‘med’ — THE SYNTAX AND SEMANTICS OF CONCOMITANCE IN NORWEGIAN

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Abstract

The paper discusses the syntax and semantics of the Norwegian preposition *med*, which denotes a variety of concomitance relations. The c-structural, f-structural and semantic properties of the preposition are examined. Special emphasis is put on the constructions which involve syntax-semantics mismatches, such as bare noun phrases denoting sets of states instead of sets of individuals and it is shown how this can be dealt with in Glue semantics.

1 Introduction

Norwegian has a preposition *med* 'with' which has a variety of meanings, more or less closely related to 'concomitance' in a wide sense – just like its English counterpart:

(1) *Gutten kom med faren.*
boy.ART came with father.ART
The boy came with the father.

(2) *Morderen forsvant med våpenet.*
murder.ART disappeared with weapon.ART
The murderer disappeared with the weapon.

(3) *Badekulturen forsvant med Romerrikets fall.*
bathing culture.ART disappeared with Roman empire.GEN fall
The bathing culture disappeared with the fall of the Roman empire.

(4) *Mordet ble utført med en pistol.*
murder.ART was committed with a gun

In example (1) we have the core meaning of concomitance – the father accompanies the boy and participates in the *coming* event. In example (2) there is also concomitance, but it is less symmetrical: the subject 'controls' the concomitance and is responsible for implicating the object of *med* in the event. In example (3), on the other hand, we have the opposite assymetry: the natural reading is that object of *med*, the fall of the Roman empire, somehow causes the event of the bathing culture disappearing. And in example (4) we have an instrumental reading, which can however also be described as a kind of specialized concomitance – the gun somehow participates in the matrix event, or to put it in other terms, there is a contextually inferrable relation between the gun and the murder event.

Even though these examples differ semantically, the syntax remains the same: we always have a prepositional phrase consisting of P + DP. But *med* frequently

[†]This paper builds on collaborative work with Kjell Johan Sæbø and Cathrine Fabricius-Hansen (both University of Oslo), to be published as Sæbø et al. (Forthcoming). The responsibility for the LFG- and Glue-based analyses presented here remains entirely my own.

occurs with a 'bare' (i.e. determinerless) NP.[1] There are often important semantic effects:

(5) *Skredderen satt der med istykkerrevet skjorte*
tailor.ART sat there with torn shirt
The tailor sat there wearing a torn shirt.

(6) *Skredderen satt der med ei istykkerrevet skjorte.*
tailor.ART sat there with a torn shirt
The tailor sat there with a torn shirt.

In example (5) it is clear that the tailor *wears* the torn shirt: for the articleless NP to be felicitous, there must be a relation of inalienable possession. In (6) the preferred interpretation is that the tailor does *not* wear the shirt, but only works on it.

Finally, there are cases where *med* seems to embed a 'small clause'[2] consisting of a DP and a predicate:

(7) *Han kom med lua på hodet.*
he came with cap.ART on head.ART
He came with the cap on his head.

(8) *Hev deigen i tre timer med et håndkle over (seg).*
let rise dough.ART for three hours with a cloth over (REFL)
Let the dough rise for three hours with a cloth over (it).

(9) *Tjeneren kom inn med Johannes' hode på et fat.*
servant.ART came in with John's head on a plate
The servant entered with John's head on a plate.

(10) *Det er ikke lett å få bilder av bygninger med blader på trærne.*
it is not easy to get pictures of buildings with leaves on trees.ART
It is not easy to get pictures of buildings when there are leaves on the trees.

(11) *Fødselen foregår med ski på beina.*
birth.ART takes place with skis on legs.ART
The birth takes place with (the mother or the baby) wearing skis.[3]

So there is much syntactic and semantic variation between the different constructions of *med*, and yet they all seem to be interrelated as instances of a meaning of 'concomitance' between the object of *med* and some element in the matrix clause.

[1] For convenience I will refer to noun phrases without a determiner or a postposed article as NPs, and noun phrases with a determiner or a postposed article as DPs. Nothing hinges on this. For clarity, I sometimes speak of 'bare' NPs and 'full' DPs.

[2] The term 'small clause' is here used pre-theoretically without a specific c-structure analysis being implied; see section 2 for the analysis.

[3] The actual example continues 'but nowadays, the skis are most often worn by the mother', exploiting the control ambiguity and referring to the traditional saying that Norwegian babies come with skis.

The very general meaning of concomitance which *med* expresses is reminiscent of the possession relation expressed by genitives, and from a discourse functional perspective, the two have similar, but 'inverse' functions: *med*, and English *with*, can be used to anchor the reference of a possessor via a possessum (*the boy with the knife*), just like a genitive will anchor the reference of a possessum (*the boy's knife*). In both cases, the semantic relation between the boy and the knife is the same.

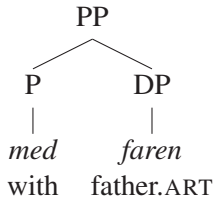
In this paper, I will first examine the syntax of *med* at c- and f-structure, then develop the idea that the meaning(s) of *med* is essentially the mirror image of the meaning(s) of genitives, and show how this can be this can be matched with the syntax in a Glue semantics approach.

