

# PP, FP and the telic/atelic distinction in Norwegian motion constructions\*.

Mai Tungseth  
*University of Tromsø.*

## 0. Introduction

In Norwegian, and to a lesser extent also in English, a sentence containing a combination of a verb of motion and a stative preposition like *i* ('in') or *på* ('on')<sup>1</sup> can be seen to be ambiguous between a telic reading of directed motion and an atelic reading of located motion. A few examples are given in (1):

- (1) a. Jon syklet i grøfta.  
*Jon biked in ditch-DEF.*
- b. Hans kastet ballen i stua.  
*Hans threw ball-DEF in living room-DEF.*
- c. Spionen gikk på taket.  
*Spy-DEF walked on roof-DEF.*

A sentence like (1a), for instance, can either be interpreted as an event of directed motion, where *Jon* ends up in the ditch as a result of his biking, or it can be read as an event of located motion, in which the event of *Jon's* biking takes place in the ditch. Simplifying somewhat, the PP *i grøfta* functions differently on the two readings of the sentence. On the telic reading, the *i*-PP gives the (spatial) endpoint of the event, while on the atelic, located motion, reading, the PP simply serves to locate the event spatially.

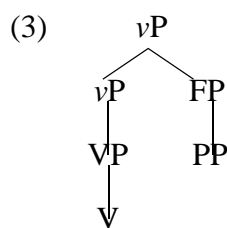
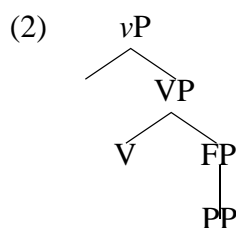
Taking ambiguous sentences like the ones in (1) as my starting point, I will argue that differences in interpretation like the ones observed are reflected in differences in the argument structure and syntactic structure for these sentences. Specifically, I will argue that both locative and directional PPs are dominated by a layer of functional structure which I have chosen simply to call FP, avoiding for the time being the issue of the specific content and semantic interpretation of this functional head.

Somewhat schematized, the argument structures for events of directed motion and events of located motion would look like the ones in (2) and (3), respectively:

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\* Thanks to Peter Svenonius, Tarald Taraldsen and Angeliek van Hout for useful discussion concerning the topics discussed in this paper. Also thanks to Kristine Benzten, for invaluable native speaker judgements, and to Marit Julien, Øystein Nilsen, Asya Pereltsvaig, and to Bodil Kappel Schmidt, for useful tips and feedback. And thanks to the audience at the 19<sup>th</sup> Scandinavian Conference of Linguistics at the University of Tromsø (Jan, 10<sup>th</sup>-12<sup>th</sup> 2002), where I presented a very early draft of this paper. This is a rough draft of May 8<sup>th</sup>, 2002, and all comments are of course welcome.

<sup>1</sup> We also have other prepositions that allow this type of ambiguity, e.g. *under* ('under'), *over* ('over'), *bak* ('behind') etc.



Specifically, I argue that in the case of the directional interpretation of sentences like the ones in (1), the verb takes an FP complement, where the head of the functional projection in the case of simple prepositional phrases like *i* or *på* is empty, but which can also contain lexical material. This, I will argue is the case in unambiguously directional sentences with complex directional PPs, where the PP then appears as complement to the functional head.

In the case of a locative interpretation of the PP, I will argue that also here, there is motivation for the presence of an extra layer of functional structure, which I will also assume to be FP. However, in contrast to directional PPs, locative PPs cannot appear as complement to a verb of motion. Instead, they must appear as adjuncts to a projection of the verb, which will be seen to follow from certain assumptions about the licensing and identification of functional projections.

This paper is organized as follows. In section 1, I look at combinations of a verb of motion followed by a simple prepositional phrase, which many speakers accept as ambiguous between a telic and an atelic reading. Here, I present a range of data which support the hypothesis that locative and directional PPs appear in different structural positions, to the effect that directional PPs are merged low down in the verb phrase as arguments of the verb, while locative PPs appear higher up in the verb phrase, functioning as event modifiers.

In section 2, I have a closer look at complex prepositional phrases, starting with directional PPs, which I will argue consist of a combination of a directional particle taking a PP as its complement. Going on to locative PPs, I will suggest that not only directional PPs, but also locative PPs are dominated by a functional projection.

As in the case of simple prepositional phrases, I will assume that the functional head is in fact the same as the one for directional PPs. I assume that PPs (or, more correctly, FPs) come from the lexicon as underspecified, and that interpretation is solely a consequence of the structural configurations that these elements are merged into.

In section 3, I lay out the theoretical basis for my analysis, under the working hypothesis that functional projections are responsible for event interpretation (c.f. Borer 2001, Travis 2000, or Ritter and Rosen 1998).

I assume that functional heads cannot appear freely with any verb, but must be licensed and identified (c.f. Ramchand 2002, van Hout 2000). In the following, I will argue that in case the PP is interpreted as directional, the functional head dominating the projection of the preposition can be licensed in one of either two ways. In the case of a directional PP containing a simple preposition like *i* or *på*, I assume that the F head is empty and must be licensed by an interpretable feature [*idir*] (directionality) on a verb of motion.

Furthermore, I assume that functional heads contain only uninterpretable category features that must be checked via Agree by an element carrying the interpretable variant

of the same feature. However, the F head can also be licensed by containing lexical material, as I will argue is the case with complex directional PPs.

If the head of a directional FP contains lexical material, the FP will be shown (c.f. section 2.2 below) to be freer in its syntactic distribution than in the case of a directional FP with an empty head, which must always appear in the complement position to a verb of motion.

In section 4, I give examples of derivations for different types of combinations of verb plus PP; for verbs with simple ambiguous prepositional phrases, and I also have a look at the internal structure of complex locative and directional PPs. In addition, I will have a look at some of the predictions made in terms of syntactic behavior and limitations on the external distribution of the two types of complex PPs, arguing that a constructionist approach to structure and interpretation is indeed on the right track here. Then, in section 5, I have a very brief look at some data from English, without going into detail with respect to the external distribution of locative and directional PPs.

### 1. Verb of motion plus simple PP

As already mentioned briefly in the introduction, many speakers of Norwegian<sup>2</sup> accept sentences like the ones in (1) above as ambiguous between a telic, directed motion, reading and an atelic, located motion, reading. (4) and (5) below give more examples of such sentences, where the sentences in (4) contain intransitive verbs, and the sentences in (5) contain transitive verbs:

- (4) a. Petter falt i brønnen.  
*Petter fell in well-DEF.*
- b. Per hoppet i vannet.  
*Per jumped in water-DEF.*
- c. Ballen rullet i åkeren.  
*Ball-DEF rolled in field-DEF.*
- (5) a. Hårek rullet tønna i kjelleren.  
*Hårek rolled keg-DEF in basement-DEF.*
- b. Per bar skiene i garasjen.  
*Per carried skis-DEF in garage-DEF.*
- c. Hunden jaget katten i et tre.  
*Dog-DEF chased cat-DEF in a tree.*

#### 1.1 The ambiguity-temporal adverbials and telicity

The acceptability of temporal adverbials is often used to test whether a given event is telic or atelic. While temporal PPs with *i* ('in'), like e.g. *i en time* ('for an hour') appear in conjunction with atelic events, PPs with *på* ('on'; English equivalent 'for'), like *på en time* ('in an hour') appear only in conjunction with telic events. However, the

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<sup>2</sup> Not all speakers of Norwegian accept this ambiguity, however. Although most speakers might accept sentences like (1a) as ambiguous, for many speakers, the only possible interpretation of the sentences in (5) would be one of located motion.

sentences in (4) and (5) accept both *på*-PPs and *i*-PPs simultaneously, but on different interpretations. Consider the sentences in (6)<sup>3</sup>:

- (6)
- a. Jon syklet i grøfta *i en time* (located motion).  
'Jon was biking around in the ditch for an hour'.
  - b. Jon syklet i grøfta *på to sekunder* (directed motion).  
'Jon biked into the ditch in two seconds'.
  - c. Per hoppet i vannet *i 20 minutter* (located motion).  
'Per was jumping (up and down) in the water for 20 minutes'.
  - d. Per hoppet i vannet *på et øyeblikk* (directed motion).  
'Per jumped into the water in a moment',
  - e. Hårek rullet tønna i kjelleren *i flere minutter* (located motion).  
'Hårek was rolling the keg in the basement for several minutes'.
  - f. Hårek rullet tønna i kjelleren *på to minutter* (directed motion).  
'Hårek rolled the keg into the ditch in two minutes'.
  - g. Barna dyttet kjelken i dammen *i en time* (located motion).  
'The children were pushing the toboggan around in the pond for an hour'.
  - h. Barna dyttet kjelken i dammen *på et sekund* (directed motion).  
'The children pushed the toboggan into the pond in one second'.

