

   b   *Il s'en est lavé beaucoup dans ces douches publiques, récemment.
         there SE of+them$_{cl}$ is washed many in these public showers recently

   c   Il s'en est cassé beaucoup dans ce lave-vaisselle.
         there SE of+them$_{cl}$ is broken many in this dish-washer

According to Guglielmo Cinque (personal communication, cited by Grimshaw (1990:184n3)), the same pattern holds in Italian, as illustrated below:[8]

(25) a   Ne sono arrivati tre.
         of+them$_{cl}$ are arrived three

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[7] Recall that certain speakers already find (23b) somewhat marginal. Nonetheless, for all speakers, (24b) is completely impossible, whether they judge (23b) as marginal or entirely acceptable.

[8] Italian speakers seem divided on (25b): some categorically ruling it out, and others accepting it. All the speakers accept (25a).

b   *Se ne sono vestiti tre.
    SI of+them_cl are dressed three

Reduced relatives supply another syntactic context to distinguish between external and internal arguments. Reduced relatives with the so-called past participle do not allow predicates with an external argument; hence, the contrast Italian shows between ((26a-b) and (26c) (see Siloni 1995,1997). Consider now the examples in (27). The reduced relative in (27b), which contains a reflexive predicate, is impossible. But, when the same morphology is used to form an unaccusative entry, the reduced relative is acceptable (27a). Once again, reflexives do not pattern with unaccusatives: [9]

(26) a   L'uomo arrivato a Ginevra è una spia.
         the man arrived in Geneva is a spy

     b   L'uomo arrestato dalla polizia è una spia.
         the man arrested by the police is a spy

     c   *L'uomo telefonato a suo nonno è una spia.
         the man telephoned to his grandfather is a spy

(27) a   Il bicchiere rottosi ieri apparteneva a mio nonno.
         the glass broken-SI yesterday belonged to my grandfather

     b   *L'uomo lavatosi ieri è mio nonno.
         the man washed-SI yesterday is my grandfather

Within the Semitic family, reflexives do not pattern with unaccusatives either. In Hebrew, reflexives decisively behave on a par with unergatives, while unaccusatives with identical morphology show all the syntactic traits of unaccusativity.

As observed by Shlonsky (1987) among others, there are two types of postverbal subjects in Hebrew. One type appears in triggered inversion, or stylistic inversion, which is licensed by an XP immediately preceding the verb [XP V S]. These postverbal subjects will not concern us here. Another type of postverbal subjects, which do not require a preverbal trigger, is found with unaccusatives (28a) and passives (28b); these postverbal subjects are internal arguments. External arguments do not allow simple inversion [V S] (28c). As shown below, reflexives cannot appear in simple inversion (28d) just like unergatives, while unaccusatives with identical morphology (in the *hitpa'el* verbal form) do allow it (28e), on a par with other predicates whose subject is an internal argument:[10]

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[9] Judgments are thanks to Guglielmo Cinque and Alessandra Lukinovich. In French the test is not applicable, as participial relatives of this kind disallow clitics altogether (unlike relatives with the so-called present participle; see Siloni 1995,1997 for discussion).

[10] Additional factors, such as focus, affect the choice of postverbal subjects, and may therefore render certain examples less acceptable than others. Arguably stylistic inversion involves V-raising out of IP (Shlonsky and Doron 1992), while in simple inversion, the subject stays in its VP-internal position, and SpecIP is filled by a null expletive. Hence, by and large simple inversion is a trait of pro-drop languages. If a null expletive is not selected in the numeration, the subject has to raise to SpecIP to check the EPP (Extended Projection Principle) feature.

(28) a   nišbar mašehu.
         broke something

     b   ne'ecru šloša xayalim ba-hafgana.
         were+arrested three soldiers in+the-demonstration

     c   *rakdu šloša yeladim ba-mesiba.
         danced three boys in+the-party

     d   *hitlabšu šaloš dugmaniyot ba-knisa.
         dressed three models in+the-entrance

     e   hit'alfu šloša xayalim ba-hafgana.
         fainted three soldiers in+the-demonstration

The same holds in embedded contexts. Raising predicates disallow [S V] order in the embedded infinitival clause (for reason which need not interest us here). Unaccusative verbs allow [V S] order and can therefore realize their subject in the subordinate clause (29a-b). Reflexives (29d), in contrast, just like unergatives (29c), disallow simple inversion [V S] and hence cannot realize their subject in the embedded clause (note that the unaccusative in (29b) and the reflexive (29d) share the same morphology) :