2 c-structure

When *med* embeds a DP, the c-structure is straightforward:

(12) *med faren*
with father.ART
'with the father'

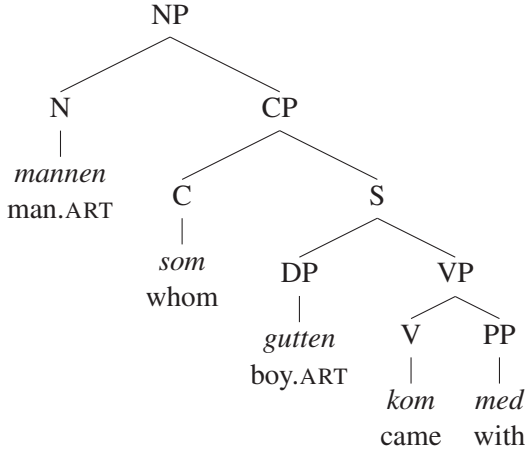
(13)



Like in other Norwegian prepositional phrases, the P can be stranded by its complement:

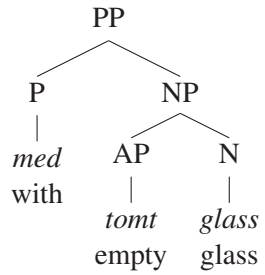
(14) *mannen som gutten kom med*
man.ART REL boy.ART came with
the man whom the boy came with

(15)



When the complement of *med* is bare, it is reasonable to assume the same c-structure modulo the category of the complement:

(16)



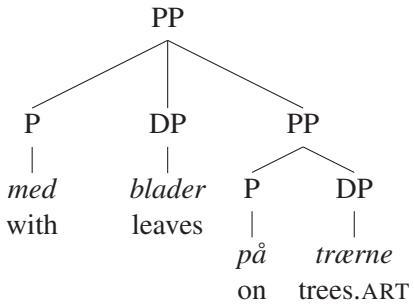
In constructions where *med* embeds a 'small clause', the question arises whether the DP and the predicate makes up a constituent or whether we have a ternary branching structure. For the latter speaks the fact that it is not possible to front the predicate and the DP together, whereas it *is* possible to front the whole prepositional phrase.[4] Thus example (10) can be turned into (17), but not (18).

(17) *Med blader på trærne er det vanskelig å ta bilder av*
with leaves on trees.ART is it difficult to take pictures of
bygningene.
buildings.ART
With leaves on the trees, it is difficult to take pictures of the buildings.

(18) **Blader på trærne er det vanskelig å ta bilder av bygningene med.*
leaves on trees is it difficult to take pictures of buildings.ART with

In fact (18) invites the reading where *på trærne* is restrictive and forms a constituent with *blader*, but in that case we get an instrumental reading which does not make sense. It therefore seems right to analyze the PP in (10) and (17) as in (19).

(19)



3 f-structure

3.1 Grammatical functions

In the 'normal' case where *med* embeds a DP or an NP, it is clear that that phrase bears the OBJ-function. This is clearly a thematic argument: in example (1), for example, the preposition *med* relates its object *faren* to *gutten* in the matrix clause.

[4]This point is made by Aa (2006).

When *med* embeds a 'small clause', on the other hand, it takes an OBJ and an XOBJ, and the object is non-thematic:

(20) *Jeg hadde noen timer til overs med kona bortreist.*
I had some hours free with wife.ART away from home
I had some hours free with my wife away from home.

Here, the *with*-relation holds between the subject of the matrix clause and *the state of the wife being away*, not between the subject and the wife. This is very different in the following example:

(21) *Jeg hadde noen timer til overs med ei bortreist kone.*
I had some hours free with a away from home wife
I had some hours free with a wife away from home.

Semantically, *med* is always a two-place relation which denotes a concomitance relation between its object and an element in the matrix clause. This does not necessarily mean that *med* is bivalent in the syntax as well,[5] but there are good arguments from binding facts that it does take a subject whenever it embeds a 'small clause':

(22) *Hev deigen i tre timer med et håndkle over (seg).*
let rise dough.ART for three hours with a cloth over (REFL)
Let the dough rise for three hours with a cloth over (it).

deigen is the object of the matrix clause, but it can bind an (optional) reflexive in the complement of *med*. Since Norwegian does not generally allow inanimate object binders, there must be a local subject present. In other words, the semantic form is here

(23) '*med* ⟨SUBJ, XCOMP⟩, OBJ'

Now what about the cases where *med* embeds a DP or an NP? Is it still the case that there is a subject present? Again, the binding facts suggest yes: As Lødrup (1999) showed, null possessors in inalienable possession constructions are generally bound in the same way as (simple) reflexives in Norwegian. Since possessors in the complement of *med* can be bound by inanimate objects in the main clause, we need a subject position in *med* here too:

(24) *Han leverte bilen med full tank*
he returned car.ART with full tank
He returned the car with the tank full.

In other words, we should conclude that the semantic form of *med* is here

(25) *med* '⟨SUBJ, OBJ⟩'

[5] See for example Dalrymple et al. (2004) on the importance of a proper distinction between syntactic functions and semantic arguments.

