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A neo-constructional approach to computer-oriented talk

Thesis for the degree philosophiae doctor

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Norwegian University of Science and Technology

Faculty of Arts

Department of Language and Communication Studies



NTNU

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For my parents
Inge and Eli Brøseth
And
My daughter
Ingelin Brøseth Karlsvik

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Abbreviations:

ACC = accusative
ADV = adverb
AP = adjective phrase
AUX = auxiliary
COMPL = complementizer
CP = complementizer phrase
DO = direct object
DS = dialog system
EXPL = expletive
FEM = feminine
F-VB = finite verb
INF = infinitive
INF-M = infinitival marker
IO = indirect object
IP = inflection phrase
I-VB = infinite verb
N = head noun
NP = noun phrase
PA = predicate adverbial
PASS = passive
PST-PRT = past participle
SA = sentence adverbial
SC-SUBJ = small clause-subject
SU = subject
T-ADV = temporal adverbial
U = user
VB = verb
∅ = elided item

Annotation symbols:

[elli] = ellipsis
< > = repetitions and corrections
** = uninterpretable word
() = possible interpretation of word
[sil] = silence (measured in seconds)
[fil-e] = filler item (vocal)
! = emphasis on the following word

* = ungrammatical
? = acceptable
?? = less acceptable but not ungrammatical
= semantically odd but grammatically acceptable

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1 Introduction

I started to work on this thesis in 2003 when I joined the BRAGE project as a PhD student.¹ BRAGE was financed by the Research Council of Norway from 2001 through 2006 as a part of the KUNSTI programme (Knowledge Generation for Norwegian Language Technology). The project partners were two departments from the Norwegian University of Science and Technology: the Department of Electronics and Telecommunications and the Department of Language and Communication Studies, along with Telenor R&D and SINTEF IKT (the Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology). The BRAGE project was a research and development project focused on speech technology and dialogue-based human-computer communication.² As a PhD student in BRAGE, one of my tasks was to contribute to this effort. In 2003, the project had already recorded several human-computer dialogues (the Trondheim Wizard of Oz material), and one of my contributions to BRAGE was therefore to document, describe and study the syntactic structures in this material, which included annotation of the speaker utterances according to the BRAGE annotation manual (Amdal and Kvale, 2003).

Given the material in the data, different phenomena could have been studied: dialogue structure, repair strategies, disfluencies, to name a few, but I have always been interested in syntax and syntactic theories, so the natural choice was to limit the thesis to this area. At the beginning of my PhD, my mindset and knowledge of linguistic theories was primarily centred on Chomskian grammar. However, the modality of the data material made me search for literature focusing on spoken language. After reading Linell (1982) and Miller and Weinert (1998), I realized that the GB theory and its descendants have to a great extent been focussed around written language, while at the same time, features of spoken language have been considered irrelevant in the study of language. Secondly, I became intrigued with an assertion put forth in Miller and Weinert (1998), which concerned the use of prefabricated chunks in spoken language. They maintained that "*it is fairly certain that utterances of spontaneous spoken language will contain phrases and even whole clauses that speakers store and use as wholes*" (ibid. p. 394). The Trondheim Wizard of Oz (henceforth TWOZ) showed that the syntactic structures were homogeneous, with one possible explanation that people indeed had stored certain structures as a whole, as proposed by Miller and Weinert (1998). However,

¹ BRAGE is an abbreviation for *Brukergrensesnitt for naturlig tale* (User interface for natural speech).

² A list of BRAGE publications can be found at this URL: <http://www.iet.ntnu.no/projects/brage/archive.php?file=Publikasjoner.html> [Accessed 23. March 2007]