However, the sentences in (7) show that when the verb is used in isolation, only *i*-PPs are accepted, which gives an indication that the event is atelic:

- (7)
- a. Jon syklet i en time/\*på en time.  
'Jon biked for an hour/\*in an hour'.
  - b. Per hoppet i en halvtime/\*på en halvtime.  
'Per jumped for 30 minutes/\*in 30 minutes'.
  - c. Hans spaserte i en time/\*på en time.  
'Hans strolled for an hour/\*in an hour'.
  - d. Hårek rullet tønna i en halv dag/\*på en halv dag.  
'Hårek rolled the keg for half a day/\*in half a day'.

Since Verkuyl 1972 it is well known that telicity should be considered a property not simply of individual verbs, but instead a property of the whole predicate. Material in the verb phrase other than the verb may have an effect on the telicity of a predicate, for the present purposes it suffices to note that the addition of an endpoint-denoting (Goal) PP to an otherwise atelic predicate can induce a telicity shift from a telic into an atelic event.

The sentences in (8) give a few examples of this. (8a), for instance, with the verb used in isolation, can only be classified as an atelic event, only accepting temporal adverbial PPs with *i*, while (8b), where an endpoint-denoting PP has been added,

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<sup>3</sup> Although the translations of the sentences in (6) into English may vary in verb form (simple present/past for the directed motion reading, and progressive for the located motion reading), the Norwegian examples are all simple present or past, the different interpretations are suggested in the temporal PP alone.

adverbial PPs with *i* can no longer be accepted, the only choice possible being temporal adverbials with *på*, which indicates that the predicate is telic:

- (8) a. Jonas padlet i en time/\*på en time.  
 ‘Jonas paddled for an hour/\*in an hour’.
- b. Jonas padlet til den lille øya \*i en time/på en time.  
 ‘Jonas paddled to the little island \*for an hour/in an hour’.
- c. Hanne jogget i 20 minutter/\*på 20 minutter.  
 ‘Hanne jogged for 20 minutes/\*in 20 minutes’.
- d. Hanne jogget til sykehuset på 20 minutter/\*i 20 minutter.  
 ‘Hanne jogged to the hospital in 20 minutes/\*for 20 minutes.’

Thus, it seems that when the verb is used in isolation, the event described is atelic, but as the sentences in (6) show, the addition of a PP does not necessarily result in the expected shift in telicity from an atelic into a telic event. Instead, the interpretation of the event is ambiguous between a telic directed motion reading and an atelic located motion reading. Assuming the verb used in the construction to be essentially the same on both readings, how can this flexibility in interpretation be explained?

As already mentioned above, I will suggest an analysis where differences in interpretation like the ones observed follow as a natural consequence of differences in the argument structures and syntactic structures projected for the different readings. However, before examining the implications of this hypothesis any further, I will devote the remainder of this section to show that the two readings of potentially ambiguous sentences like the ones in (4) and (5) behave differently with respect to a range of phenomena that are normally considered to be sensitive to differences in syntactic structure, which indicates that the hypothesis that locative and directional PPs occupy different syntactic positions is indeed on the right track.

## 1.2 VP constituency tests

In the following, I will show that data from VP-topicalization and *do so*-substitution suggests that that locative and directional PPs occupy different positions in the syntactic structure, to the effect that directional PPs<sup>4</sup> appear low down in the verb phrase as complement to a verb of motion, while locative PPs occupy positions higher up in the syntax. Assuming that only whole constituents can be topicalized, only phrases that do not appear internally to the fronted constituent can be stranded under topicalization. Consider the sentences in (9), where the VP is fronted, stranding the *i*-PP:

- (9) a. [<sub>VP</sub> Rulle tønna] gjorde Hårek i kjelleren.  
*Roll keg-DEF did Hårek in basemen-DEF.*  
 ‘What Hårek did in the basement, was to roll the keg’.
- b. [<sub>VP</sub> Bære skiene] gjorde Per i garasjen.

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<sup>4</sup> Later, we will see that complex directional PPs are freer in their distribution than simple PPs that receive a directional interpretation. While simple directional PPs must appear immediately adjacent to a verb of motion, complex directional PPs can be separated from the verb to a much greater extent. A possible explanation for this difference in behavior will be outlined in section 4 below.

- Carry skis-DEF did Per in garage-DEF.*  
 ‘What Per did in the garage, was to carry the skis’.
- c. [<sub>VP</sub> Kaste ballen] gjorde Hans i stua.  
*Throw ball-DEF did Hans in living room-DEF.*  
 ‘What Hans did in the living room, was to throw the ball’.
- d. [<sub>VP</sub> Dytte kjelken] gjorde barna i dammen.  
*Push toboggan-DEF did children-DEF in pond-DEF.*  
 ‘What the children did in the pond, was to push the toboggan’.
- e. [<sub>VP</sub> Sykle (på trehjuls sykkel)] gjorde Ole i åkeren.  
*Bike (on tricycle) did Ole in field-DEF.*  
 ‘What Ole did in the field, was to bike on his tricycle’.

As the English paraphrases show, the sentences in (9) can only be interpreted as events of located motion, which indicates that directional PPs appear VP-internally, and cannot be stranded when the VP is topicalized. Locative PPs occupy positions higher up in the structure, and permit stranding. Data from *do so*-substitution adds support to this preliminary hypothesis, consider the sentences in (10)<sup>5</sup>:

- (10) a. Jon syklet i grøfta og Per gjorde det samme i garasjen.  
 ‘Jon rode his bike in the ditch and Per did so in the garage’.
- b. Per hoppet i vannet og Kjell gjorde det samme i grøfta.  
 ‘Per jumped (up and down) in the water and Kjell did so in the ditch’.
- c. Hårek rullet tønna i kjelleren og Petter gjorde det samme i entreen.  
 ‘Hårek rolled the keg in the basement and Petter did so in the hall’.
- d. Per bar skiene i garasjen og Jens gjorde det samme i hagen.  
 ‘Per carried the skis in the garage and Jens did so in the garden’.
- e. Hans kastet ballen i stua og Tor gjorde det samme i soverommet.  
 ‘Hans threw the ball in the living room and Tor did so in the bedroom’.

Again, the only available reading for the sentences in (10) is a reading where the PP with *i* is interpreted as locating the event in space. Hence, we see that data from VP-topicalization and *do so*-substitution indicates that there is indeed a structural difference between locative and directional PPs, to the effect that directional PPs are merged low down in the verb phrase, while locative PPs appear higher up in the structure, which explains the fact that only locative PPs can be stranded under VP-topicalization and *do so*-substitution, as the trees in (2) (DIR) and (3) (LOC) above showed (repeated here):



<sup>5</sup> *Gjorde det samme* ‘did the same’ is the Norwegian equivalent to English *did so*.

### 1.3 Adverbial placement

Nilsen 1998 argues that adverbial PPs in Norwegian are hierarchically ordered. When more than one adverbial PP are present simultaneously, the unmarked order between them is the following:

(11) < V PP<sub>dir</sub>, PP<sub>inst</sub>, PP<sub>dir</sub>, PP<sub>tel</sub>, PP<sub>atel</sub>, PP<sub>loc</sub>, PP<sub>temp</sub> > (adapted from Nilsen (1998:109))<sup>6</sup>.

In contrast to the present approach, Nilsen argues explicitly against right-adjunction of adverbials, arguing instead that adverbial PPs are best treated as reduced relative clauses on the event, taking the event (AspP) in their specifier positions. Thus, in a sentence containing a locative PP, for instance, the event argument appears in the specifier position of the locative PP. The surface ordering of constituents is then derived via movement operations. This view is compatible with Kayne's LCA, but in order for this approach to work, it has to allow for head movement out of a specifier position, which represents a serious weakening of the theory, which Nilsen also notes.

