Simplex reflexives in Dutch
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Abstract: The distribution of Dutch simplex reflexives like *zich* has long been considered a problem for canonical binding theory and has motivated various extensions and revisions of it. This article argues that the standard binding theory is essentially correct, because the distribution of simplex reflexives has nothing to do with binding at all but involves inalienable possession, as proposed in Postma (1997) and Rooryck & Vanden Wyngaerd (2011): Dutch simplex reflexives are not bound but inalienably possessed by their antecedent. So far, this proposal has been elaborated mainly for inherently reflexive constructions, but we will show that it can also explain the distribution of the Dutch simplex reflexives in non-inherently reflexive constructions if we adopt the analysis of inalienable possession constructions in Broekhuis & Cornips (1997).

1   Introduction

This article deals with the distribution of the Dutch simplex reflexive pronouns. There is only one specialized form in Dutch, the third person pronoun *zich*; all other forms in the paradigm of simplex reflexives are identical to the phonetically weak object forms of the referential personal pronouns, so, for clarity's sake, the distribution of the simplex reflexives will be restricted to the specialized form *zich*. It is a well-documented fact that the distribution of *zich* cannot be accounted for by the classical binding theory in (1), in which the notion of anaphoric domain is used as a cover term for governing category (Chomsky 1981), complete functional complex (Chomsky 1986), or whatever other notion one prefers.

(1)   Classical binding theory:
  a.   Anaphors are bound in their anaphoric domain.
  b.   Referential pronouns are free in their anaphoric domain.
  c.   Referential expressions are free.

Everaert (1981/1986) observed that *zich* is typically found in inherently reflexive constructions such as (2); this holds for approximately 95% of the occurrences of *zich* in the corpus of (written) texts he used. Since the simplex reflexive by definition cannot be replaced by a referential expression such as the proper noun *Marie*, it is often assumed that *zich* is not an argument of the verb in such constructions.

(2) a.   Jan vergist   zich/*Marie.
      Jan mistakes REFL/Marie
      'Jan is mistaken.'
    b.   Jan schaamt zich/*Marie.
      Jan shames   REFL/Marie
      'Jan is ashamed.'

There are, however, also cases in which *zich* seems to occur in an unequivocal argument position. But first note that *zich* differs from the complex reflexive *zichzelf* 'himself' in that it

cannot occur in simple sentences as a nominal/prepositional object: the same normally holds for the nominal part of an adverbial PP. [1]

(3)   • Simple sentences
   a. *Marie* slaat *zichzelf/*zich*.   [DO]
       Marie hits   herself/REFL
   b. *Jan* gaf *zichzelf/*zich* een boek.   [IO]
       Jan gave himself/REFL   a book
   c. *Marie* vertrouwt op *zichzelf/*zich*.   [PP-object]
       Marie relies   on herself/REFL
   d. *Marie* spreekt namens *zichzelf/*zich*.   [adverbial PP]
       Marie talks   on.behalf.of herself/REFL

According to Everaert (1986: ch.3) and Rooryck & Vanden Wyngaerd (2011: §5.4), simplex reflexives functioning as argument typically have one of the three syntactic functions in (4); examples are given in (5).[2]

(4)   Syntactic functions of *zich* in non-inherently reflexive constructions:
   a. Complement of the locational PP in a prepositional small clause;
   b. Nominal or prepositional object of the infinitival verb in an AcI-construction;
   c. Logical SUBJECT of a small clause.

(5)   a. *Jan* legt [_SC_ het boek naast   *zich*].   [compl. of P in prepositional SC]
          Jan puts   the book next.to REFL
      b. *Jan* laat [_CLAUSE_ *zich* (door de dokter) onderzoeken].   [compl. of infinitive]
          Jan let   REFL   by the doctor   examine
      c. *Jan* voelt [_SC_ *zich*   moe/een genie].   [SUBJECT of SC]
          Jan feels   REFL   tired/a genius

As stated above, the main goal of this article is to investigate the distribution of the simplex reflexive *zich* in more detail. We mentioned that classical binding theory (1) cannot straightforwardly account for the binding of the simplex reflexives. That binding condition A cannot account for the distribution of *zich* in argument position will be clear from the fact that it cannot be bound by a co-argument, which is the prototypical case for anaphors (i.e. complex reflexives and reciprocals): the examples in (6) show that *zich* behaves more like referential pronouns such as *haar* 'her' in this respect.

(6)   a. *Marie* slaat *zichzelf/*zich/*haar*.   [DO]
          Marie hits   herself/REFL/her
      b. *Marie* gaf *zichzelf/*zich/*haar* graag cadeautjes.   [IO]
          Marie gave himself/REFL/her   gladly presents
      c. *Marie* zorgt   goed voor *zichzelf/*zich/*haar*.   [PP-complement]
          Marie takes.care good for himself/REFL/hem
          'Marie looks after herself well.'

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[1] Exceptions are so-called "free" datives (i.e. indirect objects that are not strictly selected by the main verb) such as possessive and benefactive indirect objects.

[2] Rooryck & Vanden Wyngaerd (2011:§5.4) do not commit themselves, however, to the small-clause analysis of (5a), but treat the PP as an adverbial phrase. This analysis goes against the observation in (3d) that *zich* normally cannot be used as part of adverbial PPs in simple sentences. We will ignore this issue here but return to it in Section 2.2.4.

The simplex reflexive *zich* also behaves differently from anaphors in examples containing a prepositional small clause: in (7a), the reciprocal must be bound by the logical SUBJECT of the PP-predicate, *de honden* 'the dogs', which is impossible for *zich*; (7b) shows that *zich* must instead be bound by the subject of the sentence. Again, *zich* seems to behave like a referential pronoun, as the weak pronoun *'r* 'her' can also be bound by the subject of the sentence in this construction.[3]

(7) a. Marie houdt [sc *de honden* bij *elkaar/*zich/*ze*].
         Marie keeps   the dogs   with each.other/REFL/them
         'Marie will keep the dogs together.'
     b. *Marie* houdt [sc de honden bij *zich/'r/*zichzelf*].
         Marie keeps   the dogs   with REFL/her/herself
         'Marie will keep the dogs with her.'

The examples in (6) and (7) make it clear that the distribution of *zich* resembles that of the referential personal pronouns. It cannot be accounted for by means of binding condition B, however, because its distribution is much more restricted than that of the referential pronouns; example (8) shows that *zich* behaves like an anaphor in that it must be bound within its minimal finite clause.[4]

(8) *Marie* denkt [clause dat   ik [sc de honden bij *'r/*zich/*zichzelf*] breng].
     Marie thinks   that I   the dogs   with her/REFL/herself bring
     'Marie thinks that I will bring the dogs to her.'

The discussion above points to *zich* exhibiting mixed binding behavior: it sometimes patterns with anaphors and sometimes with referential pronouns. There have been many attempts to account for this behavior: Vat (1980), Everaert (1981/1986), Koster (1987) and Broekhuis (1987/1992) proposed analyses based on postulating a larger set of anaphoric domains, while the reflexivity framework developed in Reinhardt & Reuland (1993) and Reuland (2011) adopts a modular approach based on the interaction of syntactic and non-syntactic factors. We will largely ignore these and similar proposals for reasons of space and concentrate on developing a purely syntactic account of the distribution of *zich*. The starting point will be the hypothesis first proposed in Everaert (1986) that simplex reflexives are not anaphoric elements but unaccusativity markers, which is revived in Rooryck & Vanden Wyngaerd (2011) in terms of inalienable possession. We will see that this leads to an analysis that seems more minimalistic in spirit than its competitors in that it accounts for the data without the need of additional means; it obviates the need of stipulating additional anaphoric domains, as found in Vat (1980) and its successors, or constraints such as the chain condition in the reflexivity framework, which is primarily motivated by a subset of the binding facts discussed in this article.

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[3] *Zichzelf* in (7b) becomes more or less acceptable with an emphatic accent on *zelf*; in such cases, we are not dealing with a complex reflexive but with the simplex reflexive *zich* followed by the modifier *zelf* 'himself/herself/themselves', which we also find with other noun phrases; cf. *Jan heeft met Marie zelf gesproken* 'Jan has spoken to Marie herself'. Such cases will therefore be ignored in what follows.
[4] That *zich* cannot be bound by an antecedent external to its minimal clause shows that it is also different from Icelandic *sig*, which clearly takes an antecedent external to its minimal clause in *Jón*i *sagði [að ég hefði svikið sig*i*]* 'Jón said that I had betrayed him': cf. Thráinsson (1991/2007: §9.1.2-3). I have nothing to say here about this logophoric use of the simplex reflexive *sig* but refer the reader to De Vries (1999) for an illuminating discussion of the difference between Dutch *zich* and Icelandic *sig*.

2   The syntactic function of the simplex reflexives

There is no need to adapt classical binding theory in order to account for the distribution of the Dutch simplex reflexives, as these are not anaphoric elements. This section reviews and expands earlier approaches to inherently reflexive constructions which attribute a specific syntactic function to simplex reflexives, beginning with Everaert's (1986) finding that subjects of inherently reflexive constructions exhibit properties of internal arguments. In (9) the noun phrase *zijn vader* 'his father' refers to the person being shaved and thus functions as a theme (the person being shaved) in both examples.