idioms and other ready-made language sequences are considered peripheral phenomena in generative grammar. Thus, they are not part of the core grammar, and thereby considered uninteresting in a model of Universal Grammar. But if humans have the ability to store prefabricated chunks of words and sentences (such as idioms and rhymes) and can use them as a whole, the natural assumption would be that the grammar itself also has the ability to store larger meaningful units. Since mainstream generative grammar (MGG) presupposes that every sentence is built from scratch each time, the idea of ready-made language sequences and larger meaningful units is difficult to incorporate into this framework.³ In addition, I started to question other axioms in the lexically driven grammars, such as how words are perceived as the source of syntax, and how the lexicon is organized. In the search for an approach that better could incorporate the assumptions about spoken language put forth by Miller and Weinert (1998), I was introduced to the constructionalist framework, primarily through Åfarli's (2005) work on Norwegian argument structure frames. The ideas found in constructionalism seemed to be more in line with the assumption of prefabricated chunks as an important part of human language. I also felt that this approach could yield some insight as to why the syntactic structures in the data material were rather uniform. MGG has always emphasized the creative aspect of language, but in the TWOZ, the participants seemed to have a set of preferred structures. Thus, the TWOZ material has *inspired* the discussion and comparison of linguistic theories in Chapter 3, but the comparison of the lexically driven grammars and the constructionalist approach also concerns more fundamental issues. In order to do this properly, I therefore had to consider issues and consequences of the two theories that are not directly related to the syntactic structures in the TWOZ.

In my presentation of the constructionalist approach, I also touch on issues that are not further developed in the analyses in Chapter 4, for instance the functional projections. The reason for this is twofold. First, I have kept the theoretical discussion because they can serve as a starting point for further research, even though the theories themselves are not directly used in the analyses in Chapter 4. Secondly, it was necessary to restrict the analyses to a few phenomena in order to get an in-depth presentation of the selected topics. Therefore, other interesting topics had to be put aside.

³ The term *mainstream generative grammar* is used in Culicover and Jackendoff (2005:3) to refer to the line of research associated with Noam Chomsky from Syntactic Structures (1957) to the Minimalist Program (1995).

1.1 Overview of thesis

In this thesis, I will use a neo-constructional approach to investigate some syntactic phenomena found in Norwegian computer-oriented talk.

In Chapter 2, I will give a thorough presentation of the syntactic structures that are found in Norwegian computer-oriented talk as documented in the TWOZ material. A descriptive presentation of the syntactic constructions in this corpus is interesting for several reasons. First of all, this thesis is the first investigation of Norwegian computer-oriented talk, and my documentation of the syntax in these utterances will hopefully be of interest to others who work in the development and implementation of dialogue systems for Norwegian speech. Even though there have been similar studies of computer-oriented talk in international research, it is of great importance that Norwegian computer-oriented talk also be scrutinized. The syntactic constructions documented in international studies cannot be directly or validly transferred to Norwegian computer-oriented talk since the syntax is necessarily interlinked with the particular language under investigation. Nevertheless, language dependent research can benefit from findings from other languages in a comparative perspective, and my documentation of the syntax in Norwegian computer-oriented talk can hopefully contribute to the body of international research on human-computer interaction as well.

As already mentioned, several previous studies of computer-oriented talk have been conducted, and the results seem to show that the syntactic constructions are strict, explicit, concise and stereotyped (Guyomard and Siroux (1987), Morel (1989)). These investigations do not reveal what these terms relate to in syntactic terminology. What makes a syntactic structure explicit and strict? In my investigation of the Trondheim Wizard of Oz material, I classify the various sentences according to established syntactic categories, and I also discuss syntactic phenomena such as fronting, ellipsis and disfluencies.

In Chapter 3, I will give a presentation of the theoretical framework adopted in this thesis. As already mentioned, the analysis will be anchored in a neo-constructional approach. As the name implies, this approach is considered a part of constructionalism. A common feature for all theories adhering to constructionalism is the assumption that there are ready-made form-meaning units that are larger than words and morphemes in human language. In the neo-constructional approach adopted in this thesis, these larger form-meaning units are called argument structure frames (Åfarli, 2005). Borer (2005a) defines constructionalism as an exo-skeletal approach to language, which means that *"it is the properties of the "outside" larger structure which ultimately determine the overall "shape" of what is within, rather than the other way around"* (ibid. p. 15). The opposite approach, the endo-skeletal approach

(Borer, 2005a) is a term denoting theories such as MGG that envision the syntactic constructions as a result of the information attached to each particular word in the lexicon. Thus, the syntactic rules are dependent upon this lexical information so that the formation of the structure can be performed. These two approaches, the endo-skeletal and the exo-skeletal, will be presented and compared in Chapter 3. I conclude that the exo-skeletal approach seems to have more explanatory power than the endo-skeletal approach because the exo-skeletal approach can explain phenomena such as verbs' notorious flexibility in their argument structure and the existence of made-up verbs, as well as being able to accounting for more regular phenomena. In addition, the exo-skeletal approach seems to offer an understanding of the preferred use of more habitual sentence structures.