(29) a   crixim le-hagi'a 'asara talmidim.
         need to-arrive ten pupils

     b   crixim le-hit'asef 'asara talmidim.
         need to-gather ten pupils

     c   *crixim li-rkod 'asara talmidim.
         need to-dance ten pupils

     d   *crixim le-hitlabeš 'asara talmidim.
         need to-dress ten pupils

Modification by possessive datives can also be used to detect internal arguments in Hebrew. As noted by Borer and Grodzinsky (1986), possessive datives can only modify internal arguments. Hence, they can serve as possessors to subjects of unaccusatives (30a-b), but not to subjects of unergatives (30c). As expected, reflexives (30d) behave just like unergatives (again, note that the predicates in (30b) and (30d) share the same morphology):[11,12]

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[11] Another test that seems to point to the same direction is the possibility to use *kol* as a negative polarity item . Doron and Mittwoch (1987) note that this is only possible with internal arguments. As expected, reflexives fail the test just like unergatives. However, the diagnostics should be taken with some caution; not only this use of *kol* belongs to formal language, but in addition it is better with [-animate] nouns, which renders the test more difficult for reflexives whose subject is obligatorily an Agent (we use triggered inversion contexts below as the negative polarity reading is easier to obtain with postverbal subjects):
 (i)   'etmol lo higi'a kol faks/?talmid.
       yesterday not arrived any fax/pupil
 (ii) *'etmol lo 'avad kol maxšev/po'el.
       yesterday not worked any computer/worker

(30) a šney sfarim naflu le-dan.
        two books fell to Dan

    b   ha-simla hitkamta le-dina.
        the-dress wrinkled to-Dina

    c   *ha-yeled rakad le-dina
        the-boy danced to-Dina

    d   *ha-yeled hitraxec le-dina.
        the-boy washed to-Dina

In Russian, genitive of negation provides a test of unaccusativity: internal arguments can bear genitive Case, when their predicate in negated. In Russian, too, unaccusatives can appear in the same form as reflexives. Importantly, however, while the former pass the test of negation (when they are negated their subject can appear in genitive as illustrated in (31a)), the latter fail it (31b) just like unergatives (31c):[13]

(31) a   Ne pojavilos' studentov
         NEG showed up students(GEN)

    b   *Ne pomylos' studentov
        NEG washed students(GEN)

    c   *Ne tancevalo studentov
        NEG danced students(GEN)

Finally, even in English it seems that there is evidence that the subject of reflexives is an external argument. Agent nominals, also known as *-er* nominals, can be derived only from predicates with an external argument (as their name suggests); hence, the contrast between (32a) and (32b). As expected, reflexives pattern with unergatives: they can give rise to agent nominals (32c):[14]

(32) a   She runs so fast because she is an experienced runner.
     b   *She moves so gracefully because she is an experienced mover.
     c   She dresses slowly because she is an elegant dresser.

(iii) *'etmol lo hitraxec kol yeled.
        yesterday not washed any boy
[12] In literary Hebrew the verbal form *nitpa'el* can sometimes be used instead of *hitpa'el* (that is, the Mishnaic instead of the Biblical form, which is the current form in Modern Hebrew). Although the use is limited to literary language, it seems (to us and to the informants we have consulted) that *nitpa'el* cannot be used as a reflexive (i), but can occur as an unaccusative (ii). Again, this is unexpected, if reflexives and unaccusatives belong to the same class:
(i) hu hitlabeš/*nitlabeš; histarek/*nistarek; hitraxec/*nitraxec.
     he dressed   combed   washed
(ii) hu hitkavec/nitkavec; hitkamet/nitkamet; hem hit'asfu/ nit'asfu.
     he shrunk   wrinkled   they gathered
[13] Thanks to Léa Nash and to Irena Botwinik-Rotem for the Russian data.
[14] This does not mean, of course, that all reflexives nor all unergatives can form Agent nominals.

We believe it is now evident that unaccusatives and reflexives do not belong to the same syntactic class; the difference between them is as substantial as that between unaccusatives and unergatives. This leaves us back with the ECM puzzle. That is, if reflexivization involves a lexical operation of reduction as discussed in section 3, how come in Romance it can apply to two arguments which are not θ-coarguments? And if reflexivization is essentially the same phenomenon across languages, why do languages differ with regard to the possibility to reflexivize into ECM complements?