The examples in (12) are taken from Nilsen 1998 (pp. 108-109):

- (12) a. Sprang til jobben gjorde han på to minutter.  
*Ran to job-DEF did he in two minutes.*  
'What he did, was to run to work in two minutes'.  
b. \*Sprang på to minutter gjorde han til jobben.  
*Ran in two minutes did he to work-DEF.*  
'What he did, was to run in two minutes to work'.

The contrast between the pair of sentences in (12) is quite sharp. (12a), with the directional PP preceding the temporal *på*-PP is grammatical, while (12b), with the PPs in the opposite order, is ungrammatical.

According to Nilsen's hierarchy in (11), directional PPs can appear in two positions in the clause, either in the position immediately to the right of the verb, or in the position following instrumentals, but preceding temporal PPs<sup>7</sup>. Locative PPs, on the other hand, always follow instrumental and temporal *i*- or *på*- PPs (i.e. when more than one PP is present simultaneously). Disregarding for the moment issues of adjunction and the exact position of these PPs, these assumptions can be used to test the structures. Consider

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<sup>6</sup> Where *dir*=directional, *inst*=instrumental, *atel*=atelic, *loc*=locative and *temp*=temporal.

Nilsen 1998 distinguishes between telic and atelic PPs, where he assumes that temporal PPs with *i* are examples of atelic PPs and temporal PPs with *på* are telic PPs, being restricted in their occurrence to appearing with atelic and telic events, respectively. Normally, however, telicity is considered a property of predicates, and it is also possible to have different combinations of these PPs simultaneously, with different effects on the telicity of the predicate, like e.g. *Per vasket golvet på en time* ('Per cleaned the floor in an hour') (telic) or *Per vasket golvet i en time* ('Per cleaned the floor for an hour') (atelic), but also *?Per vasket golvet på en time hver dag i en måned* ('Per cleaned the floor in an hour every day for a month') (telic). Thus, I will simply refer to PPs of this type as temporal *i*-PPs and *på*-PPs, respectively.

<sup>7</sup> As we will see later on, this is actually an oversimplification, since simple and complex directional PPs show different behavior with respect to their positioning, which we will see below. Generally, however, it seems to be the case that simple directional PPs are restricted to appearing immediately adjacent to a verb of motion, while complex directional PPs are freer in their distribution.

the sentences in (13), with instrumental PPs. Since instrumental PPs can either precede or follow directional PPs, but must precede locative PPs, an instrumental PP preceding the (temporal) *i*-PP should result in an ambiguous interpretation of the sentence, while if the order of PPs is the opposite, the resulting event should only be interpreted as an event of directed motion.

- (13) a. Jon har syklet [på trehjulssykkel] [i grøfta].  
*Jon has biked on tricycle in ditch-DEF.*  
 b. Jon har syklet [i grøfta] [på trehjulssykkel].  
 c. Hårek har trillet tønna [i trillebår] [i kjelleren].  
*Hårek has rolled cask-DEF in wheelbarrow in basement-DEF.*  
 d. Hårek har trillet tønna [i kjelleren] [i trillebår].

Look again at the sentences in (13). In (13a, c), an instrumental PP (*på trehjulssykkel* and *i trillebår*, respectively) appears between the verb and the ambiguous (LOC/DIR) *i*-PP.

Hence, according to the prediction, the only possible interpretation should here be one of located motion, and this is exactly what we get. (13a,c) are both unambiguously locative. (13 b, d), on the other hand, where the order of PPs is the opposite (i.e. LOC/DIR *i*-PP preceding instrument PP), are unambiguously directional.

Further indications for the position of locative and directional PPs comes from the relative ordering of temporal *i*- and *på*-PPs, which follow directionals, but precede locative PPs. The prediction here is that a *i* or *på*-PP preceding the PP that is ambiguous between locative and directional should result in a directed motion reading of the sentence. Consider the sentences in (14):

- (14) a. Per har hoppet [i en time] [i vannet] (locative).  
 ‘Per has been jumping up and down in the water for an hour’.  
 b. Per har hoppet [i vannet] ?[på et sekund]/[i et sekund] (directional)<sup>8</sup>.  
 ‘Per has jumped into the water in a second/for a second’.  
 c. Ballen har rullet [i en time] [i åkeren] (locative).  
 ‘The ball has been rolling for an hour in the field’.  
 d. Ballen har rullet [i åkeren] [på en time] (directional).  
 ‘The ball has rolled into the field in an hour’.  
 e. ?Hårek har rullet tønna [i en time] [i kjelleren] (locative).  
 ‘Hårek has been rolling the keg for an hour in the basement’.  
 f. Hårek har rullet tønna [i kjelleren] [på en time] (directional).  
 ‘Hårek has rolled the keg in the basement in an hour’.

The interpretations of the sentences in (14) show that the prediction is indeed borne out. In the sentences in (14 a, c, e), where the ambiguous (i.e. LOC/DIR) PP is preceded by the *på*- or *i*-PP, the sentences can only be interpreted as events of located motion, while if the order of PPs is the opposite; with LOC/DIR PP preceding the temporal PP, only a directed motion reading is available.

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<sup>8</sup> (14b) is actually compatible with both *på en time* and *i en time*, but on different readings. With *i en time*, the sentence is interpreted as a series of consecutive events of Per jumping into the water.

## 1.4 Binding of anaphora

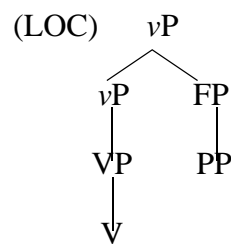
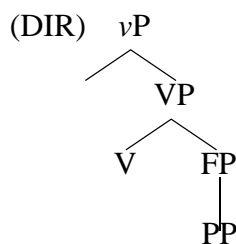
As we have already seen in the preceding sections, data from VP constituency tests together with facts about the ordering of adverbial PPs in Norwegian give us reasons to believe that locative and directional PPs occupy different syntactic positions, with directional PPs merged lower in the structure than locative PPs.

Differences in the distribution of anaphora on the two locative and directional readings of these sentences add further support to this hypothesis. According to Binding Theory Principles A and B, reflexives and pronouns should be expected to be mutually exclusive, since BT Principle A requires a reflexive to be c-commanded by an element that is coindexed with it, while for pronouns, according to BT Principle B, the opposite restriction holds; a pronoun cannot be c-commanded by an element coindexed with it.

On the assumption that directional PPs are merged lower down in the verb phrase than locative PPs, we get the following prediction: only directional PPs should permit reflexives coreferent with the direct object, which we will see is indeed the case. The sentences in (15) give some examples:

- (15) a. Jeg kastet Per<sub>i</sub> i svømmebassenget sitt<sub>i</sub> (directional).  
*I threw Per in swimming pool-DEF REFL.*  
 b. Jeg kastet Per<sub>i</sub> i svømmebassenget hans<sub>i</sub> (locative).  
*I threw Per in swimming pool-DEF PRON.*  
 c. Du dyttet hekse<sub>i</sub> i brønnen sin<sub>i</sub> (directional).  
*You pushed witch-DEF in well-DEF REFL.*  
 d. Du dyttet hekse<sub>i</sub> i brønnen hennes<sub>i</sub> (locative).  
*You pushed witch-DEF in well-DEF PRON.*

The sentences where the *i*-PP contains a reflexive (i.e. 15a, c) can only be interpreted as directed motion events, while (15b, d), where the PP contains a pronoun, are ambiguous between a directed motion reading and a located motion reading, c.f. the structures from (2) and (3) above, repeated here:



### 1.5 Syntactic structure and accent placement.

Hoekstra 1999 argues that accent placement can help in disambiguating the two (directed- and located motion) readings of a sentence like *dat Jan in de sloot valt* ('that John falls in the ditch'). Adjunct PPs are independently accentuated, while in verb-complement constructions, the main accent falls on the lexical head of the complement. Simplifying somewhat, Hoekstra (1984) argues that directional PPs appear as SC complements to the verb, while locative PPs are adjoined to the V'-level. Actually, the facts about accent placement in Norwegian are quite similar to the facts for Dutch. Also here, the accent falls on different positions in the sentence dependent on interpretation. This is shown in the sentences in (16):

- (16) a Jon SYklet i GRØfta (located motion reading).  
'Jon was biking around in the ditch'  
b. Jon syklet i GRØfta (directed motion reading).  
'Jon biked into the ditch.'  
c. Ballen RUllet i ÅKeren (located motion reading).  
'The ball was rolling (around) in the field'  
d. Ballen rullet i ÅKeren (directed motion reading).  
'The ball rolled into the field'

However, the actual connection between syntactic structure and accent placement still needs to be further elaborated upon, which has been done by Cinque 1993 and further developed by Truckenbrodt 1995.