To give an analysis of all the syntactic constructions found in the TWOZ material is not possible given the limits of a PhD thesis. On the basis of the classification in Chapter 2, I have selected three different topics which will be thoroughly discussed in Chapter 4. These three topics are the unaccusative construction, modal verbs with directional locatives, and various types of ellipsis. My choice is based on three motives. First, these phenomena have been treated and discussed in the endo-skeletal approach, and what unites them is that they all are considered problematic, either because they demand particular assumptions and analyses (unaccusative constructions and modals with directional locatives), or because they constitute a problem for the endo-skeletal view of the relation between words and syntactic structure (ellipsis).

Secondly, in light of the endo-skeletal approach, the above-mentioned phenomena are rather unexpected. Since they all in one way or another demand particular syntactic presumptions, one would not expect them to occur in computer-oriented talk, which has been categorized as strict, explicit and concise.

Thirdly, these topics have been selected because the neo-constructional approach has not to any extent been tested against these phenomena; the exception is ellipsis (Nygård, 2004). In this thesis, I conclude that the neo-constructional approach's analysis of unaccusative constructions and modals with directional locatives can account for their essential properties, but at the same time, the neo-constructional approach avoids additional stipulations that are necessary in the endo-skeletal approach. There are several unanswered questions in the analysis of ellipsis in this thesis, but the conclusion is that the neo-constructional framework offers an alternative and interesting approach to this much discussed phenomenon.

2 The data material

This chapter will start with a presentation of the experimental method called "Wizard of Oz" (abbrev. WOZ). Next, I will turn to the TWOZ experiments. I will present the experimental design, supply some key figures and exemplify the TWOZ with some examples of dialogues. I then discuss some variables in the experimental design that might have influenced the results obtained.

The next main topic in this chapter will be the characteristics of the data material, with a focus on the syntactic structures. I will classify and present the various structures found in the material. I will also consider linguistic phenomena such as ellipsis and repetitions. To preview, I will conclude that the syntactic structures are homogeneous, and that the data material consists of complete sentences.

Finally, I present national and international research that has investigated various features in human-computer interaction (HCI). I conclude that the syntactic structures found in spoken HCI are a rather unexplored field. To my knowledge, no previous study of Norwegian syntactic structures in spoken interaction with a computer has ever been conducted. Even though it is important to take the results from national and international HCI research into consideration when studying the TWOZ material, one must also examine the research conducted on spoken language in general. Two tendencies seem to be prevalent. The first is that theoretical linguistics to a large extent has solely focused on written data. The second tendency, which is connected to the first, is that the vast research on Norwegian dialectology has concentrated on phonological and morphological features in the dialects. However, it now seems that an increased interest in spoken language syntax is brewing.

2.1 Wizard of Oz-experiments

As already mentioned, my data material has been obtained by a method called the Wizard of Oz. I will start by explaining the characteristics of a WOZ experiment, and why this method is considered crucial in the investigation of HCI.

In HCI, a Wizard of Oz experiment means that the participants in the experiments are led to believe that they are interacting with a computer when in fact they are not. The Wizard of Oz method is commonly used to investigate how humans interact with a computer (McTear, 2002:147). A description of this technique is given in Wooffitt et al. (1997), cf. (1).

1

"The Wizard of Oz (WOZ) simulation technique involves a human (usually known as the wizard or accomplice) playing the role of the computer in a simulated human-computer interaction" (ibid. p. 22).