(9)   a.   Jan scheert zijn vader met een scheermes.   [transitive]
           Jan shaves   his father   with a razor
      b.   Zijn vader scheert zich   met een scheermes.   [inherently reflexive]
           his father   shaves   REFL with a razor
           'His father shaves with a razor.'

As the use of a simplex reflexive seems to lead to valency reduction, Everaert claims that the null hypothesis should be that simplex reflexives in inherently reflexive constructions are regular noun phrases with the syntactic properties in (10). We will clarify and discuss this hypothesis in Section 2.1.

(10)   Simplex reflexives:
      a.   are not assigned a thematic role by the verb;
      b.   absorb accusative case, and;
      c.   trigger unaccusative syntax as a result.

The claim in (10a) that simplex reflexives in inherently reflexive constructions are not assigned a thematic role is problematic, as noun phrases are formally licensed by being assigned case and semantically licensed by being assigned a thematic role. Everaert (1986: §7.3.1) is aware of this and proposes that the simplex reflexive is semantically licensed by an *ad hoc* rule linking it to the thematic role of its antecedent. Section 2.2 discusses an alternative solution to this problem based on the observation that simplex reflexives can occur in certain inalienable-possession constructions; cf. Postma (1997). We will show that the theoretical implementation of this proposal in Rooryck & Vanden Wyngaerd (2011), according to which the simplex reflexive is semantically licensed in the same way as the possessum in inalienable-possession constructions (without the need of postulating additional linking rules), automatically derives the properties in (10). Section 2.3, finally, extends the analysis to the non-inherently reflexive constructions listed in (4).

2.1   The simplex reflexive *zich* as a case absorber

This section provides a discussion of inherently reflexive constructions and provides a more extensive motivation for the hypothesis in (10). Simplex reflexives such as *zich* are very frequently used as reflexive markers in inherently reflexive verb constructions such as (2), repeated here as (11). The fact that a referential noun phrase cannot be used in the position of *zich* suggests that this position is not semantically selected (that is, is not assigned a thematic role) by the verb; this is also reflected by the fact that the English renderings of inherently reflexive verb constructions normally contain just a single nominal argument.

(11) a. Jan vergist   zich/*Marie
       Jan mistakes REFL/Marie
       'Jan is mistaken.'
    b. Jan schaamt zich/*Marie
       Jan shames   REFL/Marie
       'Jan is ashamed.'

Everaert (1986) nevertheless assumes that the simplex reflexives in (11) are not parts of a lexically listed complex verbal expressions but regular noun phrases. Since noun phrases must normally be assigned case, there are two case-marked noun phrases in inherently reflexive verb constructions. At first glance, this would seem to contradict the earlier conclusion that inherently reflexive verbs select only a single nominal argument, but it is consistent with the assumption that subjects of inherently reflexive verb constructions are actually internal arguments of the verb: they cannot be assigned accusative case, as this case is absorbed by the reflexive marker, and must therefore be assigned nominative case and be realized as the subject of the clause. This also accounts for the fact that inherently reflexive verbs are like unaccusative verbs in that their subjects are not typical agents (which are always external arguments). The characteristic properties of inherently reflexive verb constructions are summarized in (12); cf. Everaert (1986:315).

(12)   • Properties of inherently reflexive verb constructions:
    a. the verb does not select (assign a thematic role to) the simplex reflexive;
    b. the verb assigns accusative case to the simplex reflexive;
    c. the internal argument of the verb is assigned nominative case.

Since simplex reflexives are prototypically used in inherently reflexive verb constructions, Everaert also suggests that such constructions should be taken as our point of departure for the description of simplex reflexives in *all* syntactic environments. This leads to the null hypothesis that simplex reflexives are essentially CASE ABSORBERs, by which we mean that they have the characteristic properties in (13), which are the counterparts of the characteristic properties of inherently reflexive constructions given in (12).[5]

(13)   • Simplex reflexives:
    a. are not assigned a thematic role by the verb;
    b. absorb accusative case;
    c. trigger unaccusative syntax as a result.

Property (13c) entails that, if the verb in question is transitive, its external argument must be suppressed. This is normally not immediately visible in the case of inherently reflexive verbs like *zich vergissen/schamen* 'to be mistaken/ashamed' in (11), as these do not occur as run-of-the-mill transitive verbs. Nor is it obvious in the case of verbs of personal hygiene like *wassen* 'to wash' and *scheren* 'to shave', which can be used as normal transitive verbs; cf. (14a). Addition of *zich* in (14b) should result in suppression of the original agent and promotion of the theme argument to subject but it is not immediately clear that the subject in (14b) is not an agent, as it is interpreted simultaneously as actor and theme. This is, however, not unusual with theme subjects, as is clear from the unequivocal unaccusative construction *Jan is vertrokken* 'Jan has left', in which *Jan* also has actor and theme-like features; see Rooryck & Vanden Wyngaerd (2011:§3.4) for a more detailed discussion.

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[5] Simplex reflexives are thus assumed to perform a similar function as the passive morphology on participles in the theory of passivization proposed in Baker (1988: ch.6) and Baker, Johnson, and Roberts (1989).

(14) a. Jan scheert zijn vader met een scheermes.   [transitive]
         Jan shaves   his father   with a razor
     b. Zijn vader scheert zich   met een scheermes.   [inherently reflexive]
         his father   shaves   REFL   with a razor
         'His father shaves with a razor.'

Moreover, the actor-like feature is less prominent or even completely absent in other inherently reflexive constructions. This holds, for instance, for verbs expressing bodily harm such as *verwonden* 'to hurt' in (15). That the subject in (15b) is less actor-like than the subject in the transitive construction in (15a) is clear from the fact that it does not readily license the use of an instrumental *met*-PP; the object causing the injury is expressed by means of a (non-instrumental) *aan*-PP; see Postma (1997) and Rooryck and Vanden Wyngaerd (2011) for a more extensive discussion of the distribution of these adverbial PPs.

(15) a. Jan verwondde zijn tegenstander met/*aan zijn mes.   [transitive]
         Jan hurt   his opponent   with/at his knife
     b. Jan verwondde zich   aan/$^?$met zijn mes.   [inherently reflexive]
         Jan hurt   REFL   at/with his knife

We take this as support for the claim in (12c) and (13c) that also the subjects of inherently reflexive verbs are not external (agentive) arguments but internal (theme) arguments of the verb. More support for this claim can be found in the selectional restrictions imposed by verbs: the transitive verb *verspreiden* 'to disperse' requires a plural object (or an object headed by a collection noun like *de menigte* 'the crowd') in contexts such as (16a); the (b)-examples show that the same holds for the subject in its inherently reflexive counterpart, as expected; cf. Everaert (1986:83).

(16) a. De politie   verspreidt de demonstranten/*demonstrant.   [transitive]
         the police   disperses   the demonstrators/demonstrator
     b. De demonstranten verspreiden zich.   [inherently reflexive]
         the demonstrators disperse   REFL
     b'. *De demonstrant verspreidt zich.
         the demonstrator disperses   REFL

    That inherently reflexive constructions exhibit unaccusative syntax also becomes clear when we compare them to the two examples in (17), which introduce the so-called causative-inchoative alternation. If the verb *breken* selects the auxiliary *hebben* 'to have' in the perfect tense, as in (17a), it is a transitive verb and thus able to assign accusative case to its internal (theme) argument. However, if it selects the auxiliary *zijn* 'to be', as in (17b), it is an unaccusative verb so that accusative case is no longer available and the internal argument of (17a) must surface as the subject of the construction (and the subject of the corresponding transitive construction cannot be expressed).

(17) a. Jan breekt het glas.   [transitive; causative]
         Jan breaks the glass
     a'. Jan heeft/*is het glas gebroken.
         Jan has/is   the glass broken
     b. Het glas breekt.   [unaccusative; inchoative]
         the glass breaks
     b'. Het glas is/*heeft gebroken.
         the glass is/has   broken

Inherently reflexive constructions differ from unaccusative constructions in that they select *hebben* in the perfect tense, as illustrated in (18); see Everaert (1986:§4.6.3) for some exceptional cases. This does not come as a surprise, however, given the properties in (12b) and (13b); the verb cannot be truly unaccusative, as it must assign accusative case to the simplex reflexive.

(18) a. Jan heeft zich   vergist.
         Jan has   REFL   mistaken
         'Jan has been mistaken.'
     b. Jan heeft zich   geschoren.
         Jan has   REFL   shaved
         'Jan has shaved.'

The instances in (19) bear out that it is indeed the simplex reflexive that forces the use of *hebben* as the auxiliary: example (19a) shows again that standard Dutch does not employ a simplex reflexive in inchoative constructions and that *zijn* is used in the perfect tense form of such constructions; example (19b) shows that Dutch varieties that do use a simplex reflexive in such constructions form their perfect tense with *hebben*; cf. Cornips (1994).

(19) a. Het glas is/*heeft gebroken.   [standard Dutch]
         the glass is/has   broken
     b. Het glas heeft/*is zich   gebroken.   [Heerlen Dutch]
         the glass has/is   REFL   broken
         'The glass breaks/has broken.'