But does this apply to cases where the object of *med* is a DP and not an NP? *med* + NP patterns with *med* + 'small clause' rather than with *med* + DP in several respects, and at first sight the binding of inalienables seems to work differently in DPs and NPs. In example (24) the tank definitely is a part of the car which is returned, whereas (26) suggests that the subject returned the car together with some external tank:

(26) *Han leverte bilen med en full tank*
He returned car.ART with a full tank
He returned the car (along) with a full tank.

Consider the following three examples:

(27) *Kirurgen arbeidet med nesa brekt (small clause)*
Surgeon.ART worked with nose.ART broken
The surgeon worked with his nose broken.

(28) *Kirurgen arbeidet med brekt nese (bare NP)*
Surgeon.ART worked with broken nose
The surgeon worked with his nose broken.

(29) *Kirurgen arbeidet med ei brekt nese (indef DP)*
Surgeon.ART worked with a broken nose
The surgeon worked on a broken nose.

(27) and (28) are close paraphrases, both saying that nose of the surgeon was broken as he was working, whereas (29) is very different and says that the surgeon is working on a broken nose. However, the difference disappears if we look at non-unique inalienables, e.g. by substituting *tå* 'toe' for *nese* 'nose'.

(30) *Kirurgen arbeidet med tåa brekt (small clause)*
Surgeon.ART worked with toe.ART broken
The surgeon worked with his toe broken.

(31) *Kirurgen arbeidet med brekt tå (bare NP)*
Surgeon.ART worked with broken toe
The surgeon worked with his toe broken.

(32) *Kirurgen arbeidet med ei brekt tå (indef DP)*
Surgeon.ART worked with a broken toe.
The surgeon worked on a broken toe/with his toe broken.

In (32), unlike (29), the toe can belong to the surgeon. In other words, the difference in binding an inalienable in an indefinite DP (29) versus a bare NP (28) does not have to do with the category but rather with the fact that the indefinite article strongly suggests non-uniqueness, which does not make sense for noses belonging to a certain person, but is ok for toes belonging to a certain person. Finally, notice that an object can bind a non-unique inalienable in an indefinite NP:

(33) *Han parkerte bilen med et hjul på fortauet*
He parked car.ART with a wheel on sidewalk.ART
He parked the car with a wheel on the sidewalk.

All in all, then, we can conclude that there is always a subject present in *med*, so the semantic form is either as in (23) or as in (25). These will fit one of the two following phrase structure rules for Norwegian prepositions:[6]

(34) PP → P NP
↑= ↓ (↑OBJ) = ↓
((↑SUBJ PRED) = 'pro')

(35) PP → P NP {AP|PP}
↑= ↓ (↑OBJ) = ↓ (↑XCOMP) = ↓
((↑SUBJ PRED) = 'pro') (↑XCOMP SUBJ) = ↓

3.2 Control

The subject of *med* is never overtly realized, but is always a PRO which must be anaphorically bound. The binder is normally an argument of the matrix verb, in most cases the SUBJ or OBJ, as we saw above, but it can also be the implied agent in a passive, and even a participant implied by a verbal noun in the matrix clause as *fødsel* 'birth' in example (11).

Even more interestingly, the subject of *med* can also be anaphorically bound by the matrix event itself. This has been noted for other constructions as well Kortmann (1991):

(36) For three weeks the city had sweltered in heat and humudity, producing tension all around.

In more rigid approaches to the syntax-semantics interface such examples inevitably pose problems because the definite event description does not really correspond to any particular syntactic item (the verb denotes a *set* of events), but in Glue semantics we can capture this nicely, as we will see.

4 Semantics

4.1 Introduction

As we have already noted, the semantics of *med* are similar to that of genitives. So what exactly do genitives mean? Several answers have been forthcoming, but we will follow Partee (1983/1997). The first thing to notice is that they are ambiguous:

[6]Notice that the subject position is optional since it is unlikely that all Norwegian prepositions have subjects. However, since the subject is required by the argument structure of *med*, but never overtly realized, the rule always takes effect.

(37) John's book

(38) John's neighbour

In (37) we have a very general relation of 'possession': this could be a book that John owns, or a book he has written, or a book that is about him. In (38) we have a different situation, though, where *John* fills a slot in the valency of *neighbour*, so that the relationship is defined by the head noun as it were. We find the same ambiguity in *med*:

(39) *Mannen med boka*
man.ART with book.ART

(40) *En mann med døde foreldre*
a man with dead parents

In example (39), there is a general possessive relation between the man and the book, whereas in (40), the relation is defined by the lexical semantics of the word *parent*.

Genitives have been analysed by Partee (1983/1997) as being ambiguous between denoting a contextually supplied relation R_c and linking a noun to the argument structure of the head of the genitive:[7]

(41) a. **John's**$_2$: $\lambda P.\iota x.P(x) \wedge R_c(\mathbf{j}, x)$

b. **book** : $\lambda P.book(x)$

c. **John's book** $\lambda x.book(x) \wedge R_c(\mathbf{j}, x)$

(42) a. **John's**$_1$: $\lambda R.\iota x.R(\mathbf{j}, x)$

b. **neighbour** : $\lambda x.\lambda y.P(x, y)$

c. **John's neighbour** $\iota x.neighbour(\mathbf{j}, x)$

In the following we develop a similar semantics for *med* as essentially ambiguous between a linking function as in example (42) and denoting a general possessive/comitative relation as in (41). But in both uses, *med* essentially serves to relate two entities and so we will first have a look at what kinds of entities it can relate.