The wizard can simulate different functions in the computer system, e.g. the speech recognizer, the speech synthesizer and/or the database manipulation. The purpose of the WOZ experiments is often bilateral. First, a WOZ experiment can shed light on various dimensions of human-computer interaction. From our own experience we know that we talk differently to our five-year-old daughter than to our colleagues. The recipient of an utterance can affect the choice of words (Garrod and Anderson, 1987), syntactic structure (Chang et al., 2000) and pitch (Englund, 2005), to name just a few. This process also comes into play if we know that our conversation partner is a computer. In Conversation Analysis, this tailoring is called "recipient design" (Sacks et al., 1974) cf. (2).

2

"By "recipient design" we refer to a multitude of respects in which the talk by a party in a conversation is constructed or designed in ways which display an orientation and sensitivity to the particular other(s) who are the co-participants. In our work, we have found recipient design to operate with regard to word selection, topic selection, admissibility and ordering of sequences, options and obligations for starting and terminating conversations, etc., as will be reported in future publications" (ibid. p. 727).

To obtain reliable results in a WOZ experiment, it is therefore crucial that the participants truly believe that they are interacting with a computer. If the participants knew that there was a human involved in the interaction, the results would not give us any dependable knowledge about HCI. According to Dahlbäck et al. (1993), the Wizard of Oz technique is therefore a better alternative for gathering human-computer interaction data than using human-human dialogues as a point of departure for modelling HCI systems (ibid. p. 194).

Various investigations have indeed pointed out that the language people use when interacting with a computer differs from the language used when interacting with another human.⁴ Grosz (1977), who primarily investigates dialogue structure in task-oriented dialogue, notes that the language in the HCI is more formal. Both Reilly (1987) and Guindon et al. (1987) make references to the language between human and computer as telegraphic in style. This particular register is sometimes referred to as "computerese". Reilly (1987) exemplifies this particular language as *"leaving out function words, articles, and so on"* (ibid. p. 70). In their article "Talking to a computer is not like talking to your best friend", Jönsson and Dahlbäck (1988) state that their own findings support these studies: *"the low incident of pronouns and the relatively high frequency of more or less complex nominal phrases is quite in accordance with the results obtained by Guindon et al. (1987)."*⁵

Furthermore, the WOZ simulations make it possible to investigate how people respond to a system before it is finished or even constructed. In this respect, the experiments are a useful tool throughout the development process, and they can give us practical guidance on how to develop or refine the application in question. According to Dahlbäck (1995), the majority of empirical investigations in HCI has been concerned with the latter, i.e. evaluation of existing systems or development of new ones. He suggests another equally important aspect, namely *"finding the relevant metrics, and finding the relevant generalization domains for the results obtained"* (ibid. p. 1). Furthermore, he underscores the fact that empirical investigations must be classified along various dimensions as a first step towards a theory of discourse. If not, the empirical investigations will only result in a theory of how the computer processes language. Dahlbäck's concern relates to discourse, but I think the same point can be made for syntax. If the empirical investigations of syntactic structures in "computerese" are only studied for the purpose of implementing a computational grammar, we are in danger of overlooking the properties that could contribute to a generalization, or to put it differently, a theory of syntax. Therefore I will use the data material not only to categorize the syntactic structures in "computerese", but also to discuss the findings in relation to syntactic theory.

⁴ In the infancy of HCI studies, human-human dialogues were used as the gold standard for developing a user-friendly system. The aim was to model a system that could handle all aspects found in human-human dialogues. It was later acknowledged that the recipient design made the results from the human-human dialogues less valuable, and that simulation of human-computer interaction was needed in order to handle the typical properties in this particular register. See Jönsson and Dahlbäck (1988) for an overview of HCI studies in the 1970-80s.

⁵ I downloaded this article from <http://www.ida.liu.se/~nilda/publications.html>. It contained no page numbers, but the quote is from section 4.3.