     The discussion so far has shown that there are two strategies for the detransitivization of verbs. It seems that standard Dutch in fact employs both strategies: while standard Dutch does not employ the simplex reflexive in the causative-inchoative alternation with verbs such as *breken* 'to break' in (17), the examples in (20) show again that there is a comparable alternation with *verspreiden* 'to spread' in which the simplex reflexive must be used; cf. Everaert (1986:52-3, 85). As the simplex reflexive must be assigned case, the inherently reflexive inchoative construction is expected to behave like the Heerlen Dutch example in (19b) by taking the auxiliary *hebben* in the perfect tense.

(20) a. Jan verspreidde het gerucht.   [transitive/causative]
         Jan spread   the rumor
     b. Het gerucht verspreidde *(zich).   [inchoative]
         the rumor   spread   REFL
     b'. Het gerucht heeft zich   verspreid.
         the rumor   has   REFL   spread

It seems that causative-inchoative alternations with and without a simplex reflexive cannot be considered purely idiosyncratically constrained alternatives, as the absence or presence of a simplex reflexive may affect the semantic interpretation of inchoative constructions. This is clear from the fact illustrated by the (b)-examples in (21) that the two detransitivization strategies are sometimes simultaneously available with a distinct meaning difference.

(21) a. Eucalypta verandert Paulus/zichzelf in een schildpad.   [transitive/causative]
         Eucalypta changes   Paulus/herself   into a tortoise
     b. Eucalypta verandert zich   per ongeluk in een schildpad.   [inchoative]
         Eucalypta changes   REFL by accident   into a tortoise
     b'. Paulus verandert (*zich) gelukkig niet in een schildpad.   [inchoative]
         Paulus changes   REFL   happily not   into a tortoise

In the story alluded to the witch Eucalypta by mistake drinks her own draught, which was originally intended for the gnome Paulus. The presence of the simplex reflexive depends on the instigator of the action: if the derived (theme) subject is the instigator, as in (21b), the reflexive is preferably present: if it is not the instigator, as in (21b′), the reflexive cannot be present.

This section has shown that we may assume for at least certain types of inherently reflexive constructions that the simplex reflexive can be considered a case absorber which detransitivizes the verb and triggers unaccusative syntax. However, the claim that the simplex reflexive is not assigned a thematic role by the verb raises the question as to how it is semantically licensed. This is the main topic of Section 2.2.

2.2   The pronoun *zich* as a possessum

Section 2.1 has discussed Everaert's (1986) hypothesis that simplex reflexives in inherently reflexive constructions are regular noun phrases functioning as case absorbers: they are formally licensed by being assigned accusative case by the verb, as a result of which the internal argument of the verb must be assigned nominative case, i.e. be realized as the subject of the clause; cf. (12b-c). As noun phrases are normally semantically licensed by being selected as an internal or external argument of some lexical head (V, N, A or P), it is surprising that Everaert assumes that this does not hold for simplex reflexives in inherently reflexive constructions; cf. (12a). He solves the problem by introducing a special rule linking the simplex reflexive to the thematic role of its antecedent. We now turn to an alternative proposal, based on the observation that simplex reflexives can occur in certain inalienable-possession constructions, which will solve this problem; cf. Postma (1997) and Rooryck & Vanden Wyngaerd (2011).

2.2.1 Inalienable-possession and inherently reflexive constructions

Postma (1997) observes that dyadic constructions with a verb of physical disruption such as *breken* 'to break' in (22) can have two different interpretations. Example (22a) involves a run-of-the-mill transitive construction with an agentive subject, which is clear from the fact that it allows passivization. Example (22b), on the other hand, is an inalienable-possession construction, which differs from the transitive construction (22a) in at least two ways: (i) the subject of the clause is not agentive but functions as the possessor of the noun phrase *zijn arm*; (ii) the construction cannot be passivized without losing its inalienable-possession meaning.[6]

(22) a. Jan_i brak $zijn_j$ arm.   [subject = agent]
        Jan   broke   his arm
        'Jan broke his (≠ Jan's) arm.'
     a′. $Zijn_j$ arm is   (door Jan_i) gebroken.
        his arm   has.been by Jan   broken
        'His (≠ Jan's) arm has been broken by Jan.'
     b. Jan_i brak $zijn_i$ arm.   [subject = possessor]
        Jan   broke   his arm
        'Jan broke his (= Jan's) arm.'
     b′. *$Zijn_i$ arm is   (door Jan_i) gebroken.
        his arm   has.been by Jan   broken
        Impossible: 'His (= Jan's) arm has been broken by Jan.'

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[6] Standard Dutch expresses the possessive relation twice in the inalienable-possession construction in (22b), viz., once by means of the possessive pronoun *zijn* 'his' and once by the subject *Jan*. This is a peculiarity of this variety, as there are several Dutch dialects that use a definite article in this construction instead; see Scholten (2018: ch.4) for extensive discussion.

Postma also shows that interpretation may affect the choice between the simplex and the complex reflexive pronoun in object position. This is illustrated by the examples in (23) with the verb of bodily harm *bezeren* 'to hurt'. We have again added an adverbial phrase to these examples in order to clarify the two interpretations of the subject: the agentive reading is compatible with an instrumental *met*-PP, while the inalienable-possession reading favors a (non-instrumental) *aan*-PP to refer to the object that has inflicted the injury; cf. (15).

(23) a. Jan_i bezeerde $zijn_j$ arm met/*aan het mes.   [subject = agent]
          Jan hurt   his arm   with/on the knife
     a′. *Jan* bezeerde *zichzelf* met/*aan het mes.
          Jan hurt   himself with/on the knife
     b. Jan_i bezeerde $zijn_i$ arm aan/$^?$met het mes.   [subject = possessor]
          Jan hurt   his arm   on/with the knife
     b′. *Jan* bezeerde *zich*   aan/$^?$met het mes.
          Jan hurt   REFL on/with the knife

The primed examples show that the complex reflexive *zichzelf* is used in the regular transitive construction while the simplex reflexive *zich* is used in the inalienable-possession construction. Postma concludes from this that *zich* in (23b′) has the same function as the noun phrase *zijn arm* in (23b), that is, it functions as the possessum of an inalienable-possession construction. More specifically, Postma claims that *zijn arm* 'his arm' and *zich* differ semantically in that the first refers to a subpart of the possessor while the latter refers to the possessor as a whole.[7]

2.2.2 Entailments

On the assumption that *zich* functions as a possessum in an inalienable-possession construction, one might expect that all inalienable-possession constructions have an inherently reflexive counterpart. This section will show that this expectation is not borne out but this can be accounted for by appealing to specific semantic differences between the verbs involved.

1. Upward entailment

The claim that *zich* is a possessum referring to the whole of the possessor may be important to account for the difference between verbs of physical disruption such as *breken* 'to break' in (22) and verbs expressing bodily harm such as *bezeren* 'to hurt' in (23): while both types of verb can occur in inalienable-possession constructions, only the latter can occur in inherently reflexive constructions. Postma claims that this can be accounted for in terms of semantic ENTAILMENT. The examples in (24), in which ⊫ stands for "entails", show that we can conclude from the fact that Jan hurt his (own) finger, that he also hurt his hand/himself.

(24) Jan_i bezeerde $zijn_i$ vinger.
         Jan hurt   his finger
     ⊫ Jan_i bezeerde $zijn_i$ hand.
         Jan hurt   his hand
     ⊫ Jan_i bezeerde $zich_i$.
         Jan hurt   REFL

This shows that verbs expressing bodily harm are upward entailing in the sense that the possessum referring to a certain body part of the possessor can be replaced by a possessum

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[7] This conclusion is incompatible with the suggestion in Reuland (2011:§6.5.3.2) that inalienable-possession constructions "could provide a model for complex reflexives" such as *zichzelf*, in the sense that the body part has a similar function as the *zelf*-morpheme. In what follows, we will adopt Postma's conclusion.

referring to a larger body part of the possessor that includes the smaller body part, as in (24b), or to the possessor as a whole, as in (24c). In this respect, verbs expressing bodily harm crucially differ from verbs of physical disruption like *breken* 'to break'.

(25)   Jan$_i$ brak   zijn$_i$ vinger.
         Jan   broke   his finger
         ⊮ Jan$_i$ brak   zijn$_i$ hand.
            Jan   broke   his hand
         ⊮ Jan$_i$ brak   zich$_i$.
            Jan   broke   REFL

The restrictions on such upward entailments are far from clear, as it does not seem likely to conclude from the example in (24) that Jan hurt his arm or his upper body. Such restrictions are probably not of a linguistic nature but are related to the way we look at the world: it is quite common to see a finger as a subpart of a hand but not as a subpart of an arm or upper body. Another illustration of the same phenomenon is given in (26): *Jan bezeerde zijn neus* clearly entails *Jan bezeerde zijn gezicht* but it is less clear whether it also entails *Jan bezeerde zijn hoofd*. This suggests that a nose is seen as an inherent part of a face but not as an inherent part of a head (at least by Dutch speakers), which is consistent with the fact that the latter can refer to subparts of non-human entities such as the head of a worm, a pier, a department, etc.

(26)   Jan$_i$ bezeerde zijn$_i$ neus
         Jan   hurt   his nose
         ⊨ Jan$_i$ bezeerde zijn$_i$ gezicht.
            Jan   hurt   his face
         ⊮ Jan$_i$ bezeerde zijn$_i$ hoofd.
            Jan   hurt   his head

Whatever the precise nature of the restrictions may be, it seems plausible that upward entailment of the sort in (24) makes it possible for a verb to enter into both the inalienable-possession and the inherently reflexive construction; we refer the reader to Rooryck & Vanden Wyngaerd (2011: 80-1) for a different proposal.

