

Restrictions on reflexive and anti-causative readings in nominalizations and participles

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Abstract

This article discusses the absence of reflexive or self-caused readings in certain types of de-verbal nominalizations and participles, like *the hanging of the suicidal patient* and *The suicidal patient was hanged yesterday*. I argue that the “anti-reflexive” reading is not triggered by the presence of a subject PRO or pro, but rather by the absence of reflexive marking, i.e. overt marking that functions to recode lexically specified co-reference relations between the arguments of a predicate. I argue that nominalizations and participles are structurally fairly rich, and that the relation between “full” verbs and nominalizations and participles is fairly transparent. I further argue that the verb-phrase needs to be decomposed into at least two subparts/subevents and that each sub-event carries information about the participants involved in it (as in e.g. Pustejovsky 1995 and Ramchand 2008b). I will further argue that there basically is no difference between using a reflexive pronoun to create a reflexive reading and using a reflexive pronoun to form an anti-causative reading – it’s all about re-coding the co-reference relations between the arguments of a predicate. The article also shows that phenomena like participle formation, nominalizations and argument “reduction” can all be handled in the syntax if we follow the so-called superset principle of lexical insertion. No generative lexicon is therefore needed. This article focuses on data from Swedish, but comparisons will be made with English.

1 Introducing the phenomena

Baker et al. (1989) point out that reflexive, or self-acting/self-caused readings are unavailable in eventive passives, as illustrated below for English:

- (1) a. The children are being dressed \neq The children are dressing themselves.
- b. The climbers are being secured with a rope \neq The climbers were securing themselves.

Rather, the passive sentences in (1) seem to mean something like:

- (2) a. Someone is dressing the children
- b. Someone is securing the climbers with a rope

This is one of the main reasons why Baker et al. (1989) chose to analyze the passive morpheme as an incorporated external argument. The reflexive reading should be

unavailable since it wouldn't be possible to move a co-indexed argument over the incorporated external argument (which should follow from either Principle B or Principle C of Chomsky 1981).

Kratzer (forthcoming) notes that reflexive/self-caused interpretations are equally unavailable in eventive nominalizations:

- (3) a. The hanging of the suicidal patient forced the hospital to check their security routines.
b. The article praised the expeditious securing of the climbers.
- (4) a. the hanging of the suicidal patient = someone hanged the suicidal patient (\neq the suicidal patient hanged himself)
b. the expeditious securing of the climbers = someone secured the climbers (\neq *the climbers secured themselves)

This article focuses on Swedish, where the facts seem to mirror those of English more or less, and whatever conclusions one might reach from the Swedish facts can easily be transferred to English. As shown below, for many predicates, a reflexive interpretation is never available when the verb surfaces as a passive participle, not even in typical “adjectival” contexts.

- (5) Han blev hängd
he BLI.PAST hangPASS
'He was hanged'

The copula used in (5), *bli*, triggers event denoting readings in almost all contexts, i.e., *bli* followed by a passive participle has the same event-implications as a simple tensed verb (see e.g. Lundquist 2008 for discussion). In these contexts, just as in English, no reflexive interpretation is available. As shown in (6) and (7), no reflexive/self-caused interpretation is available either when the stative copula *vara* ('be') is used, or when the participle is used attributively either, i.e. neither (6) nor (7), can be used in a suicide-context:

- (6) Han är hängd nu
He VARA. PRES hang.PASS now
'He is hanged now/ He has been hanged now'
- (7) Den hängda mannen
the hang.PASS.DEF man.DEF
'The hung man'

However, certain verbs have corresponding participles that lack event implications, i.e., participles that only denote a state (see Kratzer 2000, Embick 2004 and Lundquist 2008 on so called target state participles, or stative participles¹). When the stative participles appear in typical “adjectival” contexts, a self caused interpretation is possible:²

¹I will use the term stative participles in this paper. Note however that this term does not refer to participles formed from stative verbs, like *the hated man*, which tends to behave like eventive participles.

²In this paper, I will use the adverb *fortfarande* ('still') to diagnose stativity in participles. See Kratzer (2000) for discussion on this diagnostics.

- (8) a. Han är fortfarande fastkedjad vid staketet
 he is still stuck.chain.DE at fence.DEF
 ‘He is still chained to the fence.’
 b. den fastkedjade mannen
 the stuck.chained man
 ‘the chained man’

The person in (8) might very well have chained himself to the fence - the sentence and DP above simply give no information about who did the chaining. Note that the adverb *fortfarande* (‘still’) in (8-a) forces a stative reading on the participle. Note further that this adverb is incompatible with the participles formed from a verb like *hänga* (‘hang’) (see Lundquist 2008 on what types of verbs fail to form stative participles):

- (9) Han är (*fortfarande) hängd
 he VARA.PRES (*still) hanged
 ‘He is still hanged’

Note further that the self-caused/reflexive reading is impossible with the eventive copula *bli*, even if the participle has a stative reading in other contexts:

- (10) Han blev fastkedjad vid staketet
 he BLI.PAST stuck.chained at gate.DEF
 He was (being) chained to the gate

The difference between (8-a) and (10) is striking – the former is straightforwardly felicitous in a context when someone has chained himself to the fence, while the latter just isn’t. In short, self-caused/reflexive readings are only licit when no event-entailments are present. Many verbs, like *hänga*, cannot form participles that lack event entailments, and can therefore never get a reflexive interpretation, not even in very adjectival contexts. The ‘eventive’ copula *bli* selects for event denoting participles in most contexts, and hence the string BLI - PARTICIPLE is not compatible with a reflexive interpretation (see Lundquist 2008 for discussion on the selectional restrictions on *bli*).

For nominalizations, the same effect obtains: nominalizations based on transitive verbs are only compatible with reflexive/self-caused interpretations once no event entailments are present. Take the nominalizations formed from the verb *hänga* (‘hang’): for whatever reason this verb has only an event denoting nominalization.³ The nominalization in (11) can only have a transitive reading, i.e., a reading that is incompatible with a suicide interpretation (even in contexts when a suicide interpretation would be pragmatically more felicitous):

- (11) Hängningen av den självmordsbenägna patienten
 hang.NOM.DEF of the suicidal patient.DEF
 ‘The hanging of the suicidal patient’

³Below just one type of nominalization is exemplified, but other nominalized forms of *hänga* also only give event-denoting readings. For other verbs, the choice of nominalization can influence the interpretation, as will be returned to in section 6.

To account for the differences between stative and eventive participles and nominalizations, a lexicalist solution has been proposed by e.g. Baker et al. (1989) for participles. According to such a solution, stative participles are formed in the lexicon, before any arguments are present, while eventive participles are formed in the syntax, presumably after argument structure has been added. During the last 20 or so years, many analyses have tried to take care of basically all types of nominalizations and participles in the syntax, in the spirit of Abney (1987). According to analyses following that trend, the participle/nominalizing morphology is merged in the syntax – before the external argument has been introduced in the stative cases, but after in the event-denoting cases (see e.g. Embick (2004) for an analysis of different types of participles). My analysis will be in spirit of the Abneyian/syntactic solution, but I will argue against the presence of an external argument in event-denoting nominalizations and participles.

The claims I want to make in this paper are the following:

1. There is no evidence for a PRO/pro or syntactically present impersonal pronoun in passive participles and event denoting nominalizations.
2. The absence of reflexive interpretation in eventive passives and nominalizations is due to the absence of reflexive marking (i.e., a violation of Reinhart and Reuland (1993)'s condition B: A reflexive predicate is reflexive-marked).
3. Co-reference relations between the arguments of a predicate are lexically specified – hence presence/absence of syntactic arguments is of little importance when it comes to encoding anti-reflexivity.
4. A reflexive argument functions to re-code the co-reference relation between arguments, i.e. mark that the arguments are co-referent (differences between simplex reflexives (*sig*) and complex reflexives (*sig själv*) will not be discussed in great detail in this article).
5. The binding conditions are different for reflexives in argument positions and reflexives in non-argument positions (i.e., possessive reflexives, reflexives in complements of prepositions) (see Pollard and Sag 1992 and Reinhart and Reuland 1993)
6. A decomposed verb phrase + a specific set of rules governing lexical insertion easily handles the differences between eventive and stative passives, and eventive and resultative nominalizations.

My analysis will be expressed in a new approach to morphosyntactic/semantic interpretation and lexicalization called Nanosyntax, which has developed at the University of Tromsø during the last couple of years (see e.g. Caha 2009 and Starke (2009)). Some basic principles of Nanosyntax will be introduced in section 4.

1.1 Structure of the paper

In the next section I will show that there are no good arguments for the presence of a PRO or pro external argument in most types of nominalization and participle. Most importantly, there is no difference between eventive and stative/result participles/nominalizations with respect to the syntactic presence or absence of PRO or pro. Section 3 gives a brief description of reflexives in Swedish, mainly focusing on reflexive

personal pronouns in object position, and how they differ from reflexive possessive pronouns. This section shows that you need a special set of rules for dealing with reflexive marked predicates, in the vein of Reinhart and Reuland (1993). Section 4 introduces a theory that can handle the reflexivity issue in nominalizations and participles that doesn't make a distinction between a lexical and a syntactic module (i.e., Nanosyntax). It further spells out the relation between argument structure and event structure. Section 5 explains the restrictions on reflexive interpretations in nominalizations and participles, using the toolbox of Nanosyntax. Section 6 highlights a couple of insights we can reach concerning argument structure, participles and nominalizations, once we have the correct analysis of argument structure and lexical insertion, as laid out in section 5. Section 7 concludes the paper.

2 Against PRO/pro in nominalizations and participles

As will be shown in section 2.1, there are some quite clear indications that there is no syntactically present subject/external argument in the types of nominalizations that do not contain an accusative marked internal argument (i.e., in derived nominals or mixed nominalizations, in the terminology of Chomsky 1970). However, for passive (past) participles, it is harder to prove either the absence or the presence of an external argument on syntactic or semantic grounds, as will be shown in section 2.2. Most facts however point to the conclusion that there is no external argument present in passive participles either. This will force us to find a way of explaining the Anti-reflexive readings in passives and nominalizations that is not based on the binding theory of Chomsky (1981).

2.1 Arguments against PRO in nominalizations

The presence or absence of PRO in nominalizations has been discussed previously in the generative literature in e.g. Abney (1987) and Alexiadou (2001), and the general conclusion has been that no external argument is present in nominalizations - not taking ACC-ing and GEN-ing into consideration. (Abney is not completely clear when it comes to the presence/absence of external arguments in mixed nominalizations, i.e., *-ing of*). I will below compare Swedish nominalizations with control infinitives, and show that whereas control infinitives always have a PRO in the subject position, nominalizations don't. I will look at two different contexts where this is apparent.

2.1.1 No obligatory control

The following two examples show that the implicit subject in an infinitival clause is necessarily controlled by the experiencer object in the matrix clause:

- (16) a. Att PRO_{i,*j} ständigt läsa skräplitteratur gör mig_i galen.
 To PRO_{i,j} constantly read.INF crap-literature does me_i crazy
 'It drives me crazy to constantly read crap literature.'
 b. Att PRO_{i,*j} ständigt festa gör mig_i galen.
 To PRO_{i,*j} constantly party.INF does me_i crazy

‘It drives me crazy to party constantly.’

In nominalizations however, the interpretation of the implicit external argument is much more free. Here the main clause object is not necessarily interpreted as co-referent with external argument of nominalization:

- (17) a. [Detta ständiga läsande av skräplitteratur] gör mig galen.
 This constant read.NOM of crap-literature does me crazy
 ‘This constant reading of crap-literature drives me crazy’
 b. [Detta ständiga festande] gör mig galen.
 This constant party.NOM does me crazy
 ‘This constant partying drives me crazy’

The reader in (17-a) and the “party-goer” in (17-b) might be some arbitrary person, or more likely, your son or daughter, whose constant partying is just driving you crazy. Note that the reader/party-goer needn’t be an arbitrary referent (i.e., PRO_{arb}) - rather, a specific referent can be intended, and this referent is picked up from the general context. Note that PRO_{arb} is licensed in some infinitives as well, as in *to only read crap-literature is bad*, which is why we don’t want to use PRO_{arb} contexts when we compare nominalizations and infinitives.

The following pair, which contain a weather-verb with a dummy subject, also makes the point that no explicit controller is needed in nominalizations (even in non- PRO_{arb} -contexts.) :

- (18) a. Det ständiga snöandet gör mig galen.
 The constant snow.NOM.DEF does me crazy
 ‘The constant snowing drives me crazy.’
 b. *Att ständigt snöa gör mig galen.
 To constantly snow.INF does me crazy
 ‘*To constantly snow drives me crazy.’

The experiencer object in (18-b) is not a potential controller of the subject position in the infinitive, and therefore the derivation crashes. In (18-a) however, no control relation needs to be established, and the absence of a potential controller is unproblematic.⁵

In other words, there is no need for a syntactically present controller of the external argument in nominalizations, which I take to indicate that there simply is no position that needs to be controlled in the nominalization.

2.1.2 Controller in Object Control Infinitives

The point that was made above for infinitives and nominalizations in subject positions can also be made for infinitives and nominalizations in complement position. As discussed in Rizzi (1986), many languages require an overt controller in object control infinitives, as shown below for Swedish:

- (19) a. de vill förbjuda ?*(folk) att sprida rasistisk propaganda
 they want forbid.INF ?*(people) to spread.INF racist propaganda

⁵Note that dummy subjects of weather verbs can control in other contexts, e.g. *Efter att ha snöat i fem dagar brjade det plötsligt att regna* (“After having snowed for five days, it suddenly started to rain”).

- ‘They want to forbid people spreading racist propaganda’
- b. De tillåter ?*(folk) att använda kondom i särskilda fall.
They allow ?*(people) to use.INF condom in certain cases
‘They allow people to use a condom in certain cases.’
- c. De gör allt för att hindra *(någon) att föra in
They do everything for to hinder.INF *(someone) to bring.INF in
kärnvapen i Mellersta Östern
nuclear-weapons in the Middle east
‘They do everything to hinder people bringing in nuclear weapons to the Middle east.’

The infinitive can be replaced with an event denoting nominalization. In this case, no overt controller is needed (in fact, no overt controller is possible, which I take to follow from independent syntactic constraints):

- (20) a. De vill förbjuda spridandet av rasistisk propaganda.
They want forbid.INF spread.NOM.DEF of racist propaganda
‘They want to forbid the spreading of racist propaganda’
- b. De tillåter användandet av kondom i särskilda fall.
They allow use.NOM.DEF of condom in certain cases
‘They allow the use of condom in certain cases.’
- c. De gör allt för att hindra införandet av
They do everything for to hinder.INF in.bring.NOM.DEF of
kärnvapen i Mellersta Östern
nuclear weapons in the Middle east
‘They do everything to hinder the bringing in of nuclear arms in the Middle east’

Again, I take the absence of an overt controller to indicate that no that there is no position within the nominalization that needs to be controlled.

2.1.3 Against *pro*

In last section I showed that there is no implicit element in the nominalizations that needs an syntactically present controller. It is however still possible that the nominalizations contain a null pronominal element that does not require to be controlled, i.e. *pro*. However, one piece of data indicates that this is not the case either. If the external arguments in nominalizations were a *pro*, we would expect that it would be able to license reflexives in the complement of the nominalized verb. However, as is shown below, this is not the case.

- (21) a. de vill förbjuda *(folk) att sprida sina egna
They want forbid.INF *(people) to spread.INF REFL.POSS.PL own
åsikter.
opinions
‘They want to forbid people to spread their own opinions.’
- b. *de vill förbjuda spridandet av sina egna åsikter.
They want forbid.INF spread.NOM.DEF of REFL.POSS.PL own opinions
‘They want to forbid the spreading of their own opinions’

(21-b) is ungrammatical in the reading where the reflexive possessor is bound by the external argument of the nominalization, and slightly marginal when the reflexive possessor is bound by the matrix subject.

It should be noted that reflexive pronouns marginally can be found in the complement of nominalizations, even when no antecedent is syntactically present:

- (22) Det ständiga hyllandet av sig själva på sina egna
 the constant celebrate.NOM.DEF of REFL self.PL on REFL.POSS.PL own
 ledarsidor – det är det som stör mig mest.
 editorial.pages – it is it that bothers me most
 ‘The constant celebrating of themselves on their own editorial pages, that is what bothers me the most’

I will take this to be an instance of some kind of logophoric binding, and I will not in this paper discuss whether this is a syntactic operation or not (note also that there are quite a lot of Swedes who wouldn’t find (22) grammatical). What is important here is that the reflexive (or the two reflexives) in the complement could not be being bound by the a pro/PRO that occupies the external position of the verb in the nominalization. We can find evidence for this in the following piece of data, where a reflexive occurs in the complement of *picture*-noun, and no binder is present:

- (23) De utmanande bilderna på sig själva på sina egna hemsidor – det är det som
 stör mig mest.
 ‘The daring pictures of themselves on their own webpages – that is what bothers me the most’

Why logophoric binding is not possible in (21-b) is a separate issue (the most probable explanation is the presence of a strong logophoric center in form of the subject of the matrix clause, which is absent in (23)). The important point here is that the availability of what seem to be unbound reflexives is not conditioned by eventive nominalizations (and the presumed subject contained in them).

However, even when no other obvious controller is present, the binding of a possessive reflexive in the complement of a nominalization in subject position is marked or ungrammatical, which is shown in (24). Here the intended binder is introduced in the first independent clause (24-a), and the binding of the possessive reflexive in (24-b) is marked or ungrammatical:

- (24) a. Hans fick mycket kritik på metod-delen.–
 ‘He received a lot of criticism on the method-part –’
 b. Användandet av ?*sina vänner som informanter gav upphov
 use.NOM.DEF of REFL.POSS.PL friends as informants gave rise
 till vissa problem, enligt kommitén.
 to certain problems, according committee.DEF.
 int. ‘Using his friends as informants gave rise to certain problems, accord-
 ing to the committee’

In (24-b), a personal pronoun would be felicitous (dropping the possessor altogether would be fine as well).

2.2 PRO or pro in Passive participles?

It is harder to argue against (or even for) the presence of an external argument in passive participles. One of the main arguments for having a pro/PRO in passives is the fact that the demoted external argument seems to be able to control a PRO in an infinitival purpose or rationale clause in the complement of the passive participle (25-a). This is not possible with clearly agent-less unaccusative verbs, as in (25-b) (see discussion in e.g. Landau 2000 and references therein):

- (25) a. The ship was sunk (to PRO collect the insurance).
 b. *The ship sunk (to PRO collect the insurance).

However, as been pointed out by Williams (1985) and Lasnik (1988), control into purpose/rationale clauses is also seen in contexts where either there is no passivized verb in the matrix clause (26-b), or where the controller is not the same as the demoted external argument as in (26-b):

- (26) a. The boat was sunk by the torpedo_i [PRO_j to prove a point](from Lasnik 1988)
 b. The thermostat is on low [PRO to save money] (from Williams 1985)

Further, as been shown by Lasnik (1988), there are also cases where implicit control is straightforwardly ungrammatical, as in (27):

- (27) *The ship was sunk to become a hero

If control into rational/purpose clauses is not a good test for the presence of an external argument, then what is? As has been shown above, eventive nominalizations are necessarily non-reflexive, even though no external argument is syntactically present. Given that, there is no longer any good reason to take the observation in Baker et al. (1989) about the forced non-reflexive readings in eventive passives as an argument for there being a PRO, pro or impersonal pronoun present in these cases. For Swedish, there is basically only one argument against a syntactically present external argument in eventive passives, and that is the fact that reflexive possessive pronouns in PP's cannot be bound by the demoted external argument, as seen in the following pair:

- (28) a. Han åt upp hela tårten på sin födelsedag
 he ate up whole cake on REFL.POSS birthday
 'He ate the whole cake on his birthday'
 b. *Hela tårten blev uppäten på sin födelsedag
 whole cake.DEF was up.eaten on REFL birthday
 int. "The whole cake was eaten up on his birthday" (i.e., he ate the whole cake on his birthday)

It is however not quite clear what this tells us, given that reflexives are usually bound by syntactic subjects anyway, or at least something highly "topical". However, even in impersonal passives, no binding from the implicit subject is possible (with the caveat that Swedish doesn't easily allow the participial passive in impersonal passives):⁶

⁶It should also be noted that pronominal possessor isn't easily interpreted as co-referent with the demoted external argument. This is in general the case for both pronouns and full DP's in the complement of both

- (29) ?På den tiden blev det dansat en hel del på deras/*sina
 on that time BLI.PAST it dance.PART a whole lot on their/REFL.PLUR
 födelsedagar
 birthdays
 int. “In those days, people danced a lot on their own birthdays”

In short, we have no waterproof evidence against a pro/PRO in passive participles, but neither do we have any arguments for it. In Baker et al. (1989), it was argued that the participial morphology itself was the phonological realization of an external argument. As argued in Lundquist (2008), passive participles in attributive position are “verbal participles” (i.e., have the same event entailments as participles in passives). Unaccusative verbs form participles that are used attributively, and in these cases, it is clear that the *-ed*-suffix cannot be the realization of a demoted external argument since there was never any external argument there to begin with:

- (30) a. de nyligen(/*fortfarande) anlända männen
 the recently(/*still) arrived men
 b. de nyligen sjunkna(/*fortfarande) skeppet
 the recently(/*still) sunk ship

Note that the adverbial is not compatible with the participles above, which indicated that these participles are event denoting. Note further that the participle in (30-b) is unambiguously formed from an intransitive verb *sjunka* and not the transitive variant *sänka*.

From now on, I will simply take it that no external argument is syntactically present in passive participles.

passive participles and nominalizations. With the right context however, it is always possible to get a DP or pronominal possessor to be co-referent with the demoted agent, as shown in (i-a) and (i-c) below (note the sharp ungrammaticality of the corresponding active clauses). Note that the possessive pronoun in (c) would come out as a pronoun rather than an anaphor in Swedish, but as an anaphor in (b) and (d).

- (i) a. John must have been murdered in the murderers own house.
 b. *He_i murdered John in the murderer’s_i own house.
 c. Van Gogh usually painted out in the fields, but this painting was painted in his/the artists own garden.
 d. *Van Gogh usually painted out in the fields, but he_i painted this painting in the artists_i own garden.

In nominalizations, we get the similar results:

- (ii) Under framförandet av en av Dylans/hans/artistens största hits buade fansen
 during perform. NOM.DEF of one of Dylan’s/his/artist. DEF.POSS greatest hits booed fansDEF
 During the performance/performing of one of Dylan’s/his/the artist’s greatest hits, the fans booed.

Dylan might very well be the performer in the example above. It does sound slightly clumsy when the name Dylan appears in the possessive, but not ungrammatical, I think. There’s anyway a sharp difference between the nominalized version and a full clause (*när Dylan_i framförde en av Dylans_{*i,j}/hans_{*i,j}/artistens_{*i,j} största hits...* ‘When Dylan performed one of Dylan’s/his/the artists greatest hits...’). The judgments in (i) and (ii) are a bit shaky (i.e., there is some variation w.r.t. the judgements), which is why I chose to put this discussion in a footnote.

2.3 Consequences

Now that we have shown that there is no external argument present in eventive nominalizations and passive participles, we have to come up with a story for why no reflexive/self-caused reading is possible in eventive nominalizations and participles. I will claim that the forced transitive readings simply follow from Condition B of Reinhart and Reuland (1993):

- (31) *Condition B*
A reflexive predicate is reflexive-marked

In section 4 I will sketch a model from which Condition B as stated above follows, and I will also show why reflexive readings actually are possible in cases where no reflexive marking is present (i.e., stative participles and nominalizations). I will also show that no separation between a lexical and a syntactic module is necessary to explain these facts.

First I will however give a quick overview of anaphora in Swedish, which will make clear that a special set of rules is necessary for capturing the distribution of direct object anaphora (i.e., the anaphora that give rise to “reflexive predicates”).

3 Quick overview of reflexives in Swedish

In the previous section I showed that there is no good evidence for a *pro* or *PRO* external argument in either participles or nominalizations, and that therefore we cannot use the classic binding theory to rule out the self-caused/reflexive readings. What we need is instead a separate part of the binding theory (or a reformed more general theory) that takes care of co-reference relations between the arguments of a predicate, as in Reinhart and Reuland (1993) or Pollard and Sag (1992). In this section I will give further evidence that points to the conclusion that we need special rules that handle co-reference relations between arguments of verbs, here focusing on object and subject control sentences.

It's easy to see that an implicit *PRO* subject always binds an anaphor in a direct object position, as can be seen in e.g. object control (32) and subject control (33) sentences. Observe that it doesn't make any difference if the reflexive is simplex (*sig*) or complex (*sig själv*).

- (32) a. *Han tvingade mig_i att PRO_i tvätta sig (själv) .
he forced me to PRO wash REFL.3 (self)
Int. 'He forced me to wash him.'
b. Jag tvingade honom_i att PRO_i tvätta sig.
I forced him to PRO wash REFL.3
'I forced him to wash himself'
- (33) a. Han_i lovade mig att PRO_i tvätta sig(self)
He promised me to PRO wash REFL.3
'He promised me to wash himself.'
b. *Jag_i lovade honom att PRO_i tvätta sig(self)
I promised him to PRO wash REFL.3

Int. ‘I promised him that I would wash him.’

It is also clear that a non-reflexive object can never give rise to a reflexive reading, as is shown below:

- (34) a. Han_i tvingade honom_j att PRO_j tvätta honom_{i/*j/k}.
 He forced him to PRO wash him
 ‘He forced him to wash him.’
 b. Han_i lovade mig att PRO_i tvätta honom_{*i/j}
 he promised me to PRO wash him
 ‘He promised me to wash him.’

The data presented in (32-a) to (34) are captured in the binding theory as proposed by Reinhart and Reuland (1993)⁷:

- (35) 1.If a predicate is reflexive marked, it is reflexive. (Reinhart and Reuland’s Condition A)
 2.If a predicate is reflexive, it is reflexive marked. (Reinhart and Reuland’s Condition B)

Note that this is a special restriction on direct objects. Reflexive pronouns in PPs for example don’t need to be bound by the PRO in the control infinitival, as shown in (36) (observe further that the non-reflexive personal pronoun is equally fine in this context):

- (36) Hon_i bad mig_j PRO_j stanna hos sig_i/henne_{i,k} över natten.
 she asked me PRO stay at REFL/her over night.DEF
 ‘She asked me to stay with her overnight.’

Also, reflexive possessive pronouns don’t necessarily need to be bound by the (*PRO*) subject. (There is a lot of dialectal/idiolectal variation on this point though. I highly prefer the reflexive possessive to be co-referent with a PRO subject in control infinitivals, though some of my other informants easily get control by the matrix subject):

⁷Reinhart and Reuland claim that the difference between the verbs that take simplex and complex reflexives is that the one that takes the simplex ones are lexically reflexive, while the ones that take complex reflexives are underlyingly transitive verbs. I will remain agnostic to this claim. R&R further make a distinction between semantic predicates and syntactic predicates. “Semantic predicate” refers to the predicate and the argument structure it is lexically specified to take. In the framework used here, it refers to the lexical specification of the verb, i.e., the heads that the verb can lexicalize, plus the possible co-reference possibilities of the elements in the specifiers. “Syntactic predicate” refers to the argument/event structure actually realized in the syntax. R&R argue that their condition B is sensitive to the notion of semantic predicate, based on examples like:

- (i) a. Max_i heard a story about him_i.
 b. Max_i told a story about him_{*i}.

The co-reference between the subject and the pronoun is impossible in (i-b), but possible in (i-a). The explanation behind the difference is that the noun *story* actually have a an “Originator/Author”-role in its lexical representation. This role however, does not seem to be present in the syntax, according R&R. I have nothing no explanation for this asymmetry at the moment.

- (37) Han tvingade mig att skriva om sina/hans memoarer
 he forced me to write again REFL.POSS/his memoirs
 ‘He forced me to re-write his memoirs.’

I will have nothing to say about non-direct object reflexives here. The only thing relevant is that reflexive arguments of the verb have different restrictions than non-argumental reflexives. The data above simply shows that a verb needs an overt reflexive argument if it is going to give rise to a reflexive reading. Another case where this is seen is in the context of object drop. If an internal argument can be dropped, no reflexive reading is available. This is shown in the following example:

- (38) a. Han är i badrummet och tvättar (kläder)
 He is in bathroom.DEF and wash (clothes)
 ‘He is in the bathroom washing (clothes).’
 b. Han är i badrummet och tvättar *(sig)
 He is in bathroom.DEF and wash (REFL)
 ‘He is in the bathroom washing (himself).’

In (38-a), the object can be dropped. Once it’s dropped, it cannot get a reflexive interpretation.

We see the same effect in present participles. Object drop in present participles is fairly easy, especially when they are used as prenominal modifiers. Here again, no self-caused/reflexive interpretation is available. As will be returned to later, it doesn’t matter if the participle is formed from a verb that would otherwise get a typical “reflexive” reading when combined with a reflexive direct object as in (39-a-b), or if it is formed from verb that otherwise would get a typical “anti-causative” interpretation when combined with a reflexive, as in (39-c-d)

- (39) a. Han hängde sig - *den hängande mannen
 He hanged himself - *the hanging man
 b. Han tvättade sig - *den tvättande mannen
 He washed himself - OK the washing man
 c. Dörrarna öppnade sig - *de öppnande dörrarna
 The doors opened - OK the opening doors
 d. Mörkret sänkte sig - *det sänkande mörkret
 darkness sank.TRANS REFL - the sinking.TRANS darkness
 “Darkness fell” - “The falling darkness”

Note that (39-a) is grammatical in either the intransitive stative reading (‘the man who is hanging’) or marginally in a transitive habitual reading (‘the man who is usually hanging people’). (39-b) is also grammatical in the transitive reading, but not in the reflexive reading. Note that it would be hard to explain the absence of the reflexive reading in (39-b) on pragmatic grounds, given that it is actually OK in English, where no reflexive internal argument needs to be present (for this verb, and other verbs of grooming). The same goes for (39-c) and (39-d).

4 Nanosyntax: what and why

In this section I will sketch a system that can derive the effects described above. So far I have only said that the patterns discussed so far “follow”, or are in accordance with the binding theory proposed by Reinhart and Reuland (1993). More specifically, the participles and nominalizations can’t get reflexive/self-caused readings of the simple reason that they lack reflexive marking. This statement is however quite vacuous unless we have an explicitly stated theory of verbal syntax and semantics, which I will provide in the following section. We also need a theory that says something about the reflexive interpretations that survive in stative participles/nominalizations. In short we need a theory that can link argument structure to event structure.

In a recent years, an approach to the (morpho)syntax-semantics interpretation called Nanosyntax has been developed (see e.g. Starke 2009, Caha 2009, Ramchand 2008b and Fábregas 2007). This theory shares a lot of traits with Distributed Morphology (see Halle and Marantz 1993). Most notably, in both DM and Nanosyntax, both word-syntax (i.e. Morphology) and phrasal syntax are taken to follow basically the same rules, and are therefore taken to be handled by the same module. Both theories adhere to the “syntax all the way down”-motto (see e.g. Harley and Noyer 1999), i.e., syntactic rules build up both words and phrases. Further, both frameworks share the idea that lexical insertion is post-syntactic, i.e. that the syntax operates on feature, and these features get replaced by phonological material after the syntactic derivation has taken place. The main difference between the two theories is that DM only allows lexical insertion into terminal nodes, while lexicalization can target full phrases in Nanosyntax (this idea goes back to McCawley 1968). This leads to two important (and highly related) differences:

1. Complexity of terminal nodes: In Nanosyntax, all terminal nodes are featurally simplex, while terminal nodes in DM can be complex. For example, take the 3rd person singular present tense *-s* in English: in Nanosyntax, the lexical item *-s* can lexicalize the stretch of terminal nodes [3rd [Sing [Pres]]]. In DM, you have to make sure that these features end up on the same terminal node. This can be done either by the operation Fusion, that takes two nodes and fuses them into one node, or by allowing pre-syntactic bundling of the features 3rd, Sing and Pres. The latter solution violates the “syntax all the way down”-condition, and the former solution adds an additional mechanism to the theory, making it less elegant. Nanosyntax, given that it allows spell-out of full phrases, don’t need any of these mechanisms.
2. Separation between features and categories: In DM, a split needs to be made between features and (lexical/syntactic) categories. For example, a second person plural pronoun will presumably contain at least the features Plural and 2nd (or addressee) (and possibly Gender features as well). In DM, these features will presumably be located in a D node. D will be the category, and Plural and Addressee will be features located in D. In Nanosyntax, second person plural (*you*) will realize a structure that consists of at least two phrases (i.e., [addressee/2P [Plural]], and possibly a GenderP and a DP as well, each headed by its own feature). That is, no distinction need to be made between feature and category. All features are alike in determining the label of their projection. The slightly artificial split between features and categories has bothered generative linguistics

at least since Chomsky (1965), and it is easily dispensed with in Nanosyntax.

Given that Nanosyntax allows one lexical item to lexicalize many features, we end up with lexical items that are specified for more than one feature. This paper deals mainly with verbal syntax and semantics, so below I will only focus on the feature specification of “verbs”. Ramchand (2008b) lays out a system that captures the relations between argument structure and event structure, and that further tries to capture the variability in e.g. valency that certain verbal roots show. According to Ramchand, all verbal roots carry a set of features that encode event structure and argument structure, and these features can be mapped on to syntactic structure, where these features are present. According to her, the verb phrase can be decomposed into three parts: (1) InitP, denoting a stative initiation subevent that takes as its subject the initiator of the event (INITIATOR); (2) ProcP, denoting a process subevent that takes as its subject the entity that undergoes change (UNDERGOER); and (3) ResP that denotes result state of an event, taking the holder of the result as its subject (RESULTEE). The verbal roots contain category features that match these subeventual heads. The verbal roots further carry indices that indicate whether the participant associated with the different subevents are co-indexed or not. In (40), the lexical specification of four types of verbs is given:

- (40) a. *samlar*_{Transitive} (‘collect’): [Init_i Proc_i, Res_j]
 b. *anl  ndar*_{Unacc} (‘arrive’): [Init_i, Proc_i, Res_i]
 c. *skrattar*_{Unerg.} (‘laugh’): [Init_i Proc_i]
 d. *chase*_{Trans} (‘chase’): [Init_i, Proc_j]

The difference between a transitive verb with an endpoint ((40-a)) and an intransitive verb with an endpoint ((40-b)) is that the participant that is associated with the Result subevent is co-referent with the participant associated with the process and initiation subevent for the intransitive verb, but not for the transitive verb. In other words, for a verb like *anl  nda*, the sole argument is both initiating, undergoing and carrying the result of the arriving event. For *samlar*, the carrier of the resultant state (i.e., the direct object), is not the same as the initiator (i.e., the subject/agent). For atelic verbs, like (40-c) and (40-d), we see the same difference between transitive and intransitive verbs, but in this case, no ResP is present (which make them atelic). Note that thematic roles are composite, following this approach, i.e. one and the same DP might receive thematic entailments from more than one head. In this paper I will assume that the verb-phrase is only bipartite. I will get rid of the InitP, and have entries like the following (see Pustejovsky 1995 for the same idea)⁸:

- (41) a. *St  ngar*_{Transitive} (‘close’): Proc_i, Res_j
 b. *Samlar*_{Transitive} (‘collect’): Proc_i, Res_j
 c. *F  rsvinna*_{Unacc} (‘disappear’): Proc_i, Res_i

Ramchand further allows lexical items to underassociate, i.e. a lexical item can be inserted when only a subset of the features specified in the lexical item is present in the syntax (see Ramchand 2008a for possible restrictions on underassociation for lexical verbs). In Nanosyntax, the general idea of underassociation has been formalized as the

⁸Information that is related to initiation and intentions behind events I take to be encoded higher up in the structure, presumably above the verb-phrase.

Superset Principle:⁹

- *The Superset principle:*

The phonological exponent of a Vocabulary item is inserted into a node if the item matches all or a superset of the grammatical features specified in the node. Insertion does not take place if the Vocabulary item does not contain all features present in the node. (from Caha 2007)

When we apply the Superset principle to the verbal lexical entries under discussion, we see that one and the same entry can lexicalize more than one syntactic structure. E.g. *stänga* and *samla* could be inserted in the following contexts (at least):

- (42) a. [Proc_i [Res_j]]
b. [Res_i]

Försvinna could be inserted in the following two contexts (at least):

- (43) a. [Proc_i [Res_i]]
b. [Res_i]

Note that *stänga* and *samla* could not be inserted in the following context, since the feature specification of the lexical items do not match the features of the syntactic structure:

- (44) a. [Proc_i [Res_i]]

Following the same reasoning, *försvinna* could not be inserted in the following context:

- (45) a. [Proc_i [Res_j]]

It should be admitted that having indices on the features (Res and Proc) goes against the above mentioned idea that terminal nodes are simplex. It would be more in accordance with the Nanosyntactic idea to split the event-information from the argument information. At the moment, it is not clear how this should be done, and hence I will just treat the two versions of each head as two different “flavors” of a head. It seems reasonable to say that co-reference is the default version of the head, and that non-co-reference is lexically marked. In such case, there will be e.g. one predicate Proc and one predicate Proc_i in the syntax, where the former is a “raising” predicate, i.e. a predicate that does not introduce a new argument, and the latter is one that does introduce a new argument. I will further assume that arguments receive their thematic interpretation by binding the indices on the sub-eventual heads, as in Baker (2003) (see Ramchand 2008b for a different account.).¹⁰

⁹The principle was originally worked out by M. Starke, see also Caha (2009) for a slight reformulation of the principle, and the Nanosyntax webpage for updates (<http://nanosyntax.auf.net/blog/>).

¹⁰If one would wish to split up the event features and the features that take indices that are tied to the arguments, one presumably would have to say that the event features dominates the indices, i.e. that the indices are first introduced, and after that the event features. This would go against a lot of current trends, where arguments are either introduced in specifiers, or (for for at least external arguments) in a Voice projection dominating the verb phrase. If the indices were introduced after sub-eventive head, one would expect to get eventive participles and nominalizations from transitive verbs without triggering an obligatorily

Going back to the above discussion on categories and features, we can now see that the typical category (from-motivated) feature V has been substituted by a semantically meaningful features like Proc and Res. In the Nanosyntactic framework, categories like V, N and A should be nothing but convenient abbreviations of semantically motivated features. This also leads to the conclusion that the participles and nominalizations under discussion should be seen as derived from verbs - rather they are surface forms that to some extent share the same semantic features. (see Lundquist 2008 for formal definition of the categories formerly known as “Adjectives”, “Nouns” and “Verbs”).

4.1 Reflexivity

Being a reflexive predicate simply means that the participants of the subevents are co-referent. There are basically two ways for a predicate to be “reflexive” (i.e., having the participants of the two sub-events being co-referent):

1. Lexically reflexive, i.e. Unaccusative: [Proc_i [Res_i]]
2. Reflexive marked (i.e., Transitive base): *sig(självt)* - [Proc_i [Res_j]] - The reflexive pronoun explicitly marks the co-reference between the two arguments.

Note that we now have a theory similar to e.g. Pustejovsky (1995) and Chierchia (2004), where unaccusatives, both reflexive marked and lexical, have external arguments. Further, for our purposes, there is no point in making any difference between what could be called a reflexive and an anticausative interpretation :

- (46)
- a. Han hängde sig
He hanged himself (‘Reflexive’)
 - b. Dörren öppnade sig
The door opened (‘Unaccusative, anti-causative’)

As noted above, information that might be related to the intentionality of the arguments is presumably located outside the ProcP.

An Anti-reflexive reading will always be forced in the context [Proc_i [Res_j]], unless a reflexive marker is present. A reflexive reading will always arise for unaccusative verbs. If the event is simplex (i.e., if it can not be decomposed into further subevents), the distinction between reflexive and anti-reflexive cannot be made, given that only one argument is involved.¹¹ The structures that will be relevant to the further discussion are the following:

- (47)
- a. [Proc_i [Res_j]] - Non-reflexive (Transitive)
 - b. [Proc_i [Res_i]] - Reflexive (Unaccusative)
 - c. [Res] - Underspecified

transitive reading (i.e., you could merge the participial or nominalizing morpheme before the index has been merged). It is conceptually quite appealing to assume that indices are introduced before events and states. In such case, one could say across the board that events and states need to be tied to individuals, or located in individuals.

¹¹As will be discussed in 5.3, some simplex predicates probably have more than one argument. As far as I can tell, these argument necessarily have disjoint referents.

5 Deriving the Anti-reflexive readings

Following Abney (1987) I will assume that both nominalizing and participle morphology can attach at different heights in the structure. For this paper, I will only look at nominalizing/participle morphology that attach either directly on top of Res, or on top of Proc. This will give rise to two types of nominalizations and two types of participles. Note that nominalizing/participial morphology can attach even higher up in the structure in many languages, presumably after a syntactic subject has been merged, giving rise to gerundive nominals and participles that have more verbal traits (most noticeably, structures where accusative case on internal arguments is licensed, see e.g. Lees 1964, Chomsky 1972 and Abney 1987 for discussion.)

5.1 Two types of nominalizations

In eventive nominalizations, the nominalizing morpheme is merged on top of a ProcP. As exemplified below for a transitive verb:

- (48) a. Hängningen av Saddam Hussein
The Hanging of Saddam Hussein
b. häng: [Proc_i [Res_j]]
c. häng-ning: [Nom [Proc_i [Res_j]]] = “non-reflexive” interpretation

In (48), Proc and Res are not co-indexed, which forces a non-reflexive interpretation. Note that certain verbal structures lack a ResP, and these can of course be nominalized as well. Here the question whether the interpretation is reflexive or not is moot, given that there is only one argument involved.

- (49) a. [under vandringen] började jag bli trött
during hike.NOM.DEF started I become tired
‘During the hike, I started to get tired’
b. vandr: [Proc]
c. vandr-ing: [Nom [Proc]]

Further, nominalizations formed from uncaccusative verbs will actually be interpreted as ‘reflexive’, i.e., the arguments of the first subevent and the second subevent are necessarily co-referent:

- (50) a. [artistens plötsliga försvinnande] förvånade fansen
The sudden disappearing/disappearance of the artist
b. försvinna: [Proc_i [Res_i]]
c. försvinnande - Nom [Proc_i [Res_j]]] = “Reflexive” interpretation

Eventive nominalizations can in other words be reflexive, but only if it is encoded in the lexical entry of the verb that it only can lexicalize a Proc-Res sequence where the two heads are co-referent.

In result nominalizations, the nominalizing suffix is merged straight on top of a ResP, i.e., they have the simple structure illustrated in (51):

- (51) Nom [Res]

A couple of examples of Result nominalizations are given below:

- (52) a. Det var en stor öppning i väggen
There was big opening in the wall
b. En tidig Beatles-inspelning hittades på vinden
an early beatles-in.play.NING found.PAST.PASS on attic.DEF
'An early Beatles-recording was found in the attic.'
c. han har en stor samling av värdefull konst
He has a big collection of valuable art

Given that we only have one verbal head present in these constructions, we don't need to worry about co-reference relations. The syntactic/semantic representation says nothing about the nature of the 'causer' argument here, given that the 'causer' is simply not present in the representation. They are surely accidentally compatible with self-caused/reflexive interpretations, but a reflexive interpretation is never forced. A reflexive interpretation could only be forced if two heads are co-indexed, so that could never happen in result nominalizations.

5.2 Two types of passives

Just as for nominalizing morphology, participial morphology can attach either directly on Res, or on Proc. The above discussed anti-reflexive interpretation arises when the participial morphology is merged on top of a [Proc [Res]] sequence, where the two heads are not co-indexed, as in (53) and (54):

- (53) a. Han blev mördad
He was murdered
b. mördad: [Part - [Proc_i [Res_j]]]
- (54) a. Den mördade mannen
The murdered man
b. mördad: [Part - [Proc_i [Res_j]]]

Unaccusative verbs can also be the input to eventive participles, and in such case, we do get a 'reflexive' participle, i.e., a participle where the two heads are co-indexed:

- (55) a. Den nyligen anlända gästerna
The recently arrived guests
b. anlända: [Proc_i [Res_i]]
c. anländ : [Part [Proc_i [Res_i]]]

Unergative verbs tend not to form passive participles (or any type of past participles that can be used attributively). The restriction on unergative verbs is discussed in detail in Lundquist (2008).

The stative passives, just like the stative nominalizations, contain only a ResP, which is diagnosed by the compatibility with the adverb *still*:

- (56) a. Dörren är fortfarande stängd
The door is still closed
b. stängd: [Part [Res]]

- (57) a. Nyckeln är fortfarande försvunnen
 key.PL.DEF are still disappearPART.SG
 ‘The key is still gone/lost’
 b. försvunnen: [Part [Res]]
- (58) Han är fortfarande nedsövd
 he is still sedated
- (58) nedsövd: [Part [Res]] (not taking the verb-particle into consideration)

In (56-a) we have no information if the someone has closed the door, or if the door has closed itself, or if the door has always been closed. In (57) an unaccusative verb is used, but still we have no idea what caused to the key to disappear. That kind of information is simply not represented in the stative participles. In (58) a typical transitive verb is used (i.e., it’s not usually used reflexively), and from our world knowledge we can guess that someone (or something) has sedated him, and he is not himself the causer/sedator. However, still the sentence (58) contains no information about who sedated him.¹²¹³

5.2.1 Why no overt reflexive marking on participles and nominalizations?

We have now seen that the simple reason for the absence of reflexive reading on most participles and nominalizations is the absence of reflexive marking. A legitimate question is then why we cannot put reflexive marking on them, to receive the reflexive interpretation. For passive participles, this question is could be solved by assume that the subject (or head of the modified DP) originates in the position that the reflexive occupies. In nominalizations, we can actually use an overt reflexive pronoun, but

¹²It has been claimed in the literature that there is a third type of passive participle, called the the resultant state participle (see Kratzer 2000) or resultative participle (see Embick 2004). These participles are eventive, in contrast to target state participles, and can, according to Kratzer, receive reflexive interpretations in German. There could simply be a difference between German and Swedish here. The examples Kratzer give are all however verbs of grooming, like *the recently washed kids* in The verbs of grooming show a very messy behavior with respect to reflexives, and possibility of reflexive interpretation in nominalizations and participles. Their weird messy behavior has its origin (I think) in the fact that they can either surface as reflexive marked or with full DP internal arguments, and still mean the same thing, as in the following pair: *han tvättade sina händer* / *han tvättade sig* (‘he washed his hands’ / ‘he washed refl’). Both the reflexive version and the full DP version could be used in the same context. In Lundquist (2008) I acknowledge the fact that there is a third type of passive, i.e., a resultant state passive, but I however argue that the resultant state passive, just like the verbal passive, contains a full VP (i.e., a ProcP), and the difference between the two is encoded higher up in the structure (i.e., it is a difference in VP-external aspect).

¹³Note that the superset approach to lexical insertion combined with the verbal lexical entries as specified in Ramchand (2008b) help us getting a better grip on selection. In DM, where a subset principle is used together with a lexicon that contains highly underspecified lexical entries, it is not possible to state that an underlyingly transitive verb like *stänga* and an underlyingly intransitive verb like *försvinn* has the same event- and argument structure as stative participles, but different argument structures as full verbs. The approach I have followed here, however has some difficulties in explaining homophonous causative-inchoative pairs, like e.g. *sinkin* English. Note that homophonous pairs like that is much rarer in Swedish, and as far as I’m aware, in other languages in general. To get the causative-inchoative pairs in English, you could either assume that English has a zero reflexive, or that all verbs that are ambiguous between causative and inchoative have two lexical entries. (See further discussion in Lundquist 2008 (chap 5), and various takes on the topic in Alexiadou et al. 2004).

only a complex reflexive, once a binder is present, either as a possessor in the DP, or somewhere outside the DP, as in (59)

- (59) a. hans hyllande av sig själv
 his celebrate.NOM of REFL self
 ‘His celebrating of himself’
 b. Han la mycket tid på vårdandet av sig själv
 he put much time on care-take.NOM.DEF of REFL self
 He invested a lot of time in the care-taking of himself

Simple reflexives are not licit in the complement of nominalizations (see e.g. Teleman et al. 1999, and see Siloni and Preminger 2007 on cross-linguistic variation with respect to reflexive marking on nominals). One reason for the absence of simplex reflexives in nominalizations might be its clitic-like behavior. It might also need higher functional layers to be licensed, but that discussion lies outside the scope of this article.

Present participles (and nominalizations too, to some extent), can sometime host the prefix *själv* (‘self’), i.e., the second part of a complex reflexive, and in these cases, a reflexive reading is available. Note however that this is only an option for verbs that preferably take the complex reflexive. Prefixation of *själv* to passive participles is however not possible. As will be show below, present participles are structurally ‘bigger’ (i.e., they contain more structure, and presumably spell out a superset of the features spelled out by the passive participle). This suggests that the prefix *själv* selects for a feature that are present in the present participle but not the past participle. This feature is presumably located higher up on a functional sequence.

5.3 Restrictions on stative participles and nominalizations

The superset principle leads to situations where more than one lexical item can be inserted. Take for example the two verbs/auxiliaries *have* and *be*. As has been noted since Benveniste (1966), these verbs seem to share certain features (see also Kayne 1993). More specifically, *have* seems to contain *be* (most likely, *have* is *be* + a preposition). Let’s assume that *be* can lexicalize the feature X, while *have* can lexicalize the feature set [X, Y]. Given the superset principle, both *have* and *be* could be inserted in context where only the feature X is present (but *be* cannot inserted in a context where both X and Y is present, given that it cannot lexicalize the feature Y). To make sure that *have* and not *be* is inserted when both X and Y is present, we need an elsewhere principle for lexical insertion:

- *Elsewhere principle*

Where several Vocabulary items meet the conditions for insertion, the item containing less features unspecified in the terminal morpheme must be chosen.¹⁴ (Caha 2007)

The elsewhere principle can also help us understand certain gaps in the availability of stative/resultative nominalizations and participles. One such gap can be seen in the following paradigm:

¹⁴This elsewhere principle is formulated to mirror the elsewhere principle used in DM, where a subset principle is used for lexical insertion.

- (60) a. the recently closed door (Eventive)
- b. the recently opened door (Eventive)
- (61) a. the still closed door (Stative)
- b. the still open/??opened door (Stative)

As discussed in Embick (2004), it seems to be the case that simple underived adjectives can block participles in some cases, as shown in (61) and (60). The verbs *open* and *close* share most properties as full verbs, and even as attributive participles, as shown in (60). However, in Stative contexts, there is a special underived form for *open* that seems to block the predicted participial form *opened*. No such form exists for *close*, and the regular participle has to be used instead. We can speculate that the underived adjective *open* has less unspecified features than the complex form *open-ed*, and the form *open* is therefore inserted. Below I will argue that this type of blocking can occur even when the blocking lexical item is identical neither in form nor in meaning to the blocked item.

In a system that allows under-attachment, a lexical item should always be able to surface in a syntactic structure where only a subset of the lexical item's features are present, unless there exists another lexical item with a smaller subset of features that has exactly the same encyclopedic content (the elsewhere principle, as stated above). We should then expect that all verbs that have both a Proc and a Res feature should be able to surface in three contexts: (i) [Proc [Res]], (ii) [Res] and (iii) [Proc]. The third case will not be discussed here, i.e., cases where a Res feature is not present. The trickier case is the absence of result nominalizations and stative participles for verbs that clearly seem to have a result phrase. For example, the verb *hänga* ('hang') has neither a corresponding stative participle, nor a corresponding result nominal. The verb *försvinna* ('disappear') has a stative participle, but not a result/stative nominalizations. The (particle) verb *spela in* ('record') has a result nominal, but no stative participle.

There seem to be many factors that restrict the possibilities of under-association. First, let's focus on verbs like *hänga* ('hang'), in the sense of execution/suicide. I will suggest here that the result participle/nominalization is blocked by the simpler participle/adjective *dead*, that presumably lacks process features. It's a general tendency that verbs of killing and dying don't have corresponding result participles. This holds for both transitive verbs like *execute*, *assassinate* *kill* and *hang* and intransitive/unaccusative verbs like *drown* and *starve (to death)*. The lack of target state participle in these cases, could all be explained by blocking: the result phrase is the same for all these verbs, i.e. *dead*. The difference between them is located in Proc. The meaning of these verbs differ in the manner of the process (i.e., the carrying out of the event), and the argument structure (co-referent or disjoint arguments of Proc and Res), but the result is always the same. Possibly, the result nominal associated to all these verbs is *death*.

When it comes to verbs that have a result participle but no result nominalization, or a result nominal but no result participle, other forces must be at work. Here, we need a more elaborate story about lexical categories, more in line with Hale and Keyser (1993) (and elaborated in Hale and Keyser (2002)). Some verbs simply have a nominal base, whereas other have an adjectival or predicative base. The verbs with an adjectival base presumably require an argument already in ResP, while the verbs with a nominal base don't. Hale and Keyser's reasoning about the relation between

lexical category and argument structure was based mainly on verb-noun conversion and adjective-verb conversion, but as argued in Lundquist (2008), this reasoning has to be extended to overtly derived de-adjectival adjectives (i.e. participles) and overtly derived de-verbal nouns (i.e. nominalizations) (see also Lundquist 2009 for discussion on the relation between non-derived adjectives and (stative) participles and non-derived nouns and (result) nominalizations). The absence of a result nominal for the verb *försvinna* ('disappear') should therefore follow from the very predicative core of the lexical item in question.

When it comes to verbs of change of location (i.e. *fall*, *arrive*, *sink*, *move* etc.), it seems like result/stative nominalizations and participles are absent as well, and for these verbs it is harder to come up with more basic nouns/adjectives that block the stative variants. It is likely that in these cases, the Res is categorically more like a Preposition or Particle. The forming of a stative participle from *fall* and *sink* may very well be blocked by the manner neutral P *down*, and in the case of *arrive*, the blocking lexical item may very well be *here*. Similarly, when it comes to many double object verbs (like *give*), the stative participle may be blocked by something like a possessive *-s* or a preposition (with the meaning "possession", see e.g. Pesetsky 1995 and Ramchand 2008b for an analysis of this kind). In these two cases (location and possession), Res is presumably obligatorily transitive (i.e., it requires one external and one internal argument).

Exactly how to state the relation between argument structure and category, or how to capture the fact that some Res is specified for taking two arguments in some cases (locative and possessive cases), one argument in other (i.e., verbs with only stative participles, or related non-derived adjectives) or no arguments (in the strictly nominal cases, most commonly unergative and non-transitive/weather-verbs) is not clear at the moment, and I will leave this issue for further study.

6 What we gained from the analysis

Below I will go through a couple of facts that are easily explained given the analysis above. Some of them have already been mentioned in the discussion above, but will be repeated here for better overview of the benefits.

6.1 Unaccusativity, anti-causatives and participles

The general take on nominalizing and participle forming morphology in this paper is that it attaches at different heights of the clausal spine, i.e., they can take complements of different sizes. This type of morphology does not however "demote" any of the arguments. Presence or absence of arguments and event-entailments is simply given by the verbal root (and maybe additional morphology attached inside of the nominalizing/participial morphology). The morphology shouldn't really care about the exact properties of the argument/event structure in its complement though. Most importantly, unaccusative verbs should form participles as freely as transitive verbs (i.e., the participial morphology shouldn't care about the co-reference relations on the arguments of the predicate it takes as its complement, but see Lundquist 2008 Chap 5 for independently motivated restrictions). We then predict that unaccusatives can form event denoting participles, which turns out to be true:

- (62) De (nyligen)/(*fortfarande) anlända gästerna
The (recently)/(*still) arrived guests

Note that the participle in (62) only can have an event-denoting interpretation.¹⁵

Event-denoting participles formed from reflexive verbs are however not possible, given that reflexive marking is absent in these cases, as has been shown above. To repeat the core data from above, the reflexive interpretation is not available in (63), since only an eventive reading is available. In (64) however, the reflexive reading is available, but only under the stative reading (i.e., when modified by *still*, but not when modified by *recently*)

- (63) a. Den (nyligen)/(*fortfarande) hängda mannen
The (recently)/(*still) hanged man
b. Den (fortfarande) fastkedjade mannen
The (still) chained man

6.2 Difference between different types of Nominalizations and Participles

In Swedish, there are two productively used nominalizing suffixes, *(n)ing* and *((e/a)-nde*, as exemplified below;

- (64) Vi försöker stoppa spridningen/spridandet av
We try.PRES stop.INF spread.ING.DEF/spread.INF.NDE,DEF of
copyrightskyddat material.
copyright.protected material.
'We are trying to stop the spreading of copyright protected material'

As has been shown above, there are further two types of participles, the present participle and the passive participle, where the present participle ending is identical to the nominalizing suffix *e/a-nde*:

- (65) a. De nyligen anlända gästerna
'The recently arrived guests'
b. De anländande gästerna 'The arriving guests'

As argued in Lundquist (2008), the nominalizing and participial *e/a-nde* attaches outside the infinitival marker *-a* (the *-e/a* being part of the infinitive), while *(n)ing* and the passive participle suffix attach to something that is less morphologically complex (what looks like the root in case of *(n)ing*, and what looks like the stem-vowel in case of the passive participle):

¹⁵See Lundquist (2008) for an explanation of why unaccusative eventive participles in general don't appear under a copula, as it would in an eventive passive (as in *??the men are arrived*). The general idea is that the sequence COPULA + UNACCUSATIVE PARTICIPLE is blocked by simplex verb form (or an active participle). This blocking (an instance of phrasal blocking) should follow from the elsewhere principle as formulated above. The sequence COPULA + UNACCUSATIVE PARTICIPLE is ill-formed for basically the same reason as an analytic superlative is bad when there is a competing synthetic superlative (i.e., *??most old* - OK *reddest*, see Poser (1992) for discussion.)

- (66) a. *(n)ing* - attaches to a “root” - *sprid-ning* (‘spreading_{nom}’)
 b. *-nde* - attaches outside the infinitival *a* - *sprid-a-nde* (‘spreading’_{part})
 c. *-/d/* (passive participle) - attaches outside the “stem”-vowel - *sänk-t*
 (‘sink_{trans}’ conj. 2), *- rädd-a-d* (‘saved’, conj. 1)

In Lundquist (2008) I show that the infinitive in Swedish always is “active”, i.e., that it always selects for a full verb phrase (i.e., ProcP). Given that the suffix *-nde* attaches to the infinitival *-a*, the *-nde*-participles and the *-nde*-participle will always as well contain a full ProcP. However, *(n)ing* and *de* (passive participle) can attach to something that is structurally smaller, i.e., something that can lack the full event- and argument structure of the infinitive (i.e., ResP).

Below I show this difference, and how it comes out for a reflexive marked anti-causative verb (*sprida sig* ‘spread’) and a non-marked (anti-)causative (*minska* ‘decrease’). For the non-marked verb, both the transitive (causative) and the intransitive (anti-causative) interpretation will be available for all participles and nominalizations. For the marked (anti-)causative, the intransitive (anti-causative) interpretation will only be available for the passive participle and the *(n)ing*-nominal, and in these cases we get stative readings (an extent-reading for the nominal).

- (67) a. Cancern spred *(sig) till flera viktiga organ
 cancer.DEF spread.PAST *(REFL) to many important organs
 ‘The cancer spread to many important organs’
 b. Det enda som kunde stoppa spridningen/#spridandet av
 the only that could stop spread.ING.DEF/#spread.INF.NDE.DEF of
 cancern var strålbehandling.
 cancer.DEF was radiation treatment
 ‘The only thing that could stop the spreading of the cancer was radiation treatment.’
 c. Cancern är spridd i hela kroppen
 Cancer.DEF is spread.DE in whole body.DEF
 ‘The cancer is spread in the whole body’
 d. ??Den spridande cancern,
 the spread.INF.NDE cancer.DEF
 intended: ‘the spreading cancer’
- (68) a. Skivförsäljningen har minskat kraftigt de senaste åren.
 record sales.DEF have decreased heavily the latest years.DEF
 ‘Record sales have decreased greatly in the last few years.’
 b. (?)minskandet/minskningen av aktiekapitalet
 decrease.INF.NDE.DEF/decrease.ING.DEF of share capital.DEF
 ‘the decrease of share capital’
 c. den kraftigt minskade skivförsäljningen
 the heavily decrease.DE record sales.DEF
 ‘the greatly decreased record sales’
 d. det minskande aktiekapitalet
 the decrease.INF.NDE share.capital.DEF
 ‘The decreasing share capital’

7 Concluding remarks

One major conclusion from the data discussed in this paper is that “roots” can’t be completely void of argument structure information and event structure information. If they were, there would be no difference between (67) and (68). It is simply quite obvious that co-reference relations between the arguments of a predicate need to be stated in the lexical entries. It is also obvious that we must be able to tinker a bit with the lexically specified argument structure. In this paper, I have claimed that we get all the flexibility we need from the rules of lexical insertion given by the Nanosyntax approach.

If we take co-reference relations between arguments to be encoded in verbal heads (i.e., each head carries information about whether it introduces a new index or not), we have already an explanation for the absence of reflexive/anti-causative readings of event nominals and eventive participles. We do not need a syntactically present arguments (PRO, pro or whatever) to explain these effects.

When it comes to the general issue of “reflexivity”, I have provided further argument to the claim that we need to take into consideration co-reference relations between the arguments of a predicate, a claim originally made by Reinhart and Reuland (1993) and Pollard and Sag (1992).

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