4.2 The semantic type of *med*'s complements

Ignoring the NP-internal restrictive cases, the subject of *med* will always have the type of individuals. This individual can be either a participant in the matrix event (as in e.g. examples 1 and 2), or the matrix event itself (as in example 3 and 4). In a Glue-based approach we do not need to distinguish these types in the lambda calculus: they are both simply individuals, and the meaning constructors will tell us how to combine them with other elements in the clause.

What about the semantic type of the complement of *med*? In the 'prototypical' case, this is also an individual: a 'normal' individual in examples (1), (2) and (4),

[7] Notice that the (English) genitive also comes with a built-in definite article.

and an event, the fall of the Roman empire, in example (3). Again, we do not need to differentiate the semantic types of (non-quantificational) DPs.

However, when *med* embeds a 'small clause' (as in examples 7-11), the complement is not an individual state, but a set of states: for example *John's head on a plate* does not refer to a particular state, but to an infinity of states characterized by John's head being on a plate. To denote a particular state, it needs to be hooked up to a definite time (which should then be related to the time of the matrix event).

Finally, we have the cases like example (5). A bare NP would normally denote a set of individuals: we would expect *istykkerrevet skjorte* 'torn shirt' to have the following meaning:

(43) $\lambda x.shirt(x) \wedge torn(x)$

But this is clearly not what we have. What example (5) means is that the tailor's shirt is torn at the moment of sitting. In other words, the semantics is in fact similar to the cases where *med* embeds a 'small clause' and (5) can be paraphrased as

(44) *Skredderen satt der med skjorta istykkerrevet*
tailor.ART sat there with shirt.ART torn
The tailor sat there with the shirt torn.

This means that the 'bare NP' in example (5), despite initial appearances, must denote a set of states (and not an individual state, for the same reasons as above). But this is exactly the kind of syntax-semantics mismatch that Glue is designed to capture, and we will see in section 4.5 how it can be done.

There is another thing to be noticed about the cases where *med* embeds a small clause or an NP: as was observed by Sæbø (2009), it is very often the case that the complement contains a variable which is bound by the subject of *med*. The variable is typically provided by a relational noun, as in example (24), but it can also come from a preposition without an object (as in the version of (8) without the reflexive), or from an inalienable possession, as in (44). This means that in many cases the semantic type of the complement is *not* a set of states, but rather a function from individuals to sets of states.

To sum up, then, the subject argument of *med* (disregarding the restrictive case) always has the type of an individual whereas the object can be either an individual (whenever *med* embeds a full DP), or a set of states (whenever it embeds a 'small clause' or a 'bare' NP), or a function from individuals to sets of states whenever there is an unfilled argument slot in the embedded state description.

4.3 Semantics of *med* + DP

This is the most straightforward case: *med* takes two individual type arguments and says that there is a contextually definable relation R_c between them. More technically, it constructs a set of states of relations holding between the two individuals:

(45) **med** : $\lambda x.\lambda y.\lambda s.R_c(x, y, s) : (\uparrow_{\text{SUBJ}})_\sigma \multimap (\uparrow_{\text{OBJ}})_\sigma \multimap \uparrow_\sigma$

Again we need the set of states to hook the state up temporally to the matrix event. In other words we need some kind of constructional meaning to bind the s variable and introduce a temporal relation $\supseteq$ between s and the matrix event e.

This constructional meaning constructor is independently required by so-called depictives like *raw* in *He ate the meat raw*, where we need to map the set of states of the meat begin raw onto the set of those events of him eating the meat which are surrounded by a state of the meat being raw. Pylkkänen (2002, p. 28) proposes such a depictive operator, which also takes care of linking *raw* to both the secondary predication and the matrix event, but in an LFG analysis with anaphoric control, we only need to link the two eventualities. This gives us an @DEPICTIVE template with the following meaning constructor:

(46) $\lambda P.\lambda Q.\lambda e.\exists s.P(s) \wedge Q(e) \wedge s \supseteq e :$
$(m_\sigma) \multimap (((\text{ADJ} \in m)_\sigma \text{ EV}) \multimap (\text{ADJ} \in m)_\sigma) \multimap$
$(((\text{ADJ} \in m)_\sigma \text{ EV}) \multimap (\text{ADJ} \in m)_\sigma)$

Where m refers to the f-structure of *med*.

For example, whenever *med* has an instrumental reading, it typically relates the matrix event to an object via the relation R_c interpreted as an instrumental thematic role. For example, the predicate *kill with the knife* should have the following meaning:

(47) $\lambda e.\exists s.R_c(e,\mathbf{k}, s) \wedge kill(e) \wedge s \supseteq e : f_\sigma \text{ EV} \multimap f_\sigma$

This meaning can be derived as in figure 1 in the appendix. Although the event variable does not have a direct representation in the syntax, it is present in the semantic structure as $(f_\sigma \text{ EV})$ and can therefore be accessed as an antecedent by the pronominal subject of *med*. We start by hypothesizing an event **e1** and let this event serve as the antecedent of the PRO subject of *med*. When we combine this with *with the knife*, we get a pair of the event constant **e1** and a set of states of a relation R_c holding between **e1** and the knife **k**. The depictive template turns the set of states into an event modifier restricting sets of events to those which are included in the time of R_c, so that we get a pair of the event constant **e1** and a function from events to truth values. Applying this function to **e1** yields the proposition that there is a state s of there being a relationship R_c between the killing event **e1** and the knife **k** and this relationship holds throughout the run time of the killing event. Finally we discharge the hypothetical event **e1** to get a set of events.[8]

There are even cases where we want *med* to relate two events, as in example (3). The object of *med* has the following meaning:

(48) Romerrikets fall = $\iota e.fall(e) \wedge theme(e,\mathbf{re}) : (\text{ADJ OBJ} \uparrow)_\sigma$

med relates the two events and says that there is a relation between them; the secondary predication rule says this state holds at least througout the runtime of the

[8]Notice that we did not introduce the arguments of the matrix verb here, as these will be introduced by a transitive template, see Asudeh et al. (2008).

matrix event. The derivation straightforwardly follows the same lines as in the previous example, and the contextual relation R_c is in this case interpreted as one of causation.

4.4 *med* + 'small clause'

As noted above, it is remarkable that in uses of *med* with 'small clauses', the 'small clause' typically contains a relational noun which has an unsatured argument slot. It is generally the case that this slot is controlled by the subject of *med*, as in examples (7-8). This corresponds to the cases where the genitive links an argument to a head as in example (38).

For these cases, we need the following meaning constructor:[9]

(49) $\lambda x.\lambda P.P(x) : (\uparrow \text{SUBJ})_\sigma \multimap \forall H(H \multimap (\uparrow\{\text{XCOMP} \,|\text{OBJ}\})_\sigma) \multimap \uparrow_\sigma$

med here combines with its subject and with its XCOMP, which 'lacks' a semantic resource H, and is therefore a function from such a resource to a set of states (simplified in the meaning constructor as $(\uparrow \text{XCOMP})_\sigma$ since we do not need to go into the internal structure of the set), and then constructs a set of states such that the subject of *med* fills the missing slot in the XCOMP. One example would be the version of example (8) without the reflexive pronoun *seg*, whose derivation is shown in figure 2 of the appendix.

For simplicity, we ignore the quantificational reading of the indefinite *et håndkle* 'cloth' and just represent it with the constant **h**. This combines with *over* to give a function from entities y to states s of the cloth being over y.[10] *med* then combines with a hypothetical subject, later to be discharged. The result is a function which takes a function from anything to a meaning for the XCOMP of *med*, to produce a meaning for the whole *med*-phrase. *et håndkle over* provides exactly this, since there is an empty slot corresponding to the object of *over*. The result is a set of states of the cloth being over the hypothetical subject of *med*. When the hypothetical subject is discharged, we get a function from entitites to such states.

Figure 3 in the appendix shows how to combine the meaning of *med et håndkle over* with (a simplified version of) the matrix clause *hev deigen*. First, the PRO-subject of *med* creates a copy of its antecedent. Next, this copy fills the empty subject slot in *med et håndkle over* while the antecedent resource, the object of the main verb, is still available. Then the @DEPICTIVE template is applied, turning *med* into a modifier of events. This modifier, and the object resource, can now be applied to a (simplified)[11] version of the matrix verb to yield a set of events

[9]Notice that both this meaning constructor and the one in (50) can apply not only to 'small clauses' but also to bare NPs, as we will see in section 4.5. For that reason we introduce the slight functional uncertainty $\{\text{XCOMP} \,|\text{OBJ}\}$.

[10]As another simplification, *håndkle* is introduced in the meaning constructor as the syntactic subject of *over*. However, this could be done in other ways. It is not clear that there is a subject position in *over*, but nothing really hinges on that question here.

[11]The semantic representation ignores the subject argument. Also, as shown in Asudeh et al. (2008), arguments of the verbs should be introduced by argument structure templates such as

of letting the dough rise such that there is a state of a cloth being over the dough which holds throughout the run time of the event.

In the above case, the small clause under *med* contained an unbound variable. There are also cases where there is *no* unbound variable in the 'small clause'. The semantic type of the complement is then just a set of states and *med* says that there is a state which falls under the description provided by its complement and which stands in a contextually defined relation to the subject of *med*:

(50) $\lambda x.\lambda P.\lambda s.\exists t.P(t) \wedge R_c(x,t,s)$:
$(\uparrow \text{SUBJ})_\sigma \multimap (\uparrow\{\text{XCOMP} \mid \text{OBJ}\})_\sigma \multimap \uparrow_\sigma$

We do not provide a full derivation here, but consider briefly example (10). The subject of *med* is the matrix event, which is the state of it being difficult to take pictures of the building. The complement of *med* is the state of there begin leaves on the trees. *med blader på trærne* denotes a set of states of some contextually definable relation, say causation, holding between it being difficult to take pictures of the buildings and there being leaves on the trees.

4.5 *med* + bare NP

The most interesting case is provided by the examples where *med* embeds a bare NP. These involve some interesting syntax-semantics mismatches:

(51) *Hvor mye veier denne ATVen med full tank?*
How much weighs this ATV.ART with full tank
How much does this ATV weigh with its tank full?

(52) *#Hvor mye veier denne ATVen med en full tank?*
How much weighs this ATV.ART with a full tank

(53) *Hvor mye veier denne ATVen med tanken full?*
How much weighs this ATV.ART with tank.TANK full

As the examples show, the bare NP construction patterns with the 'small clause' construction, not with the case where *med* embeds an indefinite DP. Both (51) and (53) introduce a predication over the tank, which is in both cases not just any tank, but the tank of the ATV – in other words, we have a case of inalienable possession. On the other hand, example (52), if it can be made sense of at all, must refer to how much the ATV weighs together with some full tank; there is no predication, only restrictive modification; and there is no inalienable possession.

Notice that Norwegian actually allows bare NPs to a much higher degree than other European languages do. But as shown by Borthen (2003), bare NPs in possessive context (widely defined, and including intensional and negated possession),

@TRANSITIVE. For a discussion of how these work in conjunction with secondary predication, see Haug (2008), although the constructions discussed there involve functional rather than anaphoric control.

such as those introduced by e.g. *ha* 'have', *trenge* 'need', *dele ut* 'hand out', *få* 'get' etc. and *med*, differ from other bare NPs in several respects.

'Normal' bare NPs typically refer to conventional situation types:

(54) *De ser på TV*
They watch TV

They cannot be freely modified, probably because of the restriction to conventional situation types:

(55) **De ser på gammel TV*
They watch old TV

But in possessive contexts there is no such restriction:

(56) *De har gammel TV*
They have old TV
They have an old TV (i.e. their TV is old).

Also, it is clear that the adjective in a bare NP occurring in a possessive construction often has a predicative reading, as in (24) above or in the following example with the verb *trenge* 'to need'.

(57) *For å kjøre herfra til Bergen trenger du full tank*
To drive from here to Bergen need you full tank
To drive from here to Bergen you need a full tank.

Despite appearances, it does not make sense to paraphrase this as 'You need an X such that X is a full tank' – the meaning is rather 'You need that your tank be full'. In other words, the bare NP denotes a state.

In an event-based semantics, we can model this as a constructional meaning. Recall first that according to the standard view all stage-level predicates (whether introduced by adjectives, verbs or prepositions) must have a state (or event) argument. The distinctive feature of these adjectives is that they are hooked up to times, and to achieve that we need the state/event argument. In other words, an adjective like 'happy' will need to have a lexical entry as the following:

(58) **happy**
$\lambda P.\lambda x.\lambda s.P(x,s) \wedge happy(x,s)$:
$((\text{ADJ} \in\uparrow)_\sigma \text{ VAR} \multimap (\text{ADJ} \in\uparrow)_\sigma \text{ RESTR}) \multimap$
$((\text{ADJ} \in\uparrow)_\sigma \text{ VAR} \multimap (\text{ADJ} \in\uparrow)_\sigma \text{ RESTR})$

In normal restrictive contexts, the state argument does not really play a role, but is closed off by the determiner, for example the quantifier *a*:

(59) **a**
$\lambda P.\lambda Q.\lambda x.\exists s.P(x,s) \wedge Q(x)$:
$(\text{SPEC} \uparrow)_\sigma \text{VAR} \multimap (\text{SPEC} \uparrow)_\sigma \text{RESTR} \multimap$
$\forall H[(\text{SPEC}\uparrow)_\sigma \multimap H] \multimap H$

But when there is no determiner the state argument is available to certain type-shifting operations such as the possessive bare NP-construction, which we can model through a template @POSS-NP:

(60) @POSS-NP
$\lambda P.\lambda s.\iota x.P(x,s) : (\uparrow \text{OBJ})_\sigma \text{VAR} \multimap (\uparrow \text{OBJ})_\sigma \text{RESTR} \multimap (\uparrow \text{OBJ})_\sigma$

To see how this works in conjunction with *med*, consider the derivation in figure 4. First, *full* combines with the (in this context) relational noun *tank*, which denotes the set of individuals such that they are the tank of **x2**. The result is a function from individuals that are the tank of **x2** to states of that tank being full. @POSS-NP then turns this into the set of states of the contextually uniquely identifiable tank of **x2** being full. We now discharge **x2** so that we get a function from individuals to states of their tank being full. This is what *med*, with its hypothetical subject **x1** looks for, so we get a set of states of **x1**'s tank being full. When we discharge **x1** we again get a function from individuals to states of their tank being full, and this time the meaning constructor tells us to combine this with the subject of *med*. The derivation then proceeds in a similar way to that in figure 3.

5 Conclusion

We have seen that *med* can be constructed with bare NPs, full DPs and 'small clauses'. Syntactically, the NP and DP constructions are similar, since they both involve *med* heading a binary branching PP and taking two f-structure functions, a subject and an object. In the small clause construction, on the other hand, we have a ternary branching structure, and *med* takes a subject, an XCOMP and a (non-thematic) object which is the subject of the XCOMP. But semantically, the NP construction patterns with the 'small clause' construction.

Glue semantics lets us deal with this syntax-semantics mismatch in an elegant way. We can treat bare NPs in the complement of *med* as other bare NPs occurring in possessive contexts. Apart from that we only need one meaning constructor (45) for *med* in the cases where it takes an individual-type object (i.e. a DP), one meaning constructor (50) for the cases where the complement is a set of states, and one (49) for the cases where the complement is a function from individuals to states, i.e. the state description has an empty slot. Finally, we have seen how Glue semantics lets us deal with other syntax-semantics mismathces, where a semantic argument which is not present in the syntax, either the implicit participants of a verbal noun such as *fødsel* or the event argument of a finite verb, can bind the subject of *med*.

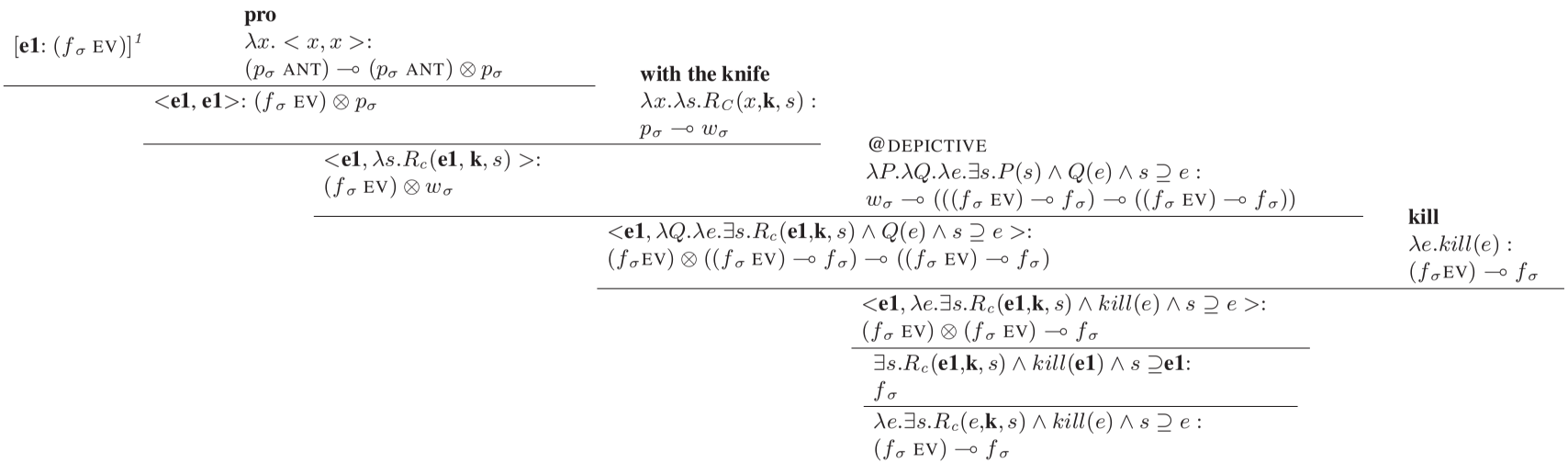


Figure 1: Semantic derivation of *kill with the knife*

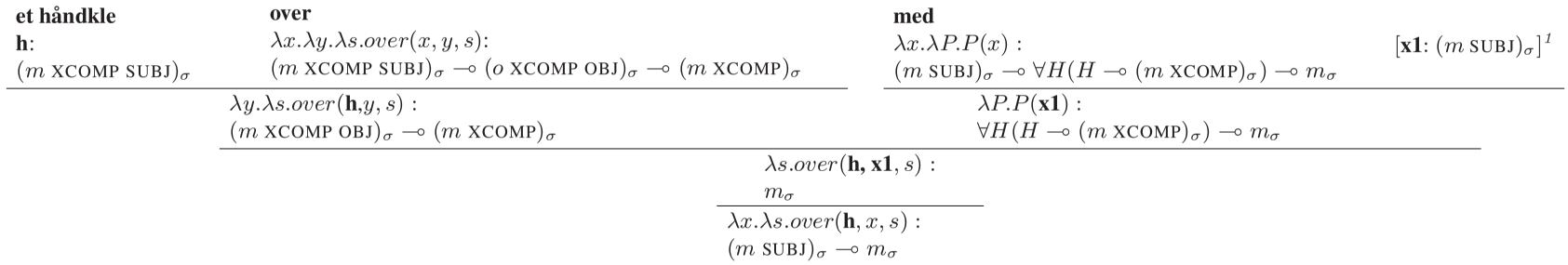


Figure 2: Semantic derivation of *med et håndkle over* 'with a cloth over (it)'

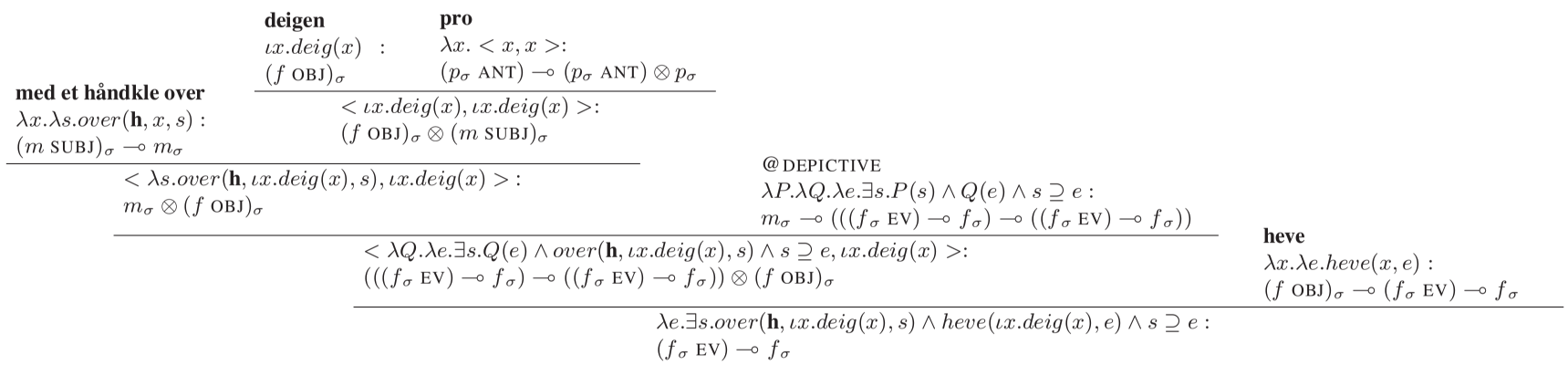


Figure 3: Semantic derivation of *hev deigen med et håndkle over* 'Let the dough rise with a cloth over (it)'

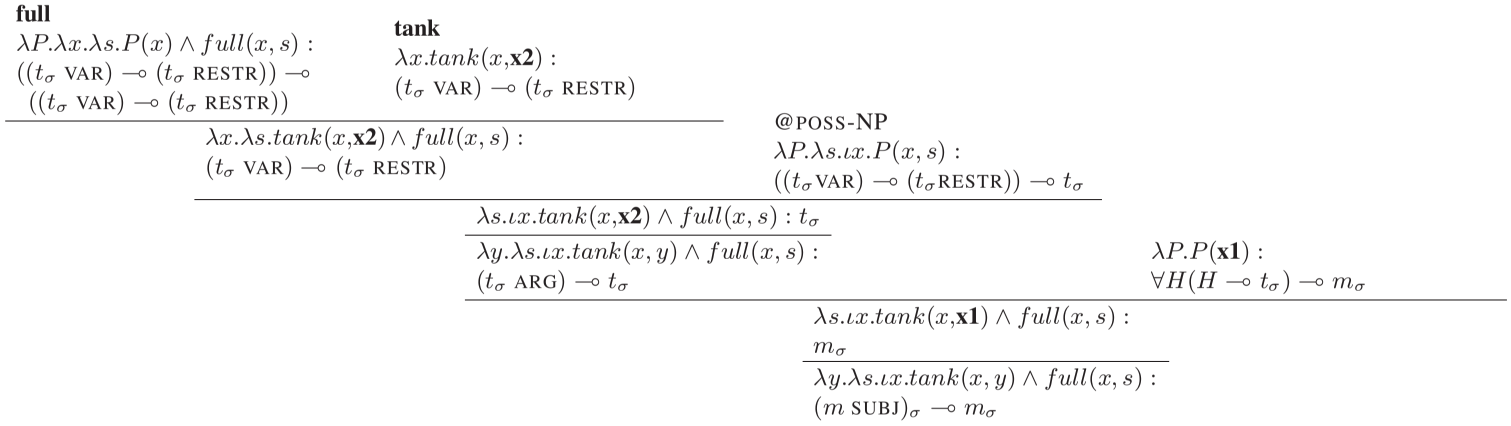


Figure 4: Semantic derivation of *med full tank*

References

Aa, Leiv Inge. 2006. *Med* som innleiande funksjonsord til småsetningar med og utan relativisering. *Norsk Lingvistisk Tidsskrift* pages 193–228.

Asudeh, Ash, Dalrymple, Mary and Toivonen, Ida. 2008. Constructions with Lexical Integrity: Templates as the Lexicon-Syntax Interface. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG08 Conference*, CSLI.

Borthen, Kaja. 2003. *Norwegian Bare Singulars*. Ph. D.thesis, NTNU, Trondheim.

Dalrymple, Mary, Dyvik, Helge and King, Tracy Holloway. 2004. Copular Complements – Closed or Open? In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG04 Conference*, CSLI Publications.

Haug, Dag. 2008. Tense and Aspect for Glue Semantics: The Case of Participial XADJs. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG08 Conference*, CSLI.

Kortmann, Bernd. 1991. *Free adjuncts and absolutes in English: problems of control and interpretation*. London: Routledge.

Lødrup, Helge. 1999. Inalienables in Norwegian and Binding Theory. *Linguistics* 37(3), 365–388.

Partee, Barbara H. 1983/1997. Genitives – a Case Study. In Johan van Benthem and Alice ter Meulen (eds.), *Handbook of Logic and Language*, pages 464–470, Elsevier.

Pylkkänen, Liina. 2002. *Introducing Arguments*. Ph. D.thesis, Massachussets Institute of Technology, Cambridge, MA.

Sæbø, Kjell Johan. 2009. Possession and Pertinence: The Meaning of *have*. *Natural Language Semantics* 17(4), 369–397.

Sæbø, Kjell Johan, Fabricius-Hansen, Cathrine and Haug, Dag Trygve Truslew. Forthcoming. Closed Adjuncts. In Cathrine Fabricius-Hansen and Dag Trygve Truslew Haug (eds.), *Big Events and Small Clauses*.