2.2 The Trondheim WOZ experiments

The TWOZ experiments at the Norwegian University of Science and Technology (NTNU) were conducted in three intervals between the summer of 2003 and the autumn of 2004. As already mentioned, the experiments were part of the BRAGE project. It was decided that an already existing application called BussTUC should be the foundation for these WOZ experiments. BussTUC is a bus schedule information system developed at NTNU that can provide information about bus schedules in Trondheim (Amble, 2000). BussTUC was equipped with a dialogue manager, and this new version of BussTUC was called BUSTER (Johnsen et al., 2003). During the time that the WOZ experiments took place, BUSTER was already functioning as a *written* question-answering system on the web.⁶ Since the aim of the WOZ experiments was to investigate a mixed-initiative *spoken* dialogue system, a speech interface was added to BUSTER.

In short, the participants used their private or office phone to call (what they thought was) an automatic bus information system to obtain various bus travel information. Except for one participant, all the participants were native Norwegian speakers. The wizard's role in the Trondheim WOZ experiments was to be a "perfect speech recognizer". He listened to the questions, and typed the relevant information into the system. The answer from BUSTER was returned automatically to the caller via a speech synthesis. The same person played the role as the wizard in all three Trondheim WOZ experiments. The exact design of the experiments will be described in Sections 2.2.1-2.2.3. In addition to develop and adjust the already existing BUSTER application, the WOZ experiments were performed to provide the BRAGE project with speech data and dialogues.

The WOZ experiments were carried out during three different periods: June-July 2003, October 2003 and September 2004. There are some differences between three experiments. For instance, the first experiment was conducted with a Talsmann speech synthesizer with a male voice, while the next two used a speech synthesis called NORA with a female voice.⁷ The system's opening utterance and answers were also altered during the three experiment periods. Furthermore, the instructions given to the participants beforehand were also

⁶ The written question-answering BUSTER can be found on the following URL: <http://www.team-trafikk.no/asttweb/bussOrakel2.asp>.

⁷ An example of the Talsmann speech synthesizer can be found on the following URL: <http://www.lingit.no/produkter/lingspeak/eksempler>.

An example of the NORA speech synthesizer can be found on the following URL: <http://www.nuance.com/realspeak/languages/>.

somewhat different. In the following subsections, I will present the details of each experiment.

The majority of user utterances from the TWOZ will be given without annotations indicating pauses, prolonging of sounds, filler items, etc. Since the main focus of this thesis is syntactic structure, the omission of these phenomena has been made to ease readability of the sentences. I have also avoided the use of punctuation and capital letters in the user utterances since these cannot be "heard" in spoken language. On the other hand, the utterances *from* the dialogue system have not been annotated or analysed. These sentences have been copied from a log file that was created during the recordings, and they follow ordinary spelling rules that I have chosen not to alter.

I will also present a gloss in capital letters, which is a word-for-word rendering of the Norwegian sentence along with relevant syntactic information. The English translation, which is given in italics, will not strive to copy the syntax of the Norwegian sentences, but rather to give an understandable version of what was said. This translation will conform to ordinary spelling rules.

Participants in the experiments also received written information containing the scenarios. All these written task descriptions were originally in Norwegian. Thus, the translations into English in this thesis are mine.

2.2.1 The first Trondheim WOZ experiment

The first experiment consisted of 36 dialogues recorded in June and July 2003. The participants in this WOZ experiment were all employees recruited either from the Department of Electronics and Telecommunication at NTNU, or the Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology (SINTEF). Each of the 18 participants made two inquiries, thus adding up to 36. More information about the first WOZ experiment is given in Table A.

Table A. Information about the first WOZ experiment

1st WOZ experiment	
Participants	18
Men	14
Women	4
No. dialogues	36
Total time	25 min.
No. user turns	89

There are 25 minutes of speech data. This includes both the utterances from the participants and the answers from the system. The experiment consisted of 89 user turns. A turn can be a single word, such as a greeting, or it can be a more complex utterance, such as a question consisting of several clauses. The average number of user turns in these dialogues was 2.5, ranging from one to five user turns. The median was 2. The average of user turns has been included to make it easier to compare the different experiments despite the variations in group size.

The participants were given a written task description with a table that showed various departures, arrivals and times of travel. This information was the basis for the inquiries. In addition, a more general instruction concerning the manner of inquiry was presented. The written task description is presented in Table B. As already mentioned, the original text given to the participant was in Norwegian, and the translation in Table B is mine.