2. Downward entailment

The previous subsection suggested that upward entailment allows a verb to occur in both the inalienable-possession and the inherently reflexive construction. Upward entailment is, however, not a necessary condition for a verb to enter into an inherently reflexive construction. This can be easily illustrated by means of verbs of personal hygiene such as *wassen* 'to wash'. The primeless examples in (27) first show that *wassen* behaves like *breken* 'to break' in (22) in that it can enter regular transitive constructions with an agentive subject as well as inherently reflexive constructions. That the subject in (27b) functions as a possessor and not as an agent is perhaps less obvious than in the case of (22b) but the fact that the inalienable-possession reading cannot be obtained in the corresponding passive example clearly shows that we are not dealing with an external argument.

(27) a.   Jan$_i$ waste zijn$_j$ handen.   [subject = agent]
          Jan   washed his hands

     a′. Zijn$_j$ handen zijn   (door Jan$_i$) gewassen.
          his hands   have.been by Jan   washed
          'His (≠ Jan's) hands have been washed by Jan.'

     b.   Jan$_i$ waste zijn$_i$ handen.   [subject = possessor]
          Jan   washed his hands

     b′. *Zijn$_i$ handen zijn   (door Jan$_i$) gewassen.
          his hands   have.been by Jan   washed
          Impossible: 'His (= Jan's) hands have been washed by Jan.'

The invalidity of the entailments in (28) shows, however, that verbs of personal hygiene are not upward entailing in the sense that a possessum referring to a certain part of the possessor can be replaced by a possessum referring to a larger part of the possessor including it, or to the possessor as a whole.

(28)   Jan$_i$ waste zijn$_i$ vinger.
          Jan   washed his finger
          ⊮ Jan$_i$ waste   zijn$_i$ hand
              Jan   washed his hand
          ⊮ Jan$_i$ waste   zich$_i$
              Jan   washed REFL

We see in (29) that verbs like *wassen* are downward entailing, as washing of the whole entails washing of at least certain subparts of the whole. We would like to propose that this kind of entailment also makes it possible for a verb to enter into both the inalienable-possession and the inherently reflexive construction.

(29)   Jan$_i$ waste zich$_i$.
          Jan   washed REFL
          ⊨ Jan$_i$ waste zijn$_i$ bovenlijf/armen/...
              Jan waste   his upper.body/arms

The restrictions on downward entailments are again far from clear and probably of a non-linguistic nature, as is clear from *zich scheren* 'to shave oneself', which would normally entail the removal of a male's facial hair but the removal of hair on a female's different body parts. This again suggests that we are dealing with restrictions of a non-linguistic nature.

3. No entailment

It seems self-evident to assume that upward entailment (part → whole) enables transitive verbs typically occurring in inalienable-possession constructions to also appear in inherently reflexive constructions. Downward entailment (whole → part) would then enable transitive verbs typically occurring in inherently reflexive constructions to also appear in inalienable-possession constructions. If correct, this will lead us to expect that there may be verbs that typically occur in inalienable-possession or inherently reflexive constructions but do not participate in the alternation because they do not evoke the entailments of the kind discussed above. That this expectation is indeed borne out is shown in Table 1, in which N is taken to function as an inalienably possessed body part.

Table 1: Alternation of inalienable-possession and inherently reflexive constructions

	TYPICAL READING			
	INALIENABLE POSSESSION		INHERENTLY REFLEXIVE	
	UPWARD ENTAILMENT	NO ENTAILMENT	DOWNWARD ENTAILMENT	NO ENTAILMENT
INALIENABLE POSSESSION	*zijn N bezeren*	*zijn N breken*	*zijn N wassen*	**zijn N vervelen*
INHERENTLY REFLEXIVE	*zich bezeren*	**zich breken*	*zich wassen*	*zich vervelen*

If we assume that verbs expressing bodily harm such as *bezeren* 'to hurt' and verbs of physical disruption like *breken* 'to break' are transitive verbs that typically enter inalienable-possession constructions, the fact that the latter does not evoke upward entailment of the kind discussed here correctly predicts that it cannot be used in inherently reflexive constructions. If we further assume that verbs of personal hygiene such as *wassen* 'to wash' and psych-verbs such as *vervelen* 'to bore' typically find themselves in inherently reflexive constructions, the fact that the latter cannot be used in inalienable-possession constructions then follows from their inability to evoke downward entailment of the kind discussed here, which in this case may be due to the fact that there is no conventional name for the mental organ involved in registering psychological states: cf. (30b).

(30) a. Jan$_i$ brak   zijn$_i$ been/*zich$_i$.
          Jan   broke his leg/REFL
     b. Jan$_i$ verveelde zich$_i$/*zijn$_i$ N.   [N = body part]
          Jan   bored   REFL/his N

For completeness' sake, it should be noted that psych-verbs like *vervelen* pattern with the other verbs discussed in this section in that they can also be used in regular transitive constructions with an agentive subject: *Jan verveelde zijn zuster/zichzelf met zijn verhalen* 'Jan bored his sister/himself with his stories': see Broekhuis et al. (2015: §2.5.1) for a more detailed discussion of the verb frames that psych-verbs can be used in.

2.2.3 Formalization

The two sections above have argued that the semantic function of the simplex reflexive in inherently reflexive construction is similar to that of the possessum in an inalienable-possession construction. This means that the properties attributed to simplex reflexives, repeated here as (31), should also hold for the possessum in an inalienable-possession construction.

(31)   • Simplex reflexives:
     a. are not assigned a thematic role by the verb;
     b. absorb accusative case, and;
     c. trigger unaccusative syntax as a result.

The unaccusative syntax of inalienable-possession constructions is given support by the fact that such constructions cannot be passivized, as illustrated in the (b)-examples in (22) and (27) above. That the possessum is assigned ("absorbs") accusative case is also clear from German inalienable-possession constructions such as (32); cf. Rooryck and Vanden Wyngaerd (2011: 73).

(32)   Das Pferd$_{Nom}$ hat seinen Fuss$_{acc}$ verletzt.
         the horse   has his foot   hurt
         'The horse hurt its foot.'

That the possessum is *not* assigned a thematic role by the verb can be supported by the fact that the possessum and its possessor constitute a semantic unit; see Lee-Schoenfeld (2006: §1.1) among many others. This is especially clear if the possessor appears as a dative phrase, as in the non-standard construction in (33a), which is functionally equivalent to its standard Dutch translation in (33b), but we assume that the same holds for nominative possessors.

(33) a. Ik was   hem$_{dat}$ de handen.   [eastern-Dutch varieties]
         I   wash him   the hands
     b. Ik was   zijn handen.   [standard Dutch]
         I   wash his hands

The standard Dutch example shows that the verb *wassen* 'to wash' selects a single internal (theme) argument, and it would therefore be undesirable to assume that the corresponding nonstandard form selects two internal arguments: a theme and a possessor. Broekhuis & Cornips (1997) therefore proposed that the dative possessor and the possessum are inserted in the structure as a single small-clause constituent, which we label as S(mall) C(clause) in (34a). This results in a structure that is similar to the structure in (34b) for prepositional indirect-object constructions proposed in Den Dikken (1995). The "P$_\varnothing$" in (34a) stands for a phonetically empty preposition, and the number sign "#" indicates that the structure is not acceptable as a surface form for reasons that will be made clear shortly.

(34) a. #Ik was [$_{SC}$ de handen [P$_\varnothing$ hem]].
          I   was   the hands   him
     b. Jan gaf [$_{SC}$ het boek [aan Marie]]
          Jan gave   the book to Marie

The structure in (34a) solves the problem with respect to the selectional properties of the verb *wassen* 'to wash', as we can now assume that this verb always selects a single internal argument: the NP *zijn handen* in (33a) and the small clause *[de handen [P$_\varnothing$ hem]]* in (34a). The licensing of the noun phrases in the small clause is independent of the verb: the pronoun *hem* is semantically licensed as the internal argument of the empty preposition P and the resulting PP [P$_\varnothing$ hem] functions as a predicate that takes the noun phrase *de handen* as its external argument. Of course, the external argument of the small clause must be assigned case, which is provided by the transitive verb *wassen*.

  For our present purpose, a willingness on the part of the reader to accept that the inalienable possessor and possessum constitute a unit of some kind that is licensed as a whole by the verb suffices. The surface order in (33a) can be derived if we assume that the empty preposition P$_\varnothing$ must be supported by some phonological material, which can be obtained by incorporating it into the verb. Broekhuis & Cornips (1997) provide the derivation in the (a)-examples in (35); this derivation closely follows Den Dikken's (1995) analysis of the double object construction in the (b)-examples, which likewise involves the phonetically empty P$_\varnothing$ (instead of the overt preposition *aan* in (34b)). Note that incorporation of P$_\varnothing$ requires that the small-clause predicate be moved into some higher functional projection (FP) in order to get "close enough" to the main verb to license the subsequent movement of P$_\varnothing$ into V; see the primed examples in which t_P is the trace of the incorporated P$_\varnothing$. The resulting complex verb V+P$_\varnothing$ is able to assign dative case to the indirect object.

(35) a.   Ik was [$_{FP}$ [P$_\varnothing$ hem]$_i$ F ... [$_{SC}$ de handen t_i]]   [predicate movement]
     a′. Ik was+P$_\varnothing$ [$_{FP}$ [t_P hem]$_i$ F ... [$_{SC}$ de handen t_i]]   [P-incorporation]
     b.   Jan gaf [$_{FP}$ [P$_\varnothing$ Marie]$_i$ F ... [$_{SC}$ het boek t_i]]   [predicate movement]
     b′. Jan gaf+P$_\varnothing$ [$_{FP}$ [t_P Marie]$_i$ F ... [$_{SC}$ het boek t_i]]   [P-incorporation]

The inalienable-possession and inherently reflexive constructions under discussion receive a roughly similar derivation as in example (33a) but differ in that the complex verb V+ $P_\varnothing$ is incapable of assigning dative case to the possessor, which must therefore be moved into the subject position of the clause in order to be assigned nominative case. We illustrate this in (36) by means of *Jan bezeert zich/zijn voet* 'Jan hurts himself/his foot'. The m-dash is used to indicate that the verb does not take an external argument; the subject position of the clause is therefore available for the possessor *Jan*. We refer the reader to Rooryck and Vanden Wyngaerd (2011:§3) for a slightly different implementation of the same general idea.

(36) a. — bezeert [$_{SC}$ zich/zijn voet [$P_\varnothing$ Jan]]
    b. — bezeert [$_{FP}$ [$P_\varnothing$ Jan]$_i$ F [$_{SC}$ zich/zijn voet t_i]]]
    c. — bezeert+$P_\varnothing$ [$_{FP}$ [t_P Jan]$_i$ F [$_{SC}$ zich/zijn voet t_i]]]
    d. Jan bezeert+$P_\varnothing$ [$_{FP}$ [t_P t_{Jan}]$_i$ F [$_{SC}$ zich/zijn voet t_i]]]

Because we do not have sufficient space for spelling out in detail the derivation we have in mind, we want to conclude with three technical notes on the analysis. First, bear in mind that the derivations given in (35) and (36) are simplifications and in fact somewhat misleading in that they suggest an anticyclical derivation: the actual derivation of course proceeds bottom-up in a cyclic fashion. Second, as the discussion above may already have made clear, we do not adopt the minimalist standard assumption that movement is strictly feature-driven but assume that it can be motivated by properties of the moved phrase as well (here; the need for phonological support of the empty preposition $P_\varnothing$); we are dealing with some form of enlightened self-interest in the sense of Lasnik (1999) or a repair strategy in the sense of Moro (2000). Third, this also makes it possible to omit the more or less standard assumption that F in (35) and (36) is part of the numeration (i.e. taken from the lexicon), and instead assume that FP is actually an extended projection (of the main verb) in the sense of Grimshaw (1997). A more detailed analysis may thus involve cyclic movement triggered by the need of the empty preposition $P_\varnothing$ to be supported by phonological material (i.e. enlightened self-interest) into the specifier of an extended projection of the main verb.

2.2.4 Conclusion

This section has presented the outline of a formal analysis of inherently reflexive constructions that derives the properties of the simplex reflexives repeated in (37), according to which the reflexive and its antecedent start out as subparts of a small clause expressing inalienable possession: as the reflexive functions as the logical SUBJECT of the small clause, it is assigned accusative case but not a thematic role by the verb (which selects the small clause as a whole), while the possessor must be promoted to subject in order to be assigned nominative case.

(37) • Simplex reflexives:
    a. are not assigned a thematic role by the verb;
    b. absorb accusative case, and;
    c. trigger unaccusative syntax as a result.

The analysis is based on Postma's insight that inalienable-possession and inherently reflexive constructions should be unified. This section has provided syntactic arguments in favor of this unification. A wider set of (sometimes problematic) arguments of a more semantic nature can be found in Rooryck & Vanden Wyngaerd (2011: §3.2).

2.3   The pronoun *zich* in non-inherently reflexive constructions

Section 2.2 has presented an analysis of inherently reflexive constructions based on the claim that the simplex reflexive is actually the possessum of an inalienable-possession construction: the possessum is the logical SUBJECT of a small clause expressing possession, as in (38a). The

construction as such is not acceptable as a surface structure due to the presence of the empty preposition $P_\emptyset$, which must find phonological support in order to be licit. This is obtained by moving the PP into the specifier position of a functional projection close to the verb, from which incorporation of the preposition into the verb can take place, as in (38b&c). The derivation is formally identical to the derivation of the double-object construction proposed in Den Dikken's (1995).

(38) a. $[_{SC}$ NP$_{possessum}$ $[P_\emptyset$ NP$_{possessor}]]$
    b. V $[_{FP}$ $[P_\emptyset$ NP$_{possessor}]_i$ F ... $[_{SC}$ NP$_{possessum}$ $t_i]]$
    c. V+$P_\emptyset$ $[_{FP}$ $[_{tP}$ NP$_{possessor}]_i$ F ... $[_{SC}$ NP$_{possessum}$ $t_i]]$

The aim of Sections 2.3.1 to 2.3.3 will be to show that this analysis is not only applicable to constructions headed by inherently reflexive verbs but also to the more complex cases listed in (4), repeated here as (39), in which the simplex reflexive at first sight seems to occupy a regular argument position.

(39)   Syntactic functions of *zich* in non-inherently reflexive constructions:
    a. Complement of the locational PP in a prepositional small clause;
    b. Nominal or prepositional object of the infinitival verb in an AcI-construction;
    c. Logical SUBJECT of a small clause.

We will argue that these cases, which have proved problematic for the classical binding theory, find a more natural explanation within the approach based on the derivation in (38). The discussion in a sense completes the study in Rooryck & Vanden Wyngaerd (2011), which assigned a special status to the constructions in (39a) and did not deal with the constructions in (39b-c). Our treatment is leaning heavily on the earlier discussion of these constructions in Everaert (1981/1986). As was done in Section 2.2.3, we will not provide the full details of the formal analysis for reasons of space and simply provide the gist of proposal. Section 2.3.4 will discuss a remaining problem.

2.3.1 Logical SUBJECTs of small clauses

The easiest cases to account for are those in which a simplex reflexive functions as the logical SUBJECT of a small clause; consider the examples in (40).

(40)   • *Zich* (and *zichzelf/elkaar*) as the SUBJECT of a small-clause predicate
    a. *Zij*   wierpen $[_{SC}$ *zich/zichzelf/elkaar*   voor de trein].
       they   threw   REFL/themselves/each.other in.front.of the train
    b. *Zij*   achten $[_{SC}$ *zich/zichzelf/elkaar*   verliefd op Jan].
       they   consider REFL/himself/each.other in.love   with Jan
       'They believe themselves/each.other to be in love with Jan.'
    c. *Zij*   vinden $[_{SC}$ *zich/zichzelf/elkaar*   bekwame taalkundigen].
       they   believe   REFL/himself/each.other competent linguists
    d. *Zij*   voelden $[_{SC}$ *zich/$^{??}$zichzelf*   zwellen van trots].
       they   felt   REFL/themselves swell   with pride

The derivation of the examples in (40) with the simplex reflexive *zich* goes along the line indicated in (41). For concreteness' sake, we have adopted Bowers' (1993) and Den Dikken's (1995/2006) proposal that the small clauses in (40) are PredPs: their structure is $[_{PredP}$ ... [Pred $[_{XP}$ ...]]] with XP being the prepositional, adjectival, nominal or verbal predicate. The structure in (41a) shows that the possessive small clause is introduced as the subject of the prepositional small clause in (40a). Since the empty preposition $P_\emptyset$ must be supported by the verb, the PP $[P_\emptyset$ zij$_{possessor}]$ must be moved into the specifier of a clausal functional projection FP close to the verb, as in (41b). After incorporation of the empty proposition $P_\emptyset$, the possessor *zij* 'they'

is moved into the subject position of the clause in order to receive nominative case. The fact that the reflexive pronouns in (40) can be assigned accusative case by the main verb can be taken as an argument for assuming that the PP-predicate of the possessive small clause is sufficiently close to this verb in order to license its movement into SpecFP. Note that the representation of the derivation in (41) is again a simplification and that the actual derivation proceeds bottom-up in a strictly cyclic fashion.

(41) a.. — V [$_{PredP}$ [$_{SC}$ zich$_{possessum}$ [P$_Ø$ zij$_{possessor}$]] [Pred [$_{XP}$ ...]]].
   b. — V [$_{FP}$ [P$_Ø$ zij$_{possessor}$]$_i$ F ... [$_{PredP}$ [$_{SC}$ zich$_{possessum}$ t_i] [Pred [$_{XP}$ ...]]]]
   c. — V+P$_Ø$ [$_{FP}$ [t_P zij$_{possessor}$]$_i$ F ... [$_{PredP}$ [$_{SC}$ zich$_{possessum}$ t_i] [Pred [$_{XP}$ ...]]]]
   d. zij$_{possessor}$ V+P$_Ø$ [$_{FP}$ [t_P t_{zij}]$_i$ F ... [$_{PredP}$ [$_{SC}$ zich$_{possessum}$ t_i] [Pred [$_{XP}$ ...]]]]

