'med' — the Syntax and Semantics of Concomitance in Norwegian

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The Norwegian preposition *med* – and its English counterpart *with* – has a very wide range of uses as illustrated by the following authentic uses:

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

     The boy came with the father.

(2) 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.

(3) Han satt der   med fullt glass.
     He   sat there with full glass

     He sat there with (his) glass full

(4) 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).

(5) 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.

(6) 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.

(7) 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.[1]

In (1) and (2) med takes a normal noun phrase as its object. In (3) it takes a 'bare' (determinerless) NP; such NPs are generally more acceptable in Norwegian than in many related langauges, but seem to be very frequent with *med*.

med can also embed a 'small clause'[2] as in exx. (4)-(7), consisting of a DP and another phrase (typically a PP or an AP) which seems to predicate over the DP, as was observed for English *with* by Jespersen. In LFG terms, *med* takes an OBJ and an XCOMP.

Semantically, the 'bare NP' construction corresponds to the small clause construction, which is strongly dispreferred when the subject is indefinite and the predicate is a simple adjective: **med et glass fullt* is unacceptable whereas *med et glass fullt av øl* is fine. Correspondingly, (3) is fine, but **med fullt av øl glass* is unacceptable.

med, then, introduces a secondary predication in such cases. But the construction runs counter to a generalization about secondary predications, namely that they must share a thematic argument with the matrix predication: this is not obviously true for ex (5) for example.

However, there are reasons to think that *med* also takes a subject argument, cf. the binding of the optional pronoun in ex. (4). Sæbø (forthcoming)[3] develops an analysis where *med/with* is taken to introduce a covert relative clause with the verb *have*, which is responsible for abstraction over a free variable in the small clause and ensures that it gets bound to the subject of the preposition, which occurs in the matrix clause. The variable which gets bound in this way is called the pertinence variable, since it ensures that the secondary predication is pertinent to the matrix clause.

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

[2] I use the term 'small clause' pre-theoretically without any claim that the two phrases form a constituent.

[3] http://folk.uio.no/kjelljs/ha.pdf

In this paper I build on Sæbø's insights about the essentially possessive semantics of *med* while developing a glue semantics analysis which can also be extended to cases like where the variable abstraction approach fails because no 'pertinence variable' is apparent. The analysis supports a separation of syntax and semantics as found in the LFG parallel projection architecture.

med in its prototypical use is essentially the mirror image of a genitive, serving to anchor the reference of a possessor via a possessum. This is seen most clearly in cases where the PP acts as a restrictive modifier *the boy with the knife*. But the same essentially also true of the adverbial use of 'med' which is the focus of the present paper, although here the *med*-phrase does not restrict the reference but rather gives supplementary information about an event or a discourse referent.

We there adopt a semantics for *med* similar to Partee's (*Chicago Linguistic Society* 25, 1989) analysis of the genitive, according to which the genitive ($\approx$ subject of *med*) enters in a possessive relation to its head ($\approx$ the object of *med*). The exact relation is either contextually inferred (R_c) or lexically provided by a relational noun (R).

We therefore need to consider four possibilities, according to whether the relation is contextually specified or given by a relational noun and whether *med* takes only an OBJ, or an XOMP + an OBJ which is arguably non-thematic.[4]

In the simple case where *med* embeds a DP we need the following meaning:[5]

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

This, like the meanings below gives us a set of eventualities, which will serve as further input to the secondary predication construction which links state to the matrix event in a way not further discussed here.

Whenever *med* takes an XCOMP it is generally the case that the subject of *med* fills an empty slot in the semantic structure of the XCOMP. The meaning is thus:

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

This will account for examples like (4) where the subject of *med* provides the object of the preposition *over*.[6] However, here too 'looser connections' are possible, as in example (5) 'hodet på et fat'. Here, the XCOMP already denotes a set, and *med* restricts this set to those elements which stand in a contextually defined relation to its subject:

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

Whenever the relation is one between an event and an individual, the contextually inferred relation will typically be a thematic role. In (5), for example, the servant satisifies the proto-agent entailment of volitional involvement (Dowty, *Language* 1990) and so qualifies as an 'upholder' of the state.

In such cases, *med* needs to existentially quantify over the state argument provided by the XCOMP. As noted above, the bare NP construction (3) parallels the small clause construction, and exactly the same semantic structure with built in existential quantification will account for it.

What kinds of subject does *med* take? Consider first ex. (2). Here it is plausible that the subject of *med* is the whole event of the bathing culture disappearing: *med Romerrikets fall* thus means $\iota e.\iota f.disappear(\mathbf{bc}, e) \wedge fall(\mathbf{re}, f) \wedge R_c(e, f, s)$, ie. that there is a contextually defined relation between the fall of the Roman empire and the disappearance of the bathing culture, say, a relation of causing. Similarly, in (6), the leaves being on the trees causes the the state of it being difficult to get pictures of the buildings. That event arguments can be controllers in other constructions as well is apparent from examples like

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

Finally, (7) shows that the subject of *med* need not be present in the syntax at all, but can be an implicit argument of a relational noun. Such implicit arguments are claimed by Partee (1989) to occur in the semantics, but not in the syntax and this intuition is formally captured in Asudeh's analysis of relational nouns. Thus, these constructions provide arguments in favour of the LFG/Glue interpretation of the syntax/semantics interface in which elements can be present in the semantics even if absent from the syntax (Asudeh, *Linguistics & Philosophy* 2005).

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[4]Probably for pragmatic reasons, it is rare that *med* only takes an object which is linked to the subject via a relation specified by the noun, ie. ex (1) does not mean that the father is the father of the boy at the time of the event, but rather that the father stands in some contextually specified relation to the boy, say that of accompanying. We will therefore only consider three possibilities here.

[5]Since the relation R_c is provided by the context rather than from the linguistic material, I simply ignore it in the linear logic.

[6]As noted, the object of the preposition can also be realized by a reflexive pronouns, but we won't go into that here.