Table B. Written task description given to participants in the first TWOZ.

Overview of the scenarios. Each scenario consists of two inquiries. The first one should be a complete inquiry in just one sentence, while the other should be divided into two or more parts.

No.	From place	To place	Time	Comments
1	Dragvoll	Tillerringen	Next bus (first bus after time: NOW)	Change 5-> Stud.samf.->46
	Tonstadkrysset	Sentrum	Next bus (first bus after time: NOW)	7
2	Skansen	Lerkendal	Time: NOW + 2 hours	8
	Kropanmarka	Breidablikk	Time: NOW	Change. 3-> Stud.samf. ->9

The column *Number* is the scenario number. *From place* is the place of departure, and *To place* is the destination. The column *Time* states the time the participant would like to travel. The information in the column *Comments* were not a part of the inquiry, but were rather a way for the participants to control the answer from the system.

The text above the table in Table B instructs participants to perform one inquiry that included all relevant information in just one sentence. They should then make one inquiry where they split up the information into several parts, for instance stating the place of departure in the first utterance, hence forcing the dialogue system to ask for more information. These instructions are likely to have influenced the number of turns in the two types of scenarios, and the information that the participants included in the opening sequence. For

instance, if the participant revealed all the information in the first turn (as instructions for the first scenario told them to do), and the system answered correctly, these dialogues should consist of just one user turn.

2.2.1.1 A dialogue from the first Trondheim WOZ-experiment

An example of a dialogue taken from the first WOZ experiment is given in (3). DS is the dialogue system and U is the user (participant). The numbers to the right indicate the turn in the dialogue. The [fil-e] is an annotation for hesitation items, and < > indicates repetitions or corrections.⁸

3

DS: Velkommen til bussruteinformasjonen i Trondheim. Hva ønsker du å vite?
"Welcome to the bus schedule information in Trondheim. What do you want to know?" 1

U: [fil-e] ja jeg skal til sentrum <i>"Yes I want to go to the city centre."</i>	2
DS: Du vil dra til sentrum. Hvor ønsker du å reise fra? <i>"You would like to go to the city centre. Where do you want to travel from?"</i>	3
U: jeg skal <fra> reise fra Tonstadkrysset <i>"I want to travel from Tonstadkrysset."</i>	4
DS: Du vil dra fra Tonstadkrysset. Når ønsker du å dra? <i>"You would like to go from Tonstadkrysset. When do you want to leave?"</i>	5
U: neste buss <i>"Next bus."</i>	6
DS: Du vil dra fra Tonstadkrysset etter klokka femten null seks. Buss sju passerer Tonstadkrysset klokka femten tretti og sentrum klokka femten førtitre. Ønsker du flere opplysninger kan du spørre nå eller avslutte. <i>"You would like to travel from Tonstadkrysset after fifteen zero six. Bus seven passes by Tonstadkrysset fifteen thirty and the city centre fifteen forty three. If you want additional information, ask now or terminate."</i>	7

2.2.2 The second Trondheim WOZ experiment

The second Trondheim WOZ consisted of 48 dialogues recorded in October 2003. Just as in the first experiment, all the participants were recruited either from NTNU or SINTEF. Each participant made three inquiries, which resulted in 48 dialogues. The amount of speech data, including both the utterances from the participants and the answers from the system, totalled to one hour. The experiment consisted of 127 user turns. The average number of user turns in

⁸ The annotations have been made according to the "Standard for ortografisk annotering av spontan tale i BRAGE" (Standard for orthographic annotation of spontaneous speech in BRAGE), which is a document developed as a guideline for the BRAGE project (Amdal and Kvale, 2003). I did the annotations, and the annotation symbols found in the examples used in this thesis have been explained in the abbreviation list.

these dialogues was 2.7, ranging from one to eight turns. The median was 2. Information about the second experiment is given in Table C.