Truckenbrodt 1995 proposes two different principles for stress placement; one for stress placement in verb-complement constructions, the other for cases in which one XP is outside of another XP, which is the case in adjunction structures. The two principles are repeated in (17-18) below (=Truckenbrodt's (25) p. 175 and (28) p. 177):

- (17) In a complement-head configuration, head and complement enter into a single headed by phrasal stress on the complement.  
(18) If XP is outside of YP and neither XP nor YP is contained inside a higher lexically headed ZP, XP and YP are phrased separately.

According to (17) and (18), then, the phrase stress in complement-head constructions (which I assume is the case for the directed motion reading of the sentence) is placed on the most deeply embedded constituent. Hence, on the directional interpretation of a sentence like *Jon syklet i grøfta* ('Jon biked in(to) the ditch'), we predict that the accent should fall on the DP *grøfta* ('the ditch'). As (16b) shows, this is indeed the case.

On the other hand, in cases where the PP (DIR/LOC) is not contained inside of the projection of the verb (i.e. in adjunction structures, like the one assumed for the located motion reading), the verb and the DP complement to the preposition are independently stressed, which sentences like (16a) show is indeed the case.

In this section we have seen that data from VP constituency tests, facts about adverbial placement, the binding of anaphora, and accent placement all point toward a

structural difference between the located motion and directed motion readings of a potentially ambiguous sentence like (1a), *Jon syklet i grøfta*. PPs getting a directional reading are merged low down in the verb phrase, while locative PPs appear higher up, possibly adjoined to a projection of the verb. In the next section, we will have a look at complex prepositional phrases (both locative and directional), to see how they fit into the overall picture that is emerging.

## 2. Complex PPs

In this section, I will have a closer look at complex prepositional phrases, which will be seen to basically fall into two categories: complex directional PPs and complex locative PPs. I start by looking at complex directional PPs, before moving on to looking more closely at complex locative PPs.

I will assume that both types of PPs are dominated by the projection of a functional head. However, for the time being, I will remain largely agnostic with respect to the exact nature of this functional head.

To foreshadow the findings of this section, then, we will see that, as was the case with the simple ambiguous PPs, the complex directional and locative PPs also behave differently with respect to the tests outlined in the preceding section.

### 2.1 Data: directional and locative prepositions

Complex directional preposition consist of a combination of a directional particle and a preposition. The sentences in (19) give a few examples:

- (19) a. Jon syklet ut i grøfta.  
*Jon biked out in ditch-DEF.*  
 ‘Jon biked into the ditch’.
- b. Hans kastet ballen inn i stua.  
*Hans threw ball-DEF in in living room-DEF.*  
 ‘Hans threw the ball into the living room’.
- c. Petter falt ned i brønnen.  
*Petter fell down in well-DEF.*  
 ‘Petter fell into the well’.
- d. Toget kjørte inn i tunnelen.  
*Train-DEF drove in in tunnel-DEF.*  
 ‘The train drove into the tunnel’.
- e. Spionen gikk opp på taket.  
*Spy-DEF walked up on roof-DEF.*  
 ‘The spy walked onto the roof’.
- f. Nora kjørte bilen ut i elva.  
*Nora drove truck-DEF out in river-DEF.*  
 ‘Nora drove the truck into the river’.

Complex locative prepositions also consist of a combination of a particle and a preposition. The sentences in (20) give the locative counterparts of the directional prepositions in (19):

- (20) a. Jon syklet ute i grøfta.  
*Jon biked out in ditch-DEF.*  
 ‘Jon biked around in the ditch’.
- b. Hans kastet ballen inne i stua.  
*Hans threw ball-DEF in in living room-DEF.*  
 ‘Hans threw the ball inside the living room’.
- c. Petter falt nede i brønnen.  
*Petter fell down in well-DEF.*  
 ‘Petter fell while he was in the well’.
- d. Toget kjørte inne i tunnelen.  
*Train-DEF drove in in tunnel-DEF.*  
 ‘The train was driving in the tunnel’.
- e. Spionen gikk oppe på taket.  
*Spy-DEF walked up on roof-DEF.*  
 ‘The spy was walking around on the roof’.

Comparing the prepositions in (19) and (20), we see that the locative prepositions differ minimally from the directional ones by having an extra morpheme *-e* attached to the particle. I will assume that both locative and directional PPs project structures where the projection of the preposition is dominated by the projection of a functional head, which I for lack of a more precise term will choose to call simply  $F^9$ .

Before looking at the details of the different structures, however, let us see whether complex locative and directional PPs also behave differently with respect to the tests outlined in section 1 above.

## 2.2 Syntactic behavior

As we saw in section 1 above, differences in behavior between (simple) locative and directional PPs with respect to various syntactic tests gave reason to believe that the two types of PPs appear in different positions in the syntactic structure. Let us now see whether applying the same tests to complex PPs yields the same results.

### 2.2.1 Topicalization and *do so*-substitution

The sentences in (21) (directional) and (22) (locative) show that complex directional and locative PPs behave differently with respect to VP-topicalization and *do so*-substitution, to the effect that only locative PPs can be stranded:

- (21) a. \*<sub>[VP Rulle tønna]</sub> gjorde Hårek inn i kjelleren.  
*Roll keg-DEF did Hårek in in basement-DEF.*  
 ‘What Hårek did, was to roll the keg into the basement’.
- b. \*<sub>[VP Bære skiene]</sub> gjorde Per ut i garasjen.  
*Carry skis-DEF did Per out in garage-DEF.*  
 ‘What Per did, was to carry the skis out into the garage’.
- c. \*<sub>[VP Kaste ballen]</sub> gjorde Hans inn i stua.

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<sup>9</sup> van Riemsdijk 1990, van Riemsdijk and Huybregts 2002, and Koopman 2000 have all argued for different types of functional projections in the extended projections of PP.

*Throw ball-DEF did Hans in in living room-DEF.*  
 ‘What Hans did, was to throw the ball into the living room’.

- (22) a. [<sub>VP</sub> Rulle tønna] gjorde Hårek inne i kjelleren.  
*Roll keg-DEF did Hårek in in basement-DEF.*  
 ‘What Hårek did, was to roll the keg in the basement’.
- b. [<sub>VP</sub> Bære skiene] gjorde Per ute i garasjen.  
*Carry skis-DEF did Per out in garage-DEF.*  
 ‘What Per did, was to carry the skis in the garage’.
- c. [<sub>VP</sub> Kaste ballen] gjorde Hans inne i stua.  
*Throw ball-DEF did Hans in living room-DEF.*  
 ‘What Hans did, was to throw the ball in the living room’.

The contrast between the sentences in (21) and (22) is quite sharp; only locative PPs can be stranded when the verb phrase is topicalized. The English translations of (23a, c) are in fact equally ungrammatical. For *do so*-substitution, the contrast is even sharper, as the sentences in (23) show. Again, attempts at stranding a directional PP results in ungrammaticality (c.f. 23a, c), while for locative PPs, stranding is accepted (c.f. 23b, d):

- (23) a. \*Jon syklet ut i grøfta og Per gjorde det samme inn i garasjen.  
*Jon biked out in ditch-DEF and Per did the same in in garage-DEF.*  
 ‘Jon biked out into the ditch and Per did so into the garage’.
- b. Jon syklet ute i grøfta og Per gjorde det samme inne i garasjen.  
*Jon biked out in ditch-DEF and Per did the same in in garage-DEF.*  
 ‘Jon biked out in the ditch, and Per did so inside the garage’.
- c. \*Per bar skiene ut i garasjen og Jens gjorde det samme ut i hagen.  
*Per carried skis-DEF out in garage-DEF and Jens did the same out in garden-DEF.*  
 ‘Per carried the skis out into the garage and Jens did so out into the garden’.
- d. Per bar skiene ute i garasjen og Jens gjorde det samme ute i hagen.  
*Per carried skis-DEF out in garage-DEF and Jens did the same out in garden-DEF.*  
 ‘Per carried the skis out in the garage and Jens did so out in the garden’.

To summarize the findings of this section briefly, we have made the observation that the presence of a directional particle like *inn* or *ut* does not have any effects on the results from topicalization and *do so*-substitution; stranding a directional PP under topicalization and *do so*-substitution is ungrammatical also in cases where the head of FP contains lexical material in the form of a directional particle.

### 2.2.2 Adverbial placement

Recall from the discussion in section 1 above, that in the case of simple ambiguous (LOC/DIR) PPs, there is a contrast with respect to the possibility of having material intervening between the verb and the PP. An intervening instrumental PP was seen to result in an unambiguously locative interpretation of the event, which led to the

preliminary conclusion that directional PPs are merged low down in the verb phrase as complements to the verb, while locatives appear higher up in the structure, possibly in adjoined positions. On the assumption that the structures projected for sentences with simple or complex PPs are essentially the same, we should expect complex PPs to behave in exactly the same way as simple PPs with respect to intervening material.

However, look at the sentences in (24), where (24a, b) give examples with complex directional PPs while (24 c, d) contain locative PPs:

- (24) a. Jon har syklet [på trehjulssykkel] [ut i grøfta].  
*Jon has biked on tricycle-DEF out in ditch-DEF.*  
 ‘Jon has biked on his tricycle into the ditch’.
- b. Hårek har trillet tønna [i trillebår] [inn i kjelleren].  
*Hårek trundled keg-DEF in wheelbarrow in in basement-DEF.*  
 ‘Hårek trundled the keg in a wheelbarrow into the basement’.
- c. Jon har syklet [på trehjulssykkel] [ute i grøfta].  
*Jon has biked on tricycle out in ditch-DEF.*  
 ‘Jon has biked on his tricycle (around) in the ditch’.
- d. Hårek har trillet tønna [i trillebår] [inne i kjelleren].  
*Hårek has trundled keg-DEF in wheelbarrow in in basement-DEF.*  
 ‘Hårek has trundled the keg in a wheelbarrow in(side) the basement’.

The sentences in (24) show that, contrary to what we would expect, there is in fact little or no contrast in acceptability between the locative (24 c, d) and the directional (24 a, b) sentences in (24) where an instrumental PP intervenes between the locative or directional PP and the verb, which might at first glance seem surprising, given the hypothesis that directionals are merged lower down in the VP than locative PPs.

This difference between simple and complex PPs follows naturally from assumptions about licensing and identification of functional structure; while simple directional PPs with an empty F head must appear in the complement position of a verb of motion in order to be interpreted as directional, complex PPs, which are inherently licensed by lexical material in F are freer in their distribution and can appear also in other positions in the clause than immediately adjacent to a verb of motion.

### 2.2.3 Binding of anaphora

In 1.4 above, we saw that there are consistent differences between locative and directional PPs with respect to the binding of anaphora. Generally, it seems to be the case that in the case of unambiguously locative PPs, a reflexive bound by the direct object is never allowed, while for directionals, both pronouns and reflexives are permitted, which indicates that PPs with complex directional prepositions are freer in their distribution than PPs with simple prepositions, which can only receive a directional interpretation when they appear in the complement position of a verb of motion. Compare the sentences in (25) (with locative PPs) and (26) (with directional PPs), which illustrate this contrast quite clearly:

- (25) a. \*Du trillet Per<sub>i</sub> inne i garasjen sin<sub>i</sub> med trillebår.  
*You trundled Per in in garage-DEF REFL with wheelbarrow.*

- ‘You trundled Per (around) inside his garage in a wheelbarrow’.
- b. Du trillet Per<sub>i</sub> inne i garasjen hans<sub>i</sub> med trillebår.  
*You trundled Per in in garage-DEF PRON with wheelbarrow.*  
‘You trundled Per (around) inside his garage in a wheelbarrow’.
- c. \*Du bar Hans og Grete<sub>i</sub> oppe på rommene sine<sub>i</sub>.  
*You carried Hans and Grete up on rooms-DEF REFL.*  
‘You carried Hans and Grete around inside their rooms’.
- d. Du bar Hans og Grete<sub>i</sub> oppe på rommene deres<sub>i</sub>.  
*You carried Hans and Grete up on rooms-DEF PRON.*  
‘You carried Hans and Grete around inside their rooms’.
- (26) a. Du trillet Per<sub>i</sub> inn i garasjen sin<sub>i</sub> med trillebår.  
*You trundled Per in in garage-DEF REFL with wheelbarrow.*  
‘You trundled Per into his garage in a wheelbarrow’.
- b. Du trillet Per<sub>i</sub> inn i garasjen hans<sub>i</sub> med trillebår.  
*You trundled Per in in garage-DEF PRON with wheelbarrow.*  
‘You trundled Per into his garage in a wheelbarrow’.
- c. Du bar Hans og Grete<sub>i</sub> opp på rommene sine<sub>i</sub>.  
*You carried Hans and Grete up on rooms-DEF REFL.*  
‘You carried Hans and Grete into their rooms’.
- d. Du bar Hans og Grete<sub>i</sub> opp på rommene deres<sub>i</sub>.  
*You carried Hans and Grete up on rooms-DEF PRON.*  
‘You carried Hans and Grete into their rooms’.

Somewhat surprisingly, we see that while locative PPs permit pronouns, but never reflexives, directional PPs accept both pronouns and reflexives. This contrasts with what we observed with simple directional PPs in 1.4 above, which were seen only to permit reflexives, and never pronouns.

With respect to accent placement, the facts for sentences with complex locative and directional PPs are exactly identical to what we observed for sentences with simple locative or directional PPs in 1.5 above; in verb-complement constructions, the main accent falls on the DP complement to the preposition, while in adjunction structures, the verb and the complement of the preposition both receive sentence stress, c.f. (27):

- (27) a. Jon syklet ut i GRØfta (directional).  
‘Jon biked into the ditch’.
- b. Jon SYKlet ute i GRØfta (locative).  
‘Jon biked around in the ditch’.

Thus, since sentences containing complex locative and directional PPs behave exactly as predicted by Truckenbrodt’s principles with respect to accent placement, we will not look further into that issue. However, before going on to sketching an analysis, let us first sum up the main findings of this section. We have seen that with respect to VP constituency tests, only locative PPs could be stranded, which is identical to what we have seen for PPs with simple prepositions.

However, the findings were a bit more surprising when we considered adverbial placement and the binding of anaphora, where the differences between locative and directional PPs were not as consistent as the case of PPs with simple prepositions. A preliminary conclusion here seems to be that directional PPs with complex prepositions are slightly freer in their distribution than directionals with simple prepositions, a possible explanation for which we will outline below.

### **3. The analysis: two different structures for events of located motion and events of directed motion**

In the following, I will pursue a view of language, and argument structure in general, where certain aspects of event structure should be represented syntactically, and where combinations of functional projections determine how the event should be interpreted. This view is often referred to as a *constructionist* approach to language, in contrast to a *projectionist* approach, where properties of lexical items themselves determine interpretation. In comparison with a projectionist approach, a constructionist approach can be seen to represent a major reduction of the burden put on the lexicon, since lexical entries do not have to contain information about the number and nature of the participants involved in the event. Instead, this can be treated as a consequence of the functional structure that these participants occupy. Borer (2001:3) summarizes this view of language elegantly, stating that:

“Syntactic properties associated with listed items, notably argument structure and category type, are, in fact, properties of structures and not properties of lexical items themselves... I will attempt to reduce as many as possible of the formal properties traditionally attributed to lexical listing to formal computational systems, be they syntax or morphology. I will call this view *exo-skeletal*, given its focus on the way in which the structure, rather than the listed item, determines not only grammatical properties, but also the ultimate fine-grained meaning of lexical items themselves”.

In accordance with this view of structure and interpretation, I will assume that the following projections are necessary in order to account for the observed ambiguities in interpretation (LOC/DIR) of a combination of a verb of motion and a PP containing a simple locative preposition, and ultimately also for structures containing a complex locative or directional PP:

- (i) Verbs decompose into two subparts, a *causing projection* *v*, and a *process projection* *V* (c.f. Hale and Keyser 1993).
- (ii) It has been argued (c.f. van Riemsdijk 1990, van Riemsdijk and Huybregts 2002, or Koopman 2000) that prepositional phrases contain more functional material than meet the eye. According to Koopman 2000, locative PPs are dominated by the projection of a functional head *Place*, while directional PPs in addition to *PlaceP* also contain a *PathP* projection.

Not adopting the specifics of Koopman’s analysis, however, I propose that the extended projection of both locative and directional PPs is dominated by an extra layer of functional structure, which I will simply call *FP*. This is similar for PPs with both simple and complex prepositions.

Following suggestions by van Hout 2000, or by Ramchand 2002, I assume that functional projections cannot appear freely with any verb, but must be licensed and identified. The verb comes from the lexicon with a set of features that determine which functional projections are licensed, and consequently also how the event is interpreted.

Features of this type come in pairs of interpretable and uninterpretable (c.f. Pesetsky and Torrego 2001), where I assume that lexical elements carry interpretable features and that functional heads carry uninterpretable features.

Functional projections can be freely projected, but in order to be licensed/identified, they must appear within the checking domain of an element carrying the corresponding interpretable feature. An interpretable feature on a lexical item checks and values an uninterpretable feature within its licensing domain. Features are then checked via the Agree operation (c.f. Chomsky 1998). Any uninterpretable features left at the end of the derivation will lead to a crash.

Having now given a rough outline of the basic machinery, let us now go on to look at derivations for different combinations of verbs and PPs, starting with the seemingly basic cases and moving on to more complicated ones.

#### **4. Derivations and structures**

In this section, I will have a look at how the machinery outlined in the previous section works in explaining the structural differences between sentences containing locative and directional PPs, as was observed in sections 1 and 2 above.

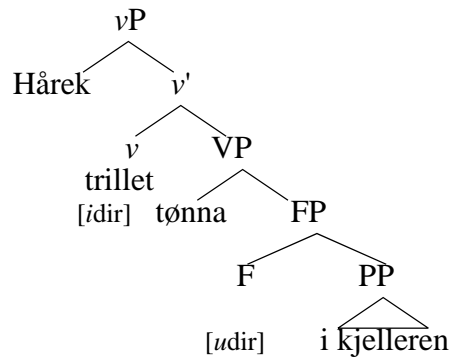
First, let us look at the cases in which a combination of a verb of motion (transitive, unergative, or unaccusative) and a PP with the locative preposition *i* can either receive a directed or a located motion reading.

Having done that, I will go on to look at combinations of a verb of motion and a complex directional PP, and of verb plus a complex locative PP. In addition, we will investigate whether locative FPs can appear in the complement position of any verb at all, concluding that if the verb does not carry an [*idir*] feature, locative PPs can in fact appear in the complement position of a verb. This adds support in favor of the constructionist approach to language assumed so far; FPs are taken from the lexicon as unspecified with respect to the LOC/DIR distinction, and the interpretation is a direct consequence of the features on the verb. An FP in the complement position of a verb (or with the head of FP filled by a directional particle) of motion is interpreted as directional, while an FP appearing outside of the licensing domain of a verb of motion receives a locative interpretation. And the possibility of locative complements in the case of non-directional verbs actually suggest that the feature-driven take on interpretation pursued here is indeed on the right track.

##### **4.1 Transitive verb plus PP with *i***

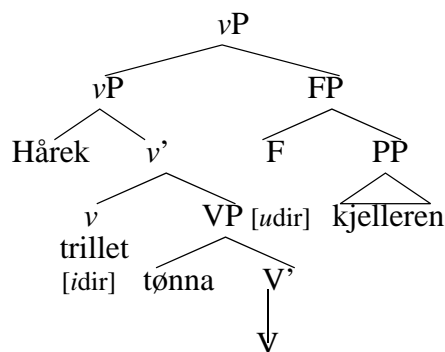
On the directional reading of a sentence like (5a) *Hårek rullet tønna i kjelleren*, I assume that the empty head of FP carrying an uninterpretable [*udir*] feature is licensed by a [*idir*] feature on a verb of motion. The subject appears in the specifier position of the *v*P projection, while the direct object occupies the specifier of the process projection, VP. In order for Agree to apply, the projection of the functional head must appear in the complement position to the verb carrying the [*idir*] feature, as in (28):

(28)



However, (5a) also has another possible reading, namely the located motion reading, where the biking event takes place in the basement, with the *i*-PP functioning as an event modifier, locating the event in space. I assume that a verb like *trille* always carries an *[idir]* feature, which, because it is interpretable, need not be checked. However, since the head of FP carries an *[udir]* feature, a locative FP is forced to occupy a position outside of the checking domain of Agree, or the locative PP would get a directional reading. I will assume locative PPs to be adjoined to a projection of the verb, functioning as event modifiers. The structure for the located motion reading of (5a) would hence look like the one in (29):

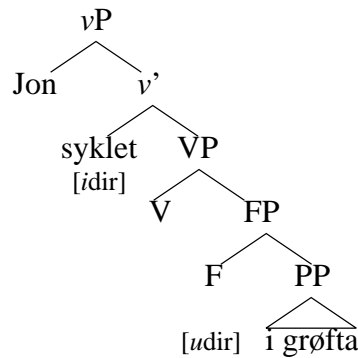
(29)



#### 4.2 Unergative verbs

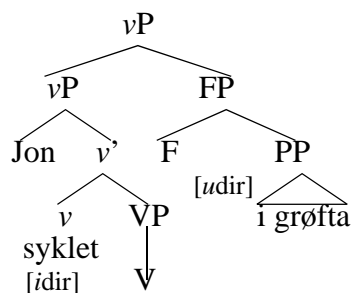
With unergative verbs, both VP projections (i.e. *vP* and *VP*) are present, and the subject of the cause projection is identical to the subject of the process projection. The structure for the directional reading of the sentence (1a) *Jon syklet i grøfta* would look like the one in (30). Again, a directional FP is licensed by a *[idir]* feature on a verb of motion, and appears in the complement position of the verb:

(30)



Again, on the located motion reading FP is forced to occupy a position outside of the domain in which Agree can apply, c.f. the structure in (31):

(31)

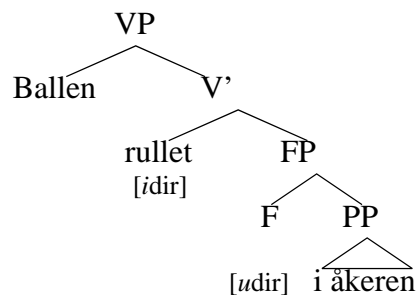


Thus, we see that both in the case of transitive and unergative verbs, the locative and directional interpretations of the same sentence project different structures. On the directional reading, the FP taking the PP as its complement appears in the complement position of the verb, while on the locative readings, FP occupy positions outside of the checking domain of Agree.

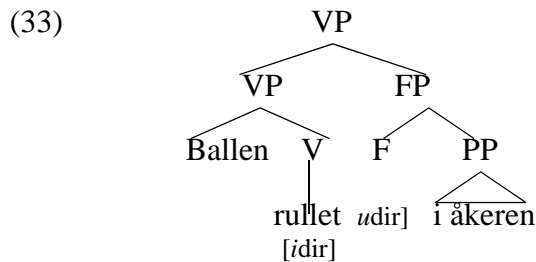
### 4.3 Unaccusative verbs

In the case of unaccusative verbs, I assume that since there is no notion of causation present, the causing projection *v* is also not present, and the structures for the directed and located motion readings for (4c) *Ballen rullet i åkeren* would look like the ones in (32) and (33), respectively:

(32)



On the directed motion reading in (32), FP appears in the complement position of a verb of motion, *rulle*, which carries an interpretable [*idir*] feature which can check the [*udir*] feature on the head of FP.



On the located motion reading represented in (33), on the other hand, the locative FP again appears as adjoined to the verb phrase, modifying the whole event.

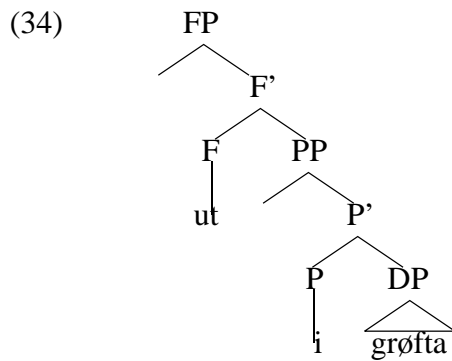
#### 4.4 Complex PPs

In this section, I will investigate further into the issue of PPs containing complex prepositions. Starting out, I will first have a look at complex directional PPs before moving on to the issue of complex locative PPs. However, because I will assume that essentially, complex directional and locative PPs occupy the same positions in the tree that simple PPs do<sup>10</sup>, I will concentrate mainly on the internal structure of the complex PPs.

##### 4.4.1 Complex directional PPs

In section 2.1 above, I argued that complex directional PPs consist of a combination of a directional particle and a preposition. I assume that the directional particle is a visible manifestation of the head of the functional projection dominating the PP, and that F then takes PP as its complement. The structure for a complex directional PP like *ut i* (literally: *out in* ('into')) in a sentence like (19a) *Jon syklet ut i grøfta* would thus look like (34), with the directional particle sitting in the head position of the functional projection taking the PP with *i* as its complement:

<sup>10</sup> But recall from section 2 that complex directional PPs are freer in their distribution than simple directionals, which I assume follows from the assumption that complex directional PPs are independently licensed, since the head of FP contains lexical material.



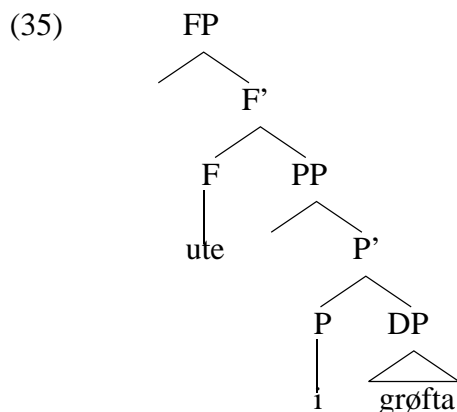
As mentioned in section 3, I assume that directional PPs in which the head of FP contains lexical material in form of a directional particle are inherently licensed, and that they thus can appear also in other positions in the clause than in the complement position to a verb of motion. The uninterpretable [*udir*] feature in F is then checked by an element (i.e. a directional particle) is merged directly in this position.

#### 4.4.2 Complex locative PPs

The structural difference between complex directional and complex locative PPs is in fact minimal, but in terms of distribution, complex locative PPs pattern with simple locatives, and not with complex directional PPs.

Like directionals, locative PPs consist of a combination of a particle and a preposition. However, interestingly, locative PPs differ from directional ones by having an extra morpheme *-e* attached to the locative particle. This morpheme never appears in the complement position of a verb specified as [*idir*], forcing complex locative PPs (in case the verb is specified as [*idir*]) to appear outside of the checking domain of Agree.

A corresponding structure for the PP *ute i grøfta* in (20a) would look like the one in (35):



#### 4.4.3 Can locative PPs appear as complements?

So far, we have seen that consistent differences between locative and directional PPs with respect to a variety of different phenomena support the hypothesis that directional PPs are merged as complements to the verb, while locative PPs appear higher up in the structure, and never in the complement position to a verb of motion. This, we have tried to derive from facts about structure and interpretation. Taking a constructionist

approach to the issue of structure and interpretation, we have assumed that a verb of motion carries an interpretable feature [*idir*]. An FP whose head carries the uninterpretable variant of the feature [*udir*] in the complement position of the [*idir*] verb is then interpreted as directional. However, a locative PP cannot appear in the complement position to a verb of motion, which we see particularly clearly if we look again at the binding of anaphora, where locative PPs consistently resist the presence of reflexives, irrespective of whether the PP is simple or complex. The sentences in (36) (repeated from (15) and (25) above) give some examples of this<sup>11</sup>:

- (36) a. \*Jeg kastet Per<sub>i</sub> i svømmebassenget sitt<sub>i</sub> (on a locative interpretation).  
 b. \*Du dyttet heksa<sub>i</sub> i brønnen sin<sub>i</sub> (on a locative interpretation).  
 c. \*Du trillet Per<sub>i</sub> inne i garasjen sin<sub>i</sub> med trillebår.  
 d. \*Du bar Hans og Grete<sub>i</sub> oppe på rommene sine<sub>i</sub>.

Thus, it seems that a locative PP can never appear in the complement position of a verb of motion carrying an [*idir*] feature. However, a question arising in this connection is whether this behavior is restricted to verbs of motion, or whether it is a property of locative PPs in general, to the effect that locative PPs never appear in the complement position of any verb, irrespective of whether the verb in question carries an [*idir*] feature or not. However, this seems a too hasty conclusion, because there seems to be many verbs that actually require a locative complement. A few examples are given in (37):

- (37) a. Marit bor i Tromsdalen.  
       ‘Marit lives in Tromsdalen’.  
 b. Dere parkerte bilene på parkeringsplassen.  
       ‘You parked your cars in the car park’.  
 c. Vi innlosjerte gjestene på et hotell.  
       ‘We accommodated the guests in an hotel’.  
 d. Byen ligger ved en innsjø.  
       ‘The town is situated by a lake’.  
 e. Vi bodde på et luksushotell i en uke.  
       ‘We lived in a luxury hotel for a week’.

The locative PPs in the sentences in (37) are very likely candidates to be arguments of the verb, and here, it is plausible to believe that none of the verbs used have an [*idir*] feature, all being verbs of placement.

However, the exact position of the locative PPs in these sentences still needs to be determined, because it is not entirely clear that they actually appear in the complement position of the verb. However, the fact just mentioned, that only PPs that appear lower down in the verb phrase than the direct object permit object-bound reflexives, can be used to determine the exact position of the locative PPs in the sentences in (37). If locative PPs appear in the complement position to the verb here, we expect them to

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<sup>11</sup> But recall from the discussion in section 1.4 above, that (36a, b) are grammatical on a directional interpretation, where the directional PP appears as complement to a verb of motion. However, the point here is that (36a, b) can never receive a locative interpretation.

permit reflexives, but if they appear in adjoined positions, as is the case with locative PPs in conjunction with a verb carrying the [*idir*] feature, only pronouns are accepted.

- (38) a. Vi innlosjerte Jens<sub>i</sub> på favorittrommet sitt<sub>i</sub>.  
 ‘We accommodated Jens in his favorite room’.  
 b. Dere parkerte bilene<sub>i</sub> på parkeringsplassene sine<sub>i</sub>.  
 ‘You parked your cars in their parking spaces’.<sup>12</sup>

Thus, it seems that the assumption that features on the verb determine what kind of functional projections are licensed or not. With a verb of motion, which I argued carries a [*idir*] feature, a PP can appearing in its complement position automatically is interpreted as directional, and hence, locative PPs can never appear in this position.

However, we have also seen that it is not a general property of locative PPs that they cannot appear as complements to the verb. While we have seen that a locative FP is not permitted in the complement position of a verb specified as [*idir*], locative complements are permitted in case the verb is non-directional, with no [*idir*] feature. This is witnessed by the clear contrasts with respect to binding. If the verb is specified as [*idir*], only directional PPs permit reflexives, while if the verb does not carry an [*idir*] feature, a reflexive is actually permitted inside the locative PP.

Consider the sentences in (39). In (39a), the verb is specified as [*idir*], and hence a reflexive inside the locative PP is not allowed. In (39b), on the other hand, the verb used does not carry an [*idir*] feature, and hence, a locative FP can be merged into the complement position of the verb, witnessed by the acceptability of a reflexive inside the locative prepositional phrase.

- (39) a. \* Du trillet Per<sub>i</sub> inne i garasjen sin<sub>i</sub>.  
*You trundled Per in in garage-DEF REFL.*  
 b. Vi parkerte lastebilen<sub>i</sub> i garasjen sin<sub>i</sub>.

This contrast actually supports a constructionist approach to language and interpretation, where FPs are taken from the lexicon as lexically underspecified, but where features on the verb determine the position these FPs can appear in, and ultimately also how they are interpreted.

## 5. A few notes on English.

In the beginning of this paper, I argued that in Norwegian, a combination of a verb of motion and a simple locative preposition like *i* (‘in’) or *på* (‘on’) can be interpreted as ambiguous between a telic reading of located motion and an atelic reading of directed motion. Norwegian was shown to be quite free in this respect, allowing for this type of flexibility with most verbs of motion.

In this section, then, I will try and have a look at data from English, to see how English fits into the general system that I have developed for English. However, the issues of feature specification and the licensing of functional projections, and the differences in the syntactic positions occupied by locative and directional PPs are

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<sup>12</sup> I.e. each car has its own defined parking space.

complicated issues which require and deserve further investigation, and which will hence not be investigated in this paper.

Consider the following sentences from English, which are the English equivalents of the Norwegian sentences in (1):<sup>13</sup>

- (40) a. John biked in the ditch.  
b. Hans threw the ball in the living room.  
c. The spy walked on the roof.

In Norwegian, I argued that sentences of this kind actually are ambiguous (LOC/DIR) for many speakers. The English sentences in (40), on the other hand, can only receive a locative interpretation. However, it is not the case that English simply lacks potentially ambiguous sentences that consist of a verb of motion combined with a simple locative preposition. The sentences in (41) give a few examples:

- (41) a. The ball rolled under the table.  
b. Mary swam behind the cape.  
c. The bird flew behind the barn.  
d. The bottle floated under the bridge.

Informally, however, it seems to be the case that in English, only verbs of directed motion, and not simple verbs of manner of motion verbs allow for this type of (LOC/DIR) alternation. The sentences in (42) all can be seen to specify some kind of direction, and hence, the possibility of a directional interpretation is available:

- (42) a. John put the key in the lock.  
b. ?Peter pushed the dog in the swimming pool.  
c. Willy threw his shoe in the garbage can.  
d. The dog jumped in the water.  
e. The passengers climbed in the lifeboat.

But on the other hand, sentences such as the ones in (43), with simple manner of motion verbs, can only receive a located motion interpretation:

- (43) a. John danced in the hall.  
b. Mary spun in the garden.  
c. The ball bounced in the kitchen.  
d. John ran in the forest.

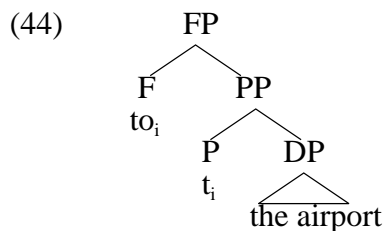
Thus, it seems that in English, the class of verbs that can combine with a PP with a simple preposition to form a directional interpretation is more restricted than in Norwegian, where this seems to be a property of most manner of motion verb. However,

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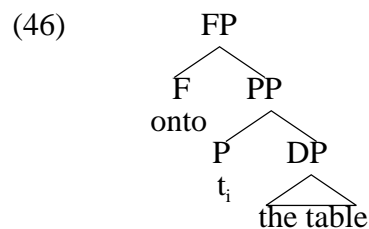
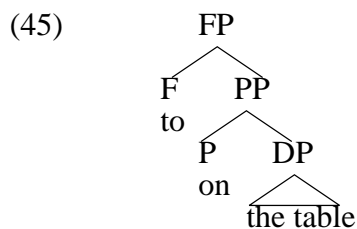
<sup>13</sup> But remember again that in English, it is more natural to use the past progressive instead of the simple past on the locative reading, while in Norwegian, there is no distinction between the simple past and the simple progressive.

having made these observations, and since a complete investigation of the properties of English verbs and prepositional phrases is beyond the scope of this paper, let us instead go on to looking at the internal structure for different types of PPs in English.

Like Norwegian, English has a class of complex prepositions that are unambiguously directional. These prepositions consist of a combination of a directional particle and a simple preposition. Prototypical examples of such prepositions include, among others, *into* and *onto*. Higginbotham 2000 terms prepositions like these, which are able to provide an endpoint to an otherwise atelic event, *accomplishment prepositions*, which can combine with an activity verb to form an accomplishment interpretation. As before, I assume that all types of prepositional phrases are dominated by a functional projection, and the internal structure for a simple directional PP like *to the airport* in a sentence like *Jenny walked to the airport* would hence look like the one in (44):

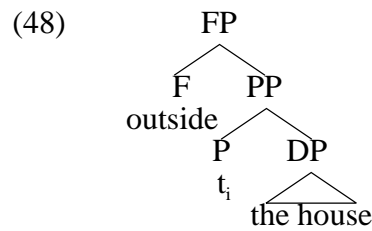
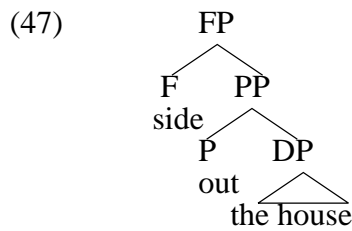


For the present, I assume that the directional particle *to* is merged in the lexical P head, but that it moves to F to license or identify this head<sup>14</sup>. For a complex directional PP like *onto the table* in a sentence like *The cat jumped onto the table*, I assume the following structure. Here, the directional particle *to* is merged directly in the F head, which takes the PP headed by *in* as its complement (c.f. (45)). *In* then incorporates into *to*, forming a complex preposition *into*, as in (46):



English also has complex prepositions of the locative type, which I assume project structures similar to the ones in (45-46). Also here, we have incorporation from P into F, forming a complex unit. Examples of such prepositions include e.g. *inside*, *outside* and *underneath*, where the morphemes *-side* and *-neath* cannot appear in isolation. Consider the structures in (47) and (48), for a PP like *outside the house* in a sentence like *The children played outside the house*:

<sup>14</sup> However, the structure of simple directional particles like *to*, or Norwegian *til* requires more investigation. For instance, is it possible that in the case of *to*, the P layer is simply not present at all, and instead, that F takes a DP complement? However, for the present, I will assume that the structure suggested in (43) in fact represents the correct structure also for PPs with simple directional particles.



Although this is just a superficial overview of the properties of different types of PPs in English, it seems that the internal structure of English PP is quite similar to that assumed for PPs in Norwegian, with the possible exception that in English, we have obligatory incorporation from P into F in the case of complex PPs<sup>15</sup>. However, many issues still need to be worked out, for instance the exact structural positions of the different types of PPs, and in addition, the theoretical implications of the observation that in English, the possibility of a combination of a verb of manner of motion and a simple locative preposition is much more restricted than in Norwegian still need to be worked out in detail.

## 6. Summary

Taking as my basis ambiguous (LOC/DIR) sentences in Norwegian containing a combination of a verb of motion and a PP headed by a simple locative preposition, I have argued that although superficially similar, the two readings of these sentences actually project different argument structures and syntactic structures. I have shown that various syntactic tests suggest that whereas directional PPs are merged as complements to the verb, locative PPs appear higher up in the structure, possibly as adjuncts to the verb phrase.

Looking more closely at the internal structure of the two types of PPs, I have suggested that both simple and complex locative and directional PPs are dominated by the projection of a functional head, which I, awaiting further investigation, have chosen to call F.

Although I have not yet looked at the differences in the semantic function of the two types of PPs, it seems at this point natural to assume that directional PPs function as arguments of the verb, while locative PPs are predicates of events, modifying the complete event.

Taking a basically constructionist approach to the relationship between structure and interpretation, I have argued that the observed differences in behavior of directional and locative PPs follow from a system where interpretation is largely a consequence of the different structural configurations that lexical items appear in, and not properties associated with individual lexical items.

Following suggestions by Ramchand 2002, I have assumed that the heads of functional projections carry uninterpretable category features that must be checked via Agree by a lexical element carrying the corresponding interpretable feature. I assume that in Norwegian, a verb of motion always carries an interpretable feature [*idir*], and a FP

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<sup>15</sup> The issue of complex Ps and incorporation in Norwegian has not been dealt with in this paper, and awaits further investigation, as the properties of complex Ps where incorporation has taken place and complex Ps with no incorporation are far from simple and consistent.

whose head is specified as [*udir*] is interpreted as directional if it is merged in the complement position of an [*idir*] verb.

In the case of a simple PP receiving a directional/goal of motion interpretation, the head of FP is empty, and thus, FP can only be licensed in the complement position of the verb. However, there is also another way in which FP can be licensed, viz. if the head of FP contains lexical material that can license it independently. That this assumption is essentially on the right track, can be seen from the fact that complex directional PPs, (where I assume the directional particle to occupy the head of FP) can occupy different positions in the clause, and not only the position immediately adjacent to the verb.

Furthermore, I have assumed that the verb carries an [*idir*] feature also in the case of a locative interpretation, and in addition, the head of FP carries the [*udir*] feature. Since an interpretable feature acts as a probe, searching for a matching goal within its licensing domain, locative PPs can never appear in the complement position to a verb of motion, where they would get a directional interpretation. Instead, locative PPs must appear outside of the checking domain for Agree. Moving on to English, we have seen that English is more restricted than Norwegian in that only verbs that seem to incorporate an element of direction allow a directional complement with *in*. However, with respect to the internal structure of prepositional phrases, the two languages are very similar, with the exception that in English complex PPs, incorporation of P into F seems to be obligatory.

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