The fact that the simplex reflexive normally alternates with the complex reflexive *zichzelf* and/or the reciprocal *elkaar* follows from the fact that regular noun phrases can also function as subjects of the small clauses: see, for instance, *Zij wierpen Jan voor de trein* 'They threw Jan in front of the train'. We thus predict that simplex and complex reflexives can normally both be used as logical SUBJECTs of small clauses.

2.3.2 *Zich* as the complement of a small-clause complement

The analysis of simplex reflexives as possessums in inalienable-possession constructions along the lines sketched in (38) is applicable beyond inherently reflexive constructions. It finds support in the alternation in in (42), first noted in Postma (1997), which shows that the subject *Marie* can be interpreted as the inalienable possessor of *haar voeten* 'her feet' and also as the antecedent of the simplex reflexive *zich*.

(42) a. Marie$_i$ zette de tas   voor haar$_i$ voeten   (neer).
         Marie put   the bag in.front.of her feet down
         'Marie put the bag (down) in front of her feet.'
   b. Marie$_i$ zette de tas   voor zich$_i$ (neer).
         Marie put   the bag in.front.of REFL down
         'Marie put the bag (down) in front of her.'

Examples such as (42a&b) are regularly analyzed as prepositional small-clause constructions. Such constructions differ from their adjectival and nominal counterparts in that only they allow the use of a simplex reflexive as the complement of the predicative part of the construction. On the assumption that simplex reflexives are anaphors, this would lead to the unnatural claim that the adjectival and nominal small clauses in (43b-c) differ from prepositional small clauses in that only the former constitute an anaphoric domain for the simplex reflexive in complement position; see Vat (1980), Everaert (1981/1986), Koster (1987) and Broekhuis (1987/1992) for attempts to account for the special status of prepositional small clauses.

(43) a. *De hond* legde [$_{SC}$ het bot   naast   *zich/'m*].
         the dog   put   the bone next.to REFL/him
         'The dog put the bone next to it (= the dog).'
   b. *Peter* acht   [$_{SC}$ Jan verliefd op 'm/*zich*].
         Peter considers   Jan in.love   on him/REFL
         'Peter believes Jan to be in love with him (=Peter).'
   c. *Peter* vindt [$_{SC}$ Jan een probleem voor 'm/*zich*].
         Peter considers   Jan a problem   for him/REFL
         'Peter believes Jan to be a problem for him (=Peter).'

However, the pattern in (43) can be interpreted more easily on the hypothesis that simplex reflexives are possessums in inalienable-possession constructions, as it is an established fact

that complements of adjectival and nominal small clauses differ from prepositional small clauses in that their complements cannot partake in inalienable-possession relations.

If the above is on the right track, we can assume that the simplex reflexive and its antecedent are introduced as parts of a small clause in the complement position of the prepositional small clause in (43a); this results in structure (44a). The derivation proceeds by extracting [$_{PP}$ P$_\varnothing$ NP] from the prepositional small clause in the way indicated in (38b); this results in structure (44b). After incorporation of the empty preposition into the verb, as in (44c), the antecedent of *zich* is moved into the subject position of the clause in order to be assigned nominative case, which results in the surface structure in (44d).

(44) a. — legde [$_{PredP}$ het bot [Pred [$_{PP}$ naast [$_{SC}$ zich [P$_\varnothing$ de hond]]]]]
     b. — legde [$_{FP}$ [P$_\varnothing$ de hond]$_i$ F ... [$_{PredP}$ het bot [Pred [$_{PP}$ naast [$_{SC}$ zich t_i]]]]]
     c. — legde+P$_\varnothing$ [$_{FP}$ [$_{tP}$ de hond]$_i$ F ... [$_{PredP}$ het bot [Pred [$_{PP}$ naast [$_{SC}$ zich t_i]]]]]
     d. de hond$_j$ legde+P$_\varnothing$ [$_{FP}$ [$_{tP}$ t_j]$_i$ F ... [$_{PredP}$ het bot [Pred [$_{PP}$ naast [$_{SC}$ zich t_i]]]]]

Broekhuis & Cornips (1997) proposed a similar analysis for inalienable-possession constructions such as (45) with a *dative* possessor for entirely independent reasons. The only difference between the examples in (42)/(43a) and (45) is that the possessor is assigned nominative case in (42)/(43a) but dative case in (45).[8]

(45)   Marie zette Peter$_i$ het kind op zijn$_i$ knie.   [possessive dative]
         Marie put   Peter the child onto the knee
         'Marie put the child on Peter's knee.'

Observe that the derivation in (44) is simplified in the same way as (36) and (41): again, the actual derivation proceeds bottom-up in a cyclic fashion. There is however, another simplification: the movement of [P$_\varnothing$ *de hond*] into SpecFP proceeds in one go, while Broekhuis & Cornips argue that this movement applies via an escape hatch within the prepositional small clause (comparable to SpecCP in clauses). We have ignored this intermediate movement step in (44) for reasons of simplicity of representation.

2.3.3 *Zich* embedded in an infinitival clause of AcI-construction

This section tackles the hardest nut to crack: cases in which the simplex reflexive *zich* is embedded in the bare infinitival complement of an AcI-construction. One long-standing problem for approaches that take simplex reflexives to be anaphors is illustrated in (46); given that simplex reflexives normally have a similar distribution as bound weak referential pronouns, the acceptability contrast between the sentences with *zich* is unexpected. Our account of this contrast will be based on the hypothesis put forward in Petter (1998:ch.4) that, contrary to what is normally assumed, the causative construction in (46b) is actually not an AcI-construction but a double-object construction: *Jan* is not the subject of the verbal small clause but a direct object of the matrix verb.

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[8] The reason for this difference is not fully clear. As the verb *leggen* 'to put' is taken not to have an external argument in the examples under discussion, it should be analyzed as an unaccusative verb. However, incorporation of the empty preposition apparently enriches the verbal complex *legde*+P$_\varnothing$ with the ability to assign accusative case to the subject of the prepositional small clause, *het bot*. This leaves the possessor caseless and thus eligible for assignment of nominative case.

(46) a. *Marie* hoorde [sc Jan ’r/*zich   roepen].
      Marie heard   Jan   her/REFL call
      ‘Mare heard Jan call her.’
   b. *Marie* liet [sc Jan op ’r/zich   schieten].
      Marie let   Jan at REFL/her shoot
      ‘Marie made/let Jan shoot at her.’

The greater degree of complexity is not only due to the analysis of the examples but also to the fact that there seems to be disagreement on the relevant data, which we will try to resolve by means of internet data.[9] The discussion is organized as follows: we will first discuss cases like (46), in which *zich* is a nominal or a prepositional complement of the infinitival verb; this is followed by a discussion of cases in which *zich* is part of a prepositional small clause.

1. Nominal and prepositional objects

We have already seen in the introduction that the examples in (47) pose a serious problem for approaches that take the simplex reflexive *zich* to be an anaphor: it is not evident why its distribution differs from the bound referential pronoun ’r ‘her’. The examples in (48), in which the subject of the verbal small clause is replaced by an agentive *door*-PP, aggravates this problem. We will sketch the outlines of an account of the distribution and interpretation of *zich* in these examples. based on the hypothesis that *zich* functions as the possessum in an inalienable-possession construction.

(47) a. *Marie* hoorde [sc Jan ’r/*zich   roepen].
      Marie heard   Jan her/REFL call
      ‘Marie heard Jan call her.’
   b. *Marie* liet [sc Jan ’r/*zich   wekken].
      Marie let   Jan her/REFL wake
      ‘Marie let Jan wake here up.’

(48) a. *Marie* hoorde [*zich*/*’r (door Jan) roepen].
      Marie heard   REFL/her   by Jan   call
      ‘Marie heard someone/Jan call her.’
   b. *Marie* liet [*zich*/*’r (door Jan) wekken].
      Marie let   REFL/her by Jan   wake
      ‘Marie let someone/Jan wake her up.’

The examples in (47) are normally assumed to be AcI-constructions: the bracketed phrases are verbal small clauses, in which the pronouns are assigned accusative case by the embedded infinitival verb, and the noun phrase *Jan* is assigned accusative case by the matrix verb. Since the verbal small clause constitutes an anaphoric domain for the referential pronoun ’r ‘her’, binding condition B correctly predicts that it cannot be bound by the subject of the infinitival clause, while it can be bound by the subject of the matrix clause. We have seen that the hypothesis that the simplex reflexive *zich* is anaphoric wrongly predicts that the subject of the matrix clause can also be the antecedent of the simplex reflexive. This prediction does not arise from the hypothesis that the simplex reflexive is the possessum of an inalienable-possession construction; at best, we would expect the infinitival clause to be inherently reflexive, but since

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[9] The acceptability judgments given in (46) are in fact also controversial: Reuland (2011:292) considers examples similar to (46a), in which a referential pronoun is bound by the matrix subject, marked or even unacceptable. We agree with Everaert (1986:278) that such examples are fully acceptable. One attested example is *Ze zegt: 'Dag Bob', en ze hoort hem haar teruggroeten [...]* ‘She says, “Hello Bob,” and she hears him greet her back [...] in chapter 2 of *De zesde mei* (2003) by the (Dutch) writer Tomas Ross.

roepen 'to call' and *wekken* 'to wake up' cannot be used as inherently reflexive verbs in monoclausal constructions, this is clearly excluded for independent reasons. The latter hypothesis is therefore to be preferred.

Let us now consider the examples in (48). These examples are not verbal small clauses, since arguably they do not contain an empty PRO-subject: if they did have a subject, the bracketed phrase would be the anaphoric domain of the pronoun *'r* 'her' and binding condition B would incorrectly predict that the pronoun can be bound by the subject of the matrix clause. If the bracketed structures are subjectless, the fact that *zich* is possible follows in a more or less standard way from the current hypothesis based on the derivation in (38): (i) *zich* absorbs the accusative case of the infinitival verb, so that the possessor must be assigned case by being promoted to subject; (ii) as the bracketed phrase does not have a subject position, the possessor can only be assigned case by becoming the subject of the matrix clause.

The difference between (47) and (48) runs parallel to the difference between the minimal pair in (49), taken from Everaert (1986:141). Example (49a) is of the type illustrated in (47) and is fully acceptable provided that the antecedent of *zich* is the subject of the infinitival clause, which Everaert (1986:214) claims to hold cross-linguistically: long-distance reflexivization is never allowed with inherently reflexive verbs. Example (49b) is of the type in (48) and thus differs from (49a) in that it requires the subject of the matrix clause to act as the antecedent of *zich*.

(49) a.   Marie laat   [*Jan zich*   wassen].
          Marie makes Jan REFL wash
     b.   *Marie* laat [*zich* (door Jan) wassen].
          Marie lets   REFL by Jan   wash

We will not digress on the claim that the *zich*-constructions in (48) and (49b) involve subjectless bare infinitival clauses here but refer to Everaert (1986: §7.1-3) for more relevant discussion. We will show, however, that an appeal to this claim also enables us to account for so-called inherently reflexive middle constructions with permissive *laten* 'to let'. We have already seen in Section 2.1 that standard Dutch (unlike certain dialects) does not allow inherently reflexive middle constructions such as (50b); the middle construction with *laten* in (50c), on the other hand, seems quite productive. The properties of the infinitival inherently reflexive *laten*-construction are similar to those of the infinitival *zich*-constructions in (48): *zich* absorbs accusative case of the infinitival verb and the nominal phrase *het truitje* 'the sweater' is realized as the subject of the matrix clause. The differences are (i) that the reflexive in (50c) cannot be replaced by a referential expression and (ii) that the use of an adverbial phrase like *gemakkelijk* 'easily' or *moeilijk* 'with difficulty' seems obligatory.

(50)   • Inherently reflexive middle construction in AcI-constructions
     a.   Jan wast   het truitje.   [transitive]
          Jan washes the sweater
     b.   *Het truitje* wast   *zich* gemakkelijk.   [inherently reflexive middle]
          the sweater washes REFL easily
     c.   *Het truitje* laat *zich* gemakkelijk wassen.   [inherently reflexive middle]
          the sweater lets REFL easily   wash
          'The sweater washes easily.'

Although various technical details remain to be worked out, the suggested derivations of the examples in (48) and (50c) are promising. There is, however, a potential problem for the analysis illustrated in example (51a), repeated from (46b), which seems quite similar to the examples in (47): the main difference is that we are (or rather: seem to be) dealing with a verbal small clause with a prepositional instead of a nominal complement. For completeness' sake,

we have added (51b) to show that the simplex reflexive can also be used when the (presumed) subject of the infinitival clause is not present but this is not really relevant, as this is expected.

(51)   • AcI-constructions with a prepositional object in the infinitival clause
   a.   *Marie* liet [sc Jan op *zich/'r*   schieten].
        Marie let   Jan at REFL/her shoot
        'Marie made/let Jan shoot at her.'
   b.   *Marie* liet [door Jan op *zich/*'r*   schieten].
        Marie let   by Jan   at REFL/her shoot
        'Marie made/let Jan shoot at her.'

The fact that the matrix subject *Marie* can bind the personal pronoun *'r* 'her' in (51a) is predicted by binding condition B, but that *Marie* can also be the antecedent of *zich* should be impossible, on the assumption that *zich* functions as the possessum in an inalienable-possession construction. As in the case of the examples in (47), we would, at best, expect the infinitival clause to be inherently reflexive, but since *schieten op* 'to shoot at' cannot be used as an inherently reflexive verb in monoclausal constructions, this should be excluded for independent reasons. The question is therefore: why is (51a) with *zich* acceptable on the intended interpretation?

To answer this question, we should first note that similar constructions with the simplex reflexive seem to be less acceptable with perception verbs like *zien* 'to see' and *horen* 'to hear'. Our own judgments on such cases are given in (52), but different judgments on the examples with *zich* can be found in the literature: Everaert (1986: 230) and Broekhuis (1988: 245), for instance, label an example with *zich* similar to (52b) as fully acceptable but without comparing it to its counterpart with a referential pronoun. Furthermore, Rooryck & Vanden Wyngaerd (2011: 165-8) claim that the acceptability depends on the nature of the antecedent; they label examples with proper names as fully acceptable but as marked with antecedents they consider to be less referential (*het meisje* 'the girl') or quantificational (e.g. *iedereen* 'everyone').

(52) a.   *Marie* zag [sc Jan naar *'r/$^{??}$zich*   zwaaien].
          Marie saw   Jan at himself/REFL/him wave
          'Marie saw Jan wave to herself.'
     b.   *Marie* hoorde [sc Jan naar *'r/$^{??}$zich* roepen].
          Marie heard   Jan to her/REFL   call
          'Marie heard Jan call to her.'
     c.   *Marie* hoorde [sc Jan over *'r/$^{??}$zich*   praten].
          Marie heard   Jan about her/REFL talk
          'Marie heard Jan talk about her.'

In order to see whether such examples with *zich* occur at all in spontaneous language, we performed a Google search (October 8, 2020) on the strings *[zag * naar haar/zich kijken]*, *[hoorde * naar haar/zich roepen]* and *[hoorde * over haar/zich praten]*. The results support the judgments given in (52): no cases were found with the simplex reflexive (apart from a couple of examples from linguistic sources) while we did find several cases with the referential pronoun *haar* (resp. 19, 8 and 7 hits); a manual check further revealed that the majority of these cases were indeed of the type in (52). For the time being, we conclude that examples of the type given in (52) do not occur with simplex reflexives, as predicted by the analysis based on the derivation in (38).

The acceptability contrast between example (51a) with *laten* 'to make/let' and the examples in (52) with perception verbs remains problematic, however, possibly because the apparent AcI-constructions with *laten* are special in some respect(s). This would be consistent with the conclusion in Petter (1998:ch.4) that examples of the kind in (51a) should (at least

sometimes) not be analyzed as AcI-constructions but as double-object constructions with a dative object (here: *Jan*) and a verbal complement of some kind; see Broekhuis & Cover (2015: Section 5.2.3.4, sub V) for a brief review of some of Petter's arguments for this claim. Here, we will just provide one additional argument based on an observation in Everaert (1986:§5.4.2). If the reflexives in the examples in (53) are analyzed as subjects of a verbal small clause (= infinitival clause), we expect them to surface either as a complex or as a simplex form; cf. Section 2.3.1. This prediction is correct for the constructions with perception verbs but not for those with the causative verb *laten*.

(53) a. *Jan* zag *zichzelf/zich* zwemmen (op TV).
          Jan saw himself/REFL swim   on TV
    a′. *Jan* laat   *zichzelf/*zich* zwemmen.
          Jan makes himself/REFL swim
     b. *Jan* hoorde *zichzelf/zich*   over Peter   praten.
          Jan heard   himself/REFL   about Peter talk
    b′. *Jan* laat   *zichzelf/*zich* over Peter   praten.
          Jan makes himself/REFL about Peter talk

The contrast between the primeless and primed examples would follow immediately if we assume that the latter are not AcI but double-object constructions, as indirect objects normally cannot surface as simplex reflexives; cf. example (3b).

2. Prepositional small clauses

The discussion above has shown that *zich* cannot take an antecedent in the matrix clause when it occurs as the nominal/prepositional complement of an (in)transitive infinitival clause in an AcI-construction with a perception verb; see (47) for cases with a transitive infinitival complement and (52) for cases with an intransitive infinitival with a PP-complement. This section will show that the results are quite different when the infinitival clause of the AcI-construction is headed by an unaccusative verb selecting a prepositional small clause. First, consider the simple clauses in (54). The unaccusative clause with a directional prepositional small clause in (54a) differs from the intransitive clause with a PP-complement in (54b) in that its subject originally occupies a VP-internal position, namely the specifier position of the small clause.

(54) a. Jan_i is [$_{VP}$ [$_{SC}$ t_i naar haar toe] gekomen].   [adpositional SC]
          Jan is   to her   TOE come
          Jan has come towards her.'
     b. Jan heeft [$_{VP}$ naar haar gekeken/geroepen].   [PP-complement]
          Jan has   to her   looked/called
          'Jan has looked at/called to her.'

The AcI-constructions in (55) take the infinitival counterpart of example (54a) as their complement. Example (55a) with the causative/permissive verb *laten* allows the matrix subject to act as the antecedent of both the referential pronoun *'r* and the simplex reflexive *zich*. This need not surprise us given that this also holds for the examples in (51a). However, that the same holds for example (55b) with the perception verbs *zien* 'to see' and *horen* 'to hear' is astonishing, given that there is no clear empirical evidence that the simplex reflexive *zich* can occur in the examples in (52). For completeness' sake, we note that a fair number of cases of the kind in (55b) can be found on the internet, which indicates that the acceptability contrast between the examples in (52) and (55b) is real.

(55) a. *Marie* liet [Jan naar *zich/'r* toe komen].
      Marie let Jan on her/REFL TOE come
      'Marie made/let Jan come toward her.'

    b. *Marie* zag/hoorde [Jan naar *zich/'r* toe komen]
      Marie saw/heard Jan on her/REFL TOE come
      'Marie saw/heard Jan come toward her.'

That the referential pronoun *'r* can be bound by *Marie* in the examples in (55) is once more predicted by binding condition B, but it is less clear why *Marie* can also be the antecedent of the simplex reflexive of *zich*, contrary to what seems to be the case in (52). To account for this, we propose (56) as the main observational generalization:

(56)   **Simplex reflexives in bare infinitival complements of AcI-constructions**: The subject of a bare infinitival clause in an AcI-construction blocks the presence of *zich* if it is an external (agentive) argument of the infinitival verb but does not if it originates as the external (theme) argument of a prepositional small clause.

Now consider again the derivation underlying inalienable-possession constructions, repeated here as (57), where $NP_{possessum}$ stands for the simplex reflexive.

(57) a. $[_{SC}\ NP_{possessum}\ [P_{\varnothing}\ NP_{possessor}]]$
    b. $V\ [_{FP}\ [P_{\varnothing}\ NP_{possessor}]_i\ F\ ...\ [_{SC}\ NP_{possessum}\ t_i]]$
    c. $V+P_{\varnothing}\ [_{FP}\ [_{tP}\ NP_{possessor}]_i\ F\ ...\ [_{SC}\ NP_{possessum}\ t_i]]$

The impossibility of the simplex reflexive in the examples in (52) is expected: the three derivational steps in (57) must take place before insertion of the external argument of the infinitival V, since we have seen that they result in valency reduction (that is, the suppression of the external argument of V). This is due to the fact that $V+P_{\varnothing}$ cannot assign case to the possessor. In other words, the examples with *zich* in (52) are unacceptable because we would expect the subject of the bare infinitival clause, *Jan*, to be the antecedent of *zich*, and not the subject of the matrix clause, *Marie*. The derivation of the examples in (55) is crucially different in that the subject of the bare infinitival clause is not an external argument of the verb but the SUBJECT of the prepositional small clause. This implies that it is already present before the derivational step in (57b) takes place: the predicate $[P_{\varnothing}\ NP_{possessor}]$ crosses the logical SUBJECT of the prepositional small clause, *Jan*, into some position from which incorporation of the empty preposition $P_{\varnothing}$ into V is possible. We assume that the V in question is the matrix verb, as this would immediately account for the fact that the possessor (i.e. antecedent) of *zich* surfaces as the subject of the matrix clause. Although the details of the analysis may need further refinement, the main conclusion is that the rationale behind generalization (56) is that the derivation in (57) can only affect the external argument of the verb supporting the empty preposition; the argument structure of the complement of this verb (here: the prepositional small clause) remains intact.

2.3.4 A remaining problem: adverbial locational PPs

Adverbial prepositional phrases normally cannot take a simplex reflexive as their complement. Some examples of adverbial PPs of various kinds are given in (58).

(58) a. *Jan* is volgens *zichzelf/*zich*   erg aardig.
         Jan is according.to himself/REFL very kind
     b. *Jan* spreekt namens *zichzelf/*zich.*
         Jan speaks   for himself REFL
     c. *Jan* discussieert vaak   met *zichzelf/*zich.*
         Jan discusses   often with himself/REFL
     d. *Jan* werd door *zichzelf/*zich* verdedigd.
         Jan was   by himself/REFL   defended
     e. *Jan* hielp   haar ten koste   van *zichzelf/*zich.*
         Jan helped her at the expense   of himself/REFL

Adverbial PPs differ in this respect from predicative PPs in small-clause constructions; cf. Section 2.3.2. Example (59) shows again that the complement of the prepositional head of the small clause can be a simplex (but not a complex) reflexive when it refers to the subject of the clause.

(59)   *Jan* legde [SC het boek voor   *zich/*zichzelf*].
         Jan put   the book in.front.of REFL/himself
         'Jan put the book in front of him'

Now consider example (60). Although this example also involves a locational PP, it is generally not analyzed as involving a small-clause construction, but as a construction involving the adverbial PP *voor/achter zich.* The reason for this is that the PP does not seem to be predicative in nature and there is no (understood) theme argument that is located in the place referred to by the PP. If correct, this shows that certain adverbial locational PPs are special in that they allow a simplex reflexive as their complement.

(60)   *Jan* keek   voor/achter/naast   *zich/*zichzelf.*
         Jan looked in.front.of/behind/next.to REFL/himself
         'Jan looked in front of/behind/next to himself.'

Other potential examples of this kind are given in (61). That the PPs in these examples are adverbial can perhaps be motivated by the fact that they are optional, although one should realize that small-clause predicates can sometimes also be omitted: cf. *Jan veegde de vloer (schoon)* 'Jan swept the floor (clean)'. Whether or not omission is possible may simply depend on the interpretability of the resulting sentence: compare *Jan veegde de bezem *(kapot)* 'lit.: Jan swept the broom (broken)'. For the sake of the argument, however, we will assume that we are indeed dealing with adverbial PPs in these examples.

(61) a. *Jan* zag   het boek (voor *zich/*zichzelf*)
         Jan saw   the book in.front.of REFL/himself
         'Jan saw the book in front of him.'
     b. *Jan* hoorde iemand   (achter *zich/*zichzelf*).
         Jan heard   someone   behind REFL/himself
         'Jan heard someone behind him.'

It is not clear how widespread the distribution of adverbial PPs of the form *P + zich* really is. Rooryck & Vanden Wyngaerd (2011: 156) claim that the adverbial PP can also be temporal but the only example they provide, given here as (62), may in fact involve a temporal small clause predicate; the PP seems virtually obligatory and locates the theme, *niemand,* in a specific temporal interval following the presidency of the person referred to by the subject. Furthermore, the example is somewhat special in that *dulden* normally selects a locational PP when the object refers to a person, as is clear from the paraphrase of this verb given in the *Van*

Dale dictionary: *het bijzijn verdragen van* 'to endure the presence of'. This would suggest that (62) involves a kind of metaphorical extension of the normal locational meaning of *dulden*. Since we are not aware of other clear cases of temporal adverbial PPs from the literature, it seems justified to say that the phenomenon is restricted to locational adverbial PPs.

(62)   *De president* duldde   niemand (*?na *zich*).
           the president tolerated nobody   after REFL
           'The president didn't tolerate that anyone would succeed hem.'

Constructions with an adverbial PP of the form *P + zich* are also restricted in that they can modify only a small number of verbs. The examples given above in fact seem to exhaust the possibilities: the construction is confined to the perception verbs *zien* 'to see', *horen* 'to hear', and *kijken* 'to look' (the more agentive counterpart of *zien*). Since the acceptability of cases like (60) and (61) is a long-standing problem, which has not received a principled explanation in the literature so far, we will provisionally assume that these examples are idiomatic in nature. If correct, this leads to the conclusion that simplex reflexives can *only* occur as complements of small clause-PPs. Note in passing that this conclusion is not commonly found in the literature due to the fact that many researchers fail to distinguish locational small clause-PPs from locational adverbial PPs. Rooryck & Vanden Wyngaerd (2011: §5.2) are a fairly recent example of this; as a result, they have to claim that *zich* can appear in locational (and temporal) adverbial PPs, which leads to an analysis for such "adverbial" cases that is completely out of line with the derivation in (38), which they promote for inherently reflexive constructions. They analyze *zich* in these cases as an anaphor -without noticing that this leaves the unacceptability of *zich* in the adverbial PPs in (58) a mystery- at the cost of the empirical scope of their proposal.

     We conclude this section by noting that there are more examples in which the collocation P + *zich* is of an idiomatic nature. Some very common examples are given in (63); see Everaert (1986:68) and Rooryck & Vanden Wyngaerd (2011: 155).

(63) a.   Dat spreekt voor zich.
           that speaks   for REFL
           'That goes without saying.'
     b.   Dat is een probleem op zich.
           that is a problem   on REFL
           'That is a problem in itself.'
     c.   Op zich is er   niets   aan de hand.
           on REFL   is there nothing to the hand
           'As such, there is nothing wrong.

Everaert notes that these cases are special in that *zich* is stressed and can be replaced by *zichzelf* (which can easily be confirmed by a cursory inspection of internet data), and suggests that we may be dealing with more recent borrowings from German, in which the simplex form *sich* functions as a regular (reflexive or reciprocal) anaphor.

2.4   Conclusion

This article is about the distribution of the Dutch simplex reflexive *zich*, which has long been considered a problem for canonical binding theory. It argues that this is not justified, as simplex reflexives are not covered by this theory: Dutch simplex reflexives are not bound but inalienably possessed by their antecedent. It has been shown that the distribution of simplex reflexives receives a natural and almost complete explanation if we adopt the analysis of inalienable possession constructions proposed in Broekhuis & Cornips (1997); the only remaining potential problem is posed by the in all likelihood idiomatic constructions in which *zich* is part of an adverbial PP.

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