6. Reflexive Reduction: Lexical and Syntactic Application

In French (or Italian), reflexivization is possible into ECM complements, as illustrated in (19b) repeated in (33a). The same is impossible in Hebrew (or English), as shown in (21a) repeated in (33b):

(33) a   Jean se considère intelligent.
         Jean SE considers intelligent

   b   *dan mitxašev 'intiligenti.
        Dan self-considers intelligent

Moreover, while in French, reflexivization is a productive operation, in Hebrew it is limited to a closed class of elements. Likewise while in French the argument reflexivization targets can be a dative element (in addition to accusative), as illustrated in (10b) or in (34a) below, in Hebrew, reflexivization of datives is inconceivable (34b):[15]

(34) a   Jean s'est envoyé une lettre.
         Jean SE is sent a letter
         'Jean sent a letter to himself'

   b   *dan hištale'ax mixtav.
        Dan self-sent letter

In Reinhart and Siloni (forthcoming), we argue that the occurrence of reflexive verbs in ECM constructions in French-type languages but not in Hebrew-type languages correlates with their productivity in the former and non-productivity in the latter. Despite the distinctions, we argue, reflexive verbs are one single phenomenon across languages. Reflexive entries are always derived from their transitive alternate by the operation of reduction targeting the internal argument, along lines proposed by Chierchia (1989) and Reinhart (1996). However, according to our proposal, reduction has two modes of application: a lexical mode and a syntactic mode. In Hebrew-type languages, reflexives are products of lexical application, while in French-type languages they are the output of syntactic application. We summarize the proposal below.
    The distinctions between Hebrew-type and French-type reflexives are derived from the distinct component of grammar in which reduction applies. While in Hebrew reflexives are

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[15] We do not discuss reciprocal verbs in this paper. Note nonetheless that reciprocals, like reflexives, fail tests of unaccusativity, and are more productive in French. Interestingly, however, Hebrew reciprocals (unlike reflexives) seem to allow reduction of nonaccusative arguments.

derived by reduction in the lexicon, in French their derivation involves syntactic reduction. Crucially, in the two types of languages, the reflexive morphology (*se* or the verbal form *hitpa'el*) has the effect of eliminating a Case feature of the verb prior to syntactic insertion. However, in Hebrew the choice of reflexive morphology requires lexical reduction, while in French *se* is a Case absorber allowing reduction to take place in the syntax of LF.

In Hebrew, reflexive reduction implies both thematic and Case reduction in the lexicon. A transitive entry (35a) which undergoes reflexive reduction forms an unergative entry (35b), which does not bear an accusative Case assigning feature (35c). The relevant numeration therefore contains in addition to a verb reduced to assign a single θ-role (θ_1), one realizable DP that will check the EPP (Extended Projection Principle) feature of I, as schematized in (35d):

(35) Hebrew:
    a $V <\theta_1,\theta_2>$
    b   Reduction: $R(V)< \theta_1>$
           $(R(V)(x)) \leftarrow (x\ V\ x)$
    c   Case absorption
    d   Numeration: $\{...I_{EPP}...R(V (\theta_1)), \{DP_i\}\}$

In French, the reflexive morphology also absorbs a Case feature of the verb, but does not require thematic reduction to apply in the lexicon. *Se* is a Case absorber which is not contingent upon lexical thematic reduction, as schematized in (36b).[16] This results in a discrepancy between the number of θ-roles and the number of Case features available to assign. The relevant numeration thus includes a verb bearing two θ-roles, but only one realizable DP, because a Case assigning feature of the verb was eliminated (36c). If two DPs are selected, the derivation will crash due to lack of Case. Reduction applies at LF (36d). Under LF-reduction, the two θ-roles of the predicate are identified to the extent that both are assigned to DP_i, as it is the only realizable DP. This thematic discharging obtains at LF an interpretation equivalent to that of lexical reduction (35b). The two θ-roles are available in syntax but checked against one single DP:

(36) French:
    a $V <\theta_1,\theta_2>$
    b   *Se*: Case absorption
    c   Numeration: $\{...I_{EPP}...V (\theta_1,\theta_2), \{DP_i\}\}$
    d   LF-reduction: $[DP_{i(\theta1, \theta2)}$ se V+I... $]$

The mechanism of LF-reduction is incongruous with the traditional formulation of the θ-criterion, as two θ-roles are assigned to one argument. However, we assume with Chomsky (1995), Reinhart and Reuland (1993), among others that the criterion is not indispensable, as its consequences, it seems, can be derived by independent modules of the theory (see cited references). Note that the mechanism requires the insertion of *se*. It cannot apply to transitive entries as the derivation will crash due to unchecked Case assigning features of the verb.

Lexical operations are typically frozen. Hence, as Hebrew does not have a *se*-type Case absorber which allows the predicate to postpone thematic reduction until LF, it manifests a closed set of reflexives. Among the members of the set, no instance of dative-reflexivization

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[16] For the sake of simplicity, the base predicate is a two place predicate; modulo the additional argument, the same holds for a three place predicate. The absorbed Case may be either accusative or dative.

is found, as mentioned above. This may be a basic trait of lexical reflexivization (note that the group of lexical reflexives is rather fixed across languages). Further, as in Hebrew the operation is obligatorily lexical, it can operate only on θ-coarguments. Hence, reflexives do not appear in ECM constructions (33b), in which reduction has to apply to two arguments of two distinct predicates.

In French, reduction is a syntactic operation, and therefore productive just like other syntactic procedures. Accordingly, the group of reflexives is not a closed class, and the operation can target accusative as well as dative arguments (34a). Further, reduction in French applies in the syntax of LF. At that level, we assume, the predicates that compose the ECM structure can form a complex predicate (along lines proposed by Reinhart and Reuland (1993) and references cited there). In (33a), for example, the verb *considère* and the adjective *intelligent* allow the formation of the complex predicate *intelligent-considère*, as schematized in (37). Consequently the θ-role of *intelligent* and the θ-role of *considère* become θ-roles of the same predicate, the complex predicate formed at LF, and can therefore be subject to LF-reduction. That is, they can be assigned to the same DP, DP_i in (36d), *Jean* in (37):

(37)   LF: [Jean se [intelligent$_i$-considère]$_j$ t$_i$]
            Jean SE intelligent-considers

Reflexivization of ECM predicates is thus limited to languages with LF-reduction. Only in these languages can reduction in ECM environments respect the constraint in (12) repeated in (38) with the emphasis that the pair of θ-roles in question must indeed be a pair of co-θ-roles:

(38)   Reduction can only apply to a pair of free co-θ-roles one of which is external.

Dutch seems to pose a problem to our proposal, as it exhibits a closed class of reflexives on the one hand (39a-c), and reflexives in ECM constructions on the other hand (40). The former is a characteristic of lexical reduction, while the latter is typical of syntactic reduction. This is unexpected under our account:

(39)a   Max wast zich.
            Max washes ZICH

    b   *Max haat zich.
            Max hates ZICH

    c   *Max hoorde zich.
            Max heard ZICH

(40)   Max hoorde [zich zingen].
            Max heard ZICH sing

However, as shown by Reinhart and Reuland (1993), *zich* is licensed in two distinct syntactic environments: with reflexive predicates and with nonreflexive predicates. When the predicate is reflexive, *zich* can be coreferential with a local subject. When the predicate is not reflexive, *zich* cannot be bound by a coargument; it is, then, what is often called a long-distance anaphor.

Reinhart and Reuland (1993) argue following Everaert (1986) that predicates such as *wast* in (39a) are lexically reflexive. These predicates belong to a closed class of elements, as

shown by the impossibility of (39b-c). In our terms, they are the products of lexical reduction. The predicate *hoorde* does not belong to the class of predicates that allow lexical reduction. Hence, *zich* is ruled out in (39c). Still, it can appear in (40), although the predicate is not reflexive, because it is the subject of the ECM complement, not a θ-argument of the matrix verb. Hence, it is not syntactically bound by a coargument, but by an argument of a distinct predicate, the embedding predicate *hoorde*. (40), which superficially seems to be a structure analogous to the French example (33a) is, in fact, an instance of syntactic binding, not the output of LF-reduction as is its French counterpart. Simply, Dutch uses the same element (*zich*) in both contexts: when lexical reduction takes place and in the context of non-local syntactic binding.[17]

7. SUMMARY

In this paper we argue that the unaccusative analysis of reflexive verbs must be discarded, as reflexives systematically fail syntactic tests of unaccusativity. They are unergative entries, whose subject is an external argument, unlike the subject of unaccusatives. We adopt the view that reflexives are derived from their transitive alternate by a reduction operation that reduces the internal argument provided that it is identified with its external coargument. Further, we argue that reduction has two modes of application: a lexical mode and a syntactic one. This is what makes reflexives show somewhat different characteristics in Hebrew-type languages vs. French type-languages. In our view, then, reflexivization is essentially the same phenomenon cross-linguistically. The distinctions between the two types of reflexives, e.g. in Hebrew and French, follow from the different component of grammar in which reduction applies.

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[17] An interesting question is whether *zich* is an ambiguous form, or one and same element in both contexts. Clearly, in (40) it is an argument bearing Case and θ-role. In (39a), in contrast, lexical reduction, as defined in (35), has the effect of reducing both the internal θ-role and the relevant Case feature of the verb. If so, then *zich* in (39a) can only be a marker of lexical reflexivization. But, why does it occur in the object position? Reinhart (1996) suggests that lexical reduction does not always entirely eliminate the Case feature of the verb. When it does, the object position will not be projected, when it does not, some element (*zich*) is inserted to take care of the Case residue of the verb.

Additionally, note that we assume with Reinhart and Reuland (1993), that complex predicate formation at LF is a an optional operation. The formation of a complex predicate in (40) would have the annoying result of making the two relevant arguments coarguments, in contradiction with what the relevant binding condition requires.

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