Table C. Information about the second WOZ experiment

2nd WOZ experiment	
No. participants	16
Men	14
Women	2
Mean age	41.3
No. dialogues	48
Time	60 min.
No. user turns	127

The instructions and scenarios given to the participants in the second WOZ experiment differ from those in the first TWOZ (presented in Table B). The participants in the second WOZ were given some general instructions about the inquiry, given in (4).

4

There are no restrictions in the formulations of questions in the particular inquiries, but the following advice can be useful:

- *Talk with a clear and normal voice, but do not “exaggerate”.*
- *Do not use overly complex sentences with a lot of irrelevant remarks, i.e. get straight to the point.*
- *An inquiry does not have to contain all relevant information in one sentence. For example, the participant can ask “When is the next bus to Lade?”. Then the system will ask about the missing information; in this case, the place of departure. It is also possible to give the system additional information that the system did not request. For example, if you only state the place of arrival, the system will ask for the place of departure. You can then reply with both place of departure and time of travel.*
- *You can only ask about one bus service at a time.*

As shown in Table B, the participants in the first experiment were given their scenarios in a table. In the second experiment, however, the participants were given five different groups of scenarios with various layouts. I will now look at each group separately.

2.2.2.1 The different scenario types

2.2.2.1.1 Scenario type: Complete inquiry

The participants were instructed to freely formulate an inquiry containing all relevant information given in the scenarios in just *one* utterance. The group contained ten different scenarios. The instruction and an example are given in (5).

5

In the scenarios described below you should freely formulate an inquiry in one sentence. The sentence must include the 3 elements: place of departure, place of arrival and time as given in each scenario.

Place of departure: Munkvoll

Place of arrival: Kalvskinnet

Time: On Monday. You want to arrive at 16:00.

2.2.2.1.2 Scenario type: Partitioned inquiry

The participants were instructed to divide the information in the scenarios into *several* utterances. They were also told that the first utterance always should contain a bus stop, i.e. they were not allowed to only state the time of travel in their first utterance. This group had ten different scenarios, which were presented in the same way as shown in (5). The general instruction given in relation to Partitioned inquiry is given in (6).

6

In the scenarios below, you should perform a partitioned inquiry, i.e. all the information necessary in order to find the answer in the data base should not be included in the first sentence (for instance When does the next bus leave for Lade?). The system will then ask for the missing information. You can also reveal more information than the system is asking for (for instance if you only give the place of arrival, the system will ask for the place of departure. You can then answer by giving both place of departure and time of travel). The user can choose how many "pieces of information" he will give in each sentence (one or two of respectively place of departure, place of arrival and time). One limitation is that the first sentence from the caller must at a minimum include one of the bus stops (place of departure or arrival), i.e. you cannot only give the time of travel in the first sentence.

2.2.2.1.3 Scenario type: Narrative

The instructions were given as a narrative, and the participants were asked to perform an inquiry based on the information in the little story. This group contained five scenarios. The instruction and an example are given in (7).

7

In the scenarios given below, you will find a description of various situations that the user might be in. Based on this narrative you should freely formulate an inquiry for the system that solves the travel needs presented in the narrative. Remember that you can only ask about one bus trip at a time, but all information about a bus trip need not be included at once.

You are working at Dragvoll and wish to go to a football match at Lerkendal. The game starts at 21:00, but you want to be there in time to meet some friends and enjoy the support band before the match.

2.2.2.1.4 Scenario type: Complex inquiry

The scenarios contained a change or correction to the original inquiry. This group consisted of five different scenarios. The instructions and an example are given in (8).

8

In the scenarios below you will find descriptions of situations and inquiries that include more than just one bus trip. Follow these in order to freely formulate questions that meet the criteria given in the scenarios. Remember that you don't need to provide all information at once.

1. Formulate one inquiry that contains the following information:

Place of departure: Lade

Place of arrival: Saupstad

Time: Tomorrow, after 14:30

2. You are not satisfied with the answer and ask a question about a later bus.

2.2.2.1.5 Scenario type: Unrestricted inquiry

The unrestricted inquiries contained only one instruction, which is presented in (9). All participants in the second and third WOZ experiment conducted one unrestricted inquiry.

9

You should freely formulate an inquiