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The Syntax and Semantics of Excess: OVER-Predicates in Germanic

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1. Introduction

Many Germanic languages use elements such as English *over*, German *über* or Icelandic *yfir* to express that a given activity is carried out excessively, as in (1) and (2) (from English and German; cf. also Risch 1995, Putnam forthcoming).

- (1) John over-ate.
- (2) Hans über-aß sich.
Hans over-ate ANPH

While in (1) and (2) the OVER-element is prefixed to the verb, in the Icelandic example in (3a) it has the status of a preposition. The patterns illustrated in (1) and (2) are not possible here (cf. 3b):

- (3) a. Hans borðaði yfir sig (af hákarli).
Hans ate over ANPH (P shark)
'Hans ate too much shark.'
- b. *Hans yfir-borðaði (sig).

Three patterns for OVER-modification in Germanic emerge from the examples in (1), (2), and (3a). They will be called 'Type 1', 'Type 2', and 'Type 3'. For reasons of exposition, the types are numbered in reverse order to how they have been introduced:

- (4) Syntactic types of OVER-predicates
- Type 1** V [OVER ANPH] (Icelandic)
- Type 2** OVER-V ANPH (German)
- Type 3** OVER-V (English)

The examples of OVER-predicates given above are 'unary' in so far as they have only one argument position (the external argument). There are also 'binary' OVER-predicates, i.e. OVER-predicates that take both an internal and an external argument. Examples are given in (5) (from Risch 1995).

- (5) a. Der Hausmeister über-heizt den Raum.
the caretaker over-heats the room
'The caretaker overheats the room.'
- b. Maria über-dehnt das Gewebe.
Maria over-stretches the fabric
'Maria overstretches the fabric.'

While our main focus is on unary OVER-predicates as illustrated in (1)–(3a), we will also consider the syntax and interpretation of binary ones like those in (5). We address three main questions in this squib:

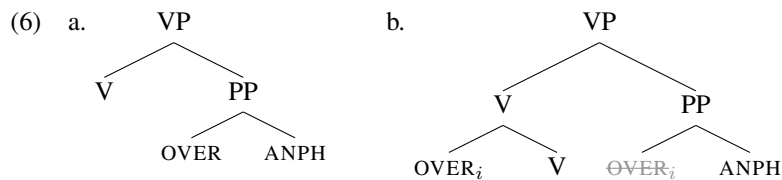
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- Q1** How can the structures introduced in (1)–(3a) above be analyzed in semantic and syntactic terms?
- Q2** How do the three ‘strategies’ found in Germanic languages (prefixal OVER with and without object, prepositional OVER) relate to one another?
- Q3** How do unary OVER-predicates relate to binary ones?

In Section 2, we discuss the syntax of OVER-modification in selected Germanic languages. Here we adopt the assumption that particles and prefixes are semantically similar and refer to them as a unified class of ‘P-elements’. After introducing our syntactic analysis of OVER-modification in Germanic languages, we provide a working definition of the semantic function of OVER in Section 3. Section 4 contains our analysis of the mapping from syntactic to semantic representations in unary OVER-predicates. In Section 5, the analysis is extended to binary predicates. Section 6 concludes this paper and points to potential fruitful areas of future research related to this topic.

2. The Syntax of OVER-Modification in Germanic

Our syntactic analysis unifies the three types of structures illustrated in (1)–(3a) by regarding OVER as denoting a three-place relation between a predicate, an individual, and an event (to be fleshed out in more detail in Section 3). We adopt the view that particles, prefixes, and prepositions (of specific types) form a natural class.¹ In the Icelandic-style strategy (Type 1), OVER surfaces as a preposition, and the PP that it projects functions as an adjunct within VP. In German and English (Types 2 and 3), OVER is incorporated into the verb. We assume that the prepositional structure (Type 1) is basic (cf. 6a) and that Types 2 and 3 are derived from it (cf. 6b for Type 2; note that the order of V and PP is irrelevant here).² A syntactic analysis of Type 3 (English) will be postponed to Section 4.



Examples (7a) and (7b) illustrate the derivational history of Types 1 and 2 with Icelandic and German examples (some intermediate steps in the derivation are disregarded).

- (7) a. [TP Hans borðaði [VP Hans [VP borðaði [pp yfir sig]]]]
 b. [CP Maria überraß_j [... [VP [pp über_i sich] über_i-aß_j] ...] ...]

Although the P-elements in both Type 1 and Type 2 OVER-modification target different landing sites, the derivational history we adopt here demonstrates that the P-element in both derivations begins as a preposition, and that the overt anaphor begins as a complement of a preposition (and most likely receives its case in this position).

The analysis of Type 2 OVER-predicates is inspired by comparable preposition/prefix-alternations in motion predicates (see for instance Abraham 1995: Chs. 2.4 and 7.11). For example, the prefix *um-* in combination with a motion predicate (cf. 8a) alternates with a ‘double’ prepositional phrase as in (8b) (cf. Biskup & Putnam forthcoming for a similar alternation between *ent-*verbs and *aus-*PPs).

- (8) a. Er um-fuhr den Polizisten.
 he around-drove the policeman

¹See for instance Jackendoff (1973), Emonds (1985), Zwanenburg (1992), den Dikken (1995), Zeller (2001), Matushansky (2002), Gehrke (2008).

²In their analysis of *ent-/aus-*alternations, Biskup & Putnam (forthcoming) follow Svenonius (2003, 2007) in assuming a layered structure for prepositional phrases, i.e. [_{PP} p [_{PP} P DP]]. For the sake of simplicity, we will assume a simple PP-structure, but nothing hinges on this.

- b. Er fuhr [pp um den Polizisten herum].
 he drove around the policeman around
 ‘He drove around the policeman.’

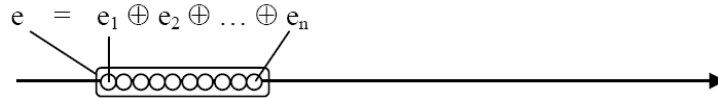
We will assume that Type 2 OVER-elements roughly correspond to prepositional phrases headed by *über ... hinaus* ‘beyond’, with an implicit measure phrase. The anaphor in these constructions (e.g. Germ. *sich*) is interpreted metonymically as standing for the ‘standard degree’ corresponding to the relevant referent. Accordingly, (2) (here repeated as 9a) is roughly interpreted as (9b).

- (9) a. Er über-aß sich.
 b. Er aß [pp über sein Maß hinaus].
 he ate OVER his degree beyond
 (roughly) ‘He ate beyond his capacity.’

3. The Semantics of OVER-Modification in Germanic

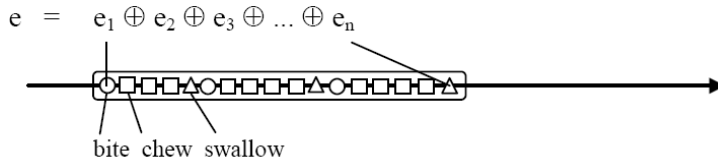
As originally observed by Risch (1995), most of the predicates that participate in OVER-prefixation and require the overt *sich*-element are originally activity verbs, though OVER turns them into accomplishments (cf. Kennedy & Levin 2008 on the interaction of degrees and *aktionsart*). We regard activity verbs as denoting individual sums of atomic events (cf. Dowty 1979; Rothstein 2004, 2007). Some predicates are ‘naturally atomic’, i.e. they consist of individual, spatio-temporally bounded subevents. These verbs have both a semelfactive and a cumulative interpretation (e.g. *skip once*, *skip for an hour*). The structure of ‘naturally atomic’ predicates is shown in (10). Each circle stands for a subevent e_i (e.g. a skipping event), and the entire event e is the individual sum of all subevents e_i .

- (10) A naturally atomic event



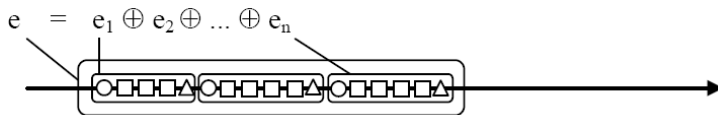
‘Non-naturally atomic events’ are not indivisible because they are ‘complex’ or ‘internally heterogeneous’ with respect to the subevents that they contain. For instance, simplifying somewhat, eating can be regarded as a sequence of biting (circles), chewing (square) and swallowing (triangle) events (cf. 11).

- (11) A non-naturally atomic event



Arrays of ‘bite-chew-swallow’ subevents can be subsumed under what we will call ‘component events’, i.e. event sequences which represent more or less self-contained units. In (12), component events are enclosed by (rounded) rectangles, each of them corresponding to a bite-chew-swallow sequence:

- (12) Component events



Component events are reflected linguistically, e.g. in so far as they are the basic units for event modification. For instance, (13) is best interpreted with respect to the sequence of component events, not (atomic) subevents (in naturally atomic events, atomic events are also component events).

- (13) He ate quickly.
→ rapid succession of component events (though not necessarily of atomic subevents)

In (14), we define the ‘(minimal) component event’ relation, which holds between two events e and f and a predicate P : an event e is a component event of another event f instantiating a predicate P iff e is a part of f , e instantiates P , and no part of e instantiates P .

- (14) For any predicate P and any pair of events e, f instantiating a predicate P :
 $\text{COMP}(e, f, P) := e \leq f \wedge \neg \exists g [g < e \wedge P(g)]$

We can now define a function that delivers the number of component events of a given event. We call this number the ‘extent’ of an event. It is a function from events to natural numbers.

- (15) For any (complete) event e_c instantiating a predicate P :
 $\text{Ext}(e_c, P) := |\{e_i \mid \text{COMP}(e_i, e_c, P)\}|$
(the cardinality of the set of component events e_i comprised by e_c)

For our analysis of OVER, we need to define one more function. We assume that (certain types of) activity verbs, while not having an intrinsic endpoint, have a ‘natural endpoint’, i.e. a point at which they are expected to end for extra-linguistic (e.g. physical) reasons. For example, the ‘natural endpoint’ of an eating event is the point at which the eater is full, and the natural endpoint of a working event is determined by factors such as fatigue, time, the completion of specific tasks, etc. The number of component events leading up to the ‘natural endpoint’ of an activity will be called the ‘natural extent’ of that activity. It is a function from pairs of predicates and individuals to natural numbers ($\lambda P \lambda x [\text{NatExt}(P, x)]$) that returns the average extent of an event instantiating a predicate P , relative to an individual x .

- (16) For any individual x , for any predicate P , and for any event $e_i \in \{e \mid P(x, e)\}$:
 $t_i = \text{Ext}(e_i, P)$, and
 $\text{NatExt}(x, P) := \bar{t} (= \frac{1}{n} \sum_{i=1}^n t_i)$

On the basis of the definitions given above, we can finally provide a semantic analysis of OVER. We analyze OVER as a three-place relation that takes as its arguments an individual x , a predicate P , and an event variable e . It indicates that the extent of the event e exceeds the natural extent of an event instantiating P relative to x :

- (17) $\llbracket \text{OVER} \rrbracket = \lambda x \lambda P \lambda e [P(e) \wedge \text{Ext}(e, P) > \text{NatExt}(P, x)]$

4. The Syntax-Semantics Interface: Unary OVER-Predicates

In Type 1 languages (e.g. Icelandic), the OVER-predicate surfaces as a preposition. It applies to the (syntactically bound) anaphor, which, for the sake of simplicity, is represented as a copy of its antecedent (sig_{Hans}) in (18) (we assume a syntactic binding mechanism along the lines of Büring 2005):

- (18) $\llbracket \text{yfir sig}_{\text{Hans}} \rrbracket$
 $\lambda x \lambda P \lambda e [P(e) \wedge \text{Ext}(e, P) > \text{NatExt}(P, x)] (\llbracket \text{sig}_{\text{Hans}} \rrbracket)$
 $\lambda P \lambda e [P(e) \wedge \text{Ext}(e, P) > \text{NatExt}(P, \llbracket \text{sig}_{\text{Hans}} \rrbracket)]$

The OVER-PP can adjoin to the VP borðaði as shown in (19). The external argument is assumed to be merged in vP, and the event variable of the predicate gets bound in T (cf. 20; we adopt a neo-Davidsonian treatment of the external argument à la Kratzer 1996).

- (19) $\llbracket \text{vP borðaði} \llbracket \text{pp yfir sig} \rrbracket \rrbracket$
 $\lambda e [\text{EAT}(e) \wedge \text{Ext}(e, \text{EAT}) > \text{NatExt}(\text{EAT}, \llbracket \text{sig}_{\text{Hans}} \rrbracket)]$
- (20) $\llbracket \text{TP Hans}_1 \text{ borðaði} \llbracket \text{vP}_{\text{Hans}} \llbracket \text{vP}_{\text{borðaði}} \llbracket \text{pp yfir sig}_1 \rrbracket \rrbracket \rrbracket$
 $\exists e [\text{EAT}(e) \wedge \text{Agent}(\text{Hans}, e) \wedge \text{Ext}(e, \text{EAT}) > \text{NatExt}(\text{EAT}, \text{Hans})]$
‘There is an eating event e such that Hans is the Agent of e and the extent of e exceeds the natural extent of an eating event relative to Hans.’

In Type 2 languages (German), the meaning of the OVER-element is identical, but the derivational history is different (cf. 6b above). The interpretation of (2) is shown in (21) and (22).

- (21) $[\text{VP} [\text{PP } \text{über}_i \text{ sich}_{\text{Hans}}] \text{über}_i\text{-aß}]$
 $\lambda P \lambda e [P(e) \wedge \text{Ext}(e, P) > \text{NatExt}(P, [\text{sich}_{\text{Hans}}])] (\lambda e [\text{EAT}(e)])$
 $\lambda e [\text{EAT}(e) \wedge \text{Ext}(e, \text{EAT}) > \text{NatExt}(\text{EAT}, [\text{sig}_{\text{Hans}}])]$
- (22) $[\text{CP } \text{Hans}_1 \text{ überaß}_j [\text{TP } \dots [\text{VP } \text{Hans} [\text{VP} [\text{PP } \text{über}_i \text{ sich}_1] \text{über}_i\text{-aß}_j]]]]$
 $\exists e [\text{EAT}(e) \wedge \text{Agent}(\text{Hans}, e) \wedge \text{Ext}(e, P) > \text{NatExt}(\text{EAT}, [\text{sich}_{\text{Hans}}])]$
 ‘There is an event of eating e such that Hans is the Agent of e and the extent of e is greater than the natural extent of an eating event relative to Hans.’

Finally, in Type 3 languages (English) there is no overt anaphor (cf. 23). The question thus arises how the first argument position of the OVER-predicate as defined in (17) is filled.

- (23) a. John overate (*himself) (on pizza).
 b. Fred overworks (*/?himself).

Although there is no overt anaphor in English, the interpretation of the examples in (23) is parallel to the one of German OVER-predicates. There are good (independent) reasons for assuming that English uses phonologically empty anaphoric elements in specific contexts. This assumption is also made in research on reflexivity more generally and can be historically motivated (cf. van Gelderen 2000; Gast 2006). In (24), such an anaphoric element is represented as ‘ \emptyset ’. It is syntactically bound like an overt anaphor.

- (24) $[\text{VP } \text{over}_i\text{-ate} [\text{PP } \text{over}_i \emptyset_{\text{John}}]]$
 $\lambda P \lambda e [P(e) \wedge \text{Ext}(e, P) > \text{NatExt}(P, [\emptyset_{\text{John}}])] (\lambda e [\text{EAT}(e)])$
 $\lambda e [\text{EAT}(e) \wedge \text{Ext}(e, \text{EAT}) > \text{NatExt}(\text{EAT}, [\emptyset_{\text{John}}])]$
- (25) $[\text{TP } \text{John}_k \text{ overate}_j [\text{VP } \text{John}_k [\text{VP } \text{over}_i\text{-ate}_j [\text{PP } \text{over}_i \emptyset_{\text{John}}]]]]$
 $\exists e [\text{EAT}(e) \wedge \text{Agent}(\text{John}, e) \wedge \text{Ext}(e, \text{EAT}) > \text{NatExt}(\text{EAT}, [\emptyset_{\text{John}}])]$

5. Binary OVER-Predicates

The analysis presented in Sections 3 and 4 can be applied to specific types of binary OVER-predicates as well. For instance, (26) can be interpreted along the lines sketched for unary OVER-predicates above.

- (26) John overwashed his jeans.

The most prominent reading of (26) is that John washed his jeans too many times and, as a result, his jeans were damaged. In this case, the OVER-predicate does not apply to individual washing events, but to an iterative or habitual ‘superevent’ consisting of several individual washing events. The interpretation is thus largely parallel to the one sketched in Section 3, the only difference being that different event types, or perhaps events at different levels, are under discussion. The component events of *overeat* correspond to individual washing events in (26), and the entire event of overeating corresponds to the ‘iterative superevent’ of (26) (repeated washing). Note that such ‘type-shifting’ can be observed in unary OVER-predicates as well. One can overwork not only on a particular occasion, but also over a longer period of time (by not taking a holiday).

A different case is illustrated by (27).

- (27) John overtightened the bolt.

While the most prominent reading of (27) is that too much force was exerted in the attempt to tighten the bolt, a reading that is not possible is one where John’s overtightening the bolt results from the number of times (individual events) he spends attempting to tighten the bolt (cf. also McIntyre 2003 for predicates of this type).

Examples like (27) are best accommodated by introducing the dimension of ‘effect’. For reasons of space, we can only sketch this analysis here. Events are, by definition, dynamic, i.e. they represent

transitions between states. Let us assume that states are associated with properties, e.g. *cold*. A state is a period in which this property is exhibited (*be cold*), while events are transitions between states in which the property in question is exhibited to different degrees (e.g. *cool [down]*) (cf. also Kennedy & Levin 2008). A state associated with a predicate P will be represented as ' s_P '. An event e can thus be regarded as corresponding to a pair of a source state (s_{P_0}) and a target state (s_{P_t}), i.e. $\langle s_{P_0}, s_{P_t} \rangle$.

The effect of an event corresponds to the difference between the degree to which P holds in s_{P_0} and in s_{P_t} . We use a function $\lambda P \lambda s [d(P,s)]$ that delivers the degree of P in s . The effect of an event $\lambda e [\text{Eff}(e,P)]$ can be defined as the difference between the degree of P in s_t and in s_0 as shown in (28) (cf. also Kennedy 2001, Kennedy & Levin 2008 on [differential] measure functions).

$$(28) \quad \text{For any event } e \text{ corresponding to a pair of states } \langle s_{P_0}, s_{P_t} \rangle: \\ \text{Eff}(e, P) := d(\langle P, s_{P_t} \rangle) - d(\langle P, s_{P_0} \rangle)$$

We can now provide a definition for OVER-predicates which captures cases like (27). First, we can define a function delivering the 'natural effect' of an event type (predicate), relative to an individual x . The definition given in (29) is entirely parallel to the definition of the NatExt-function in (16) above.

$$(29) \quad \text{For any individual } x, \text{ for any predicate } P, \text{ and for any event } e_i \in \{e \mid P(x, e)\}: \\ r_i = \text{Eff}(e_i, P), \text{ and} \\ \text{NatEff}(x, P) := \bar{r} (= \frac{1}{n} \sum_{i=1}^n r_i)$$

The function of OVER-predicates can now be described as follows:

$$(30) \quad [\text{OVER}] = \lambda x \lambda P \lambda e [P(e) \wedge \text{Eff}(e,P) > \text{NatEff}(P,x)]$$

According to (30), OVER-predicates indicate that the effect of an activity exceeds the type of effect typically (or perhaps ideally)³ associated with the predicates in question. This, we believe, comes rather close to an intuitive understanding of the type of predicate under discussion in this squib.

The question arises how the two analyses provided above – the one referring to the 'natural extent' of an activity and the one based on the 'natural effect' – relate to each other. *Prima facie*, the second analysis is more general. The quantity of 'effect' is proportional both to the 'power' with which an activity is carried out, and to its duration or the number of component events. The two cases considered above – *overeating* and *overtightening* – can thus be compared as illustrated in Figure 1. A more or less uniform eating event proceeds as shown on the left hand side (with four component events), while a (sudden) event of excessively tightening a bolt can be represented as shown on the right hand side. In both cases, the effect exceeds a specific threshold value (the 'natural effect').

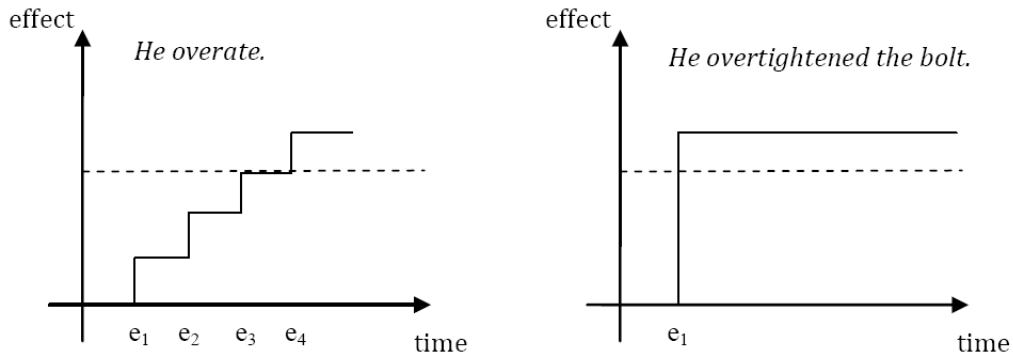


Figure 1: Effect as a function of power and extent/time

³The 'ideally'-option is attractive. It requires reference to modality. We leave an investigation of OVER-predicates in a modal framework as a suggestion for future research.

While the analysis based on ‘effect’ may be the more general one from this point of view, it seems to run into problems in cases like *overwash*. Washing is probably best described as an increase in cleanness, i.e. washing events are transitions from a state s_0 in which some object is less clean to a state s_t in which the object is cleaner, i.e. $d(\text{CLEAN}, s_t) > d(\text{CLEAN}, s_0)$. *Overwashing* should thus mean that some object has been washed beyond a natural degree of cleanness, according to the definitions given above. What it means, however, is that an object has been washed too many times. In this case, an analysis based on ‘extent’ is thus perhaps more appropriate. In other cases, both analyses make similar predictions, e.g. for *overeat* (‘eat too long or too much at a time’) and *overwork* (‘work too long or too hard [or both]’). Future work will have to show how the two alternative analyses considered in this squib relate to each other, and which sets of examples they can cover.

6. Conclusion(s) and Avenues for Future Research

In this squib, we have presented a semantic and syntactic analysis of OVER-elements in Germanic languages, i.e. markers of ‘excessivity’ that surface either as prepositions or as verbal prefixes. Starting with ‘unary’ OVER-predicates – those predicates taking either an anaphor as an object or no internal argument at all – we have captured the meaning of OVER-elements by regarding them as expressing a comparison of the ‘extent’ of a (specific) event and the ‘natural extent’ of a (generic) event of the relevant type. As this analysis could not explain specific cases like *overtighten* (*a bolt*), we have proposed an alternative analysis that makes reference to the ‘effect’ of an activity. While it seems to us that the latter analysis is more general than the former, there are also cases that it cannot easily accommodate (e.g. *overwash*). This seems to suggest that different (sub)cases of OVER-predicates need to be distinguished and that a unifying analysis is perhaps not possible (cf. also Risch 1995).

For a better understanding of OVER-predicates it will also be helpful to carry out more comparative investigations, within and beyond the Germanic family. Here we briefly highlight central aspects of such an endeavour and some of the problems that spring to mind when considering some more data from Germanic. First, as noted in Section 4, most English predicates that are modified by OVER do not license an overt anaphor. This is apparently also the case for Swedish (data from Camilla Thurén, p.c.):

- (31) a. överåta (*sig) ‘to overeat’
 b. överstimuliera (*sig) ‘to overstimulate’
 c. överarbeta (*sig) ‘to overwork’⁴
 d. överanvända (*sig) ‘to overuse’
 e. överträffa (*sig) ‘to exceed’ (lit. ‘to over-meet’)

Swedish and English thus appear to be akin in so far as they do not allow the presence of an overt anaphor (e.g. *-self* and *sig* respectively). Similarly, data from Norwegian suggests that this language makes use of different strategies with respect to OVER-modification (cf. Putnam forthcoming; data from Terje Lohndal and Helge Lødrup, p.c.):

- (32) a. Jon over-spiser (*seg).
 Jon over-eats ANPH
 b. Jon snakkt over seg.
 Jon talked over ANPH
 ‘John talked too much (about things he does not know).’

It seems, thus, that Germanic languages are not homogeneous with respect to the strategies of OVER-marking that they use and an interesting question that arises is which (classes of) verbs are associated with which strategies, and what conditions the choice of strategy.

Another interesting question concerns the relationship between OVER-predicates and other prefixes with an overlapping range of functions. (33) suggests that Type 2 excessivity marking is possible in Norwegian, however not with OVER. Prefixes like Norw. *for-* are found in other Germanic languages, too (e.g. German *ver-*, cf. 34). It appears that Swedish also follows suite here (cf. 35, data from Camilla Thurén, p.c.):

⁴As an interesting side note, Camilla Thurén (p.c.) notes that the non-incorporated form *arbета över* in Swedish means ‘to work over(time)’. The same reading is also possible in some (but not all) dialects of English.

- (33) Terje for-spise seg.
Terje PART-eat ANPH
'Terje ate too much.'
- (34) Hans hat ver-schlafen.
Hans has over-slept
- (35) Han för-åt sig på bananer.
he PART-ate ANPH on bananas
'He ate too many bananas.'

Some Germanic languages (e.g. German and Dutch) regularly allow VER-verbs in connection with an overt reflexive to deliver a 'damage reading,' e.g. Germ. *Er verspricht sich* 'He misspoke'. Future research in the domain of the syntax and semantics of excessivity must determine the degree to which these predicates are similar to, or distinct from, OVER-modification as discussed in this squib. Lastly, a more detailed analysis of the syntactic and semantic function of the overt anaphor in languages that license their presence in combination with OVER-modification is sorely needed, for it appears that it is impossible to classify them (purely) as reflexives or reciprocals, nor as middle markers, as the latter appear to be barred from prepositional phrases in Germanic languages (cf. Gast & Haas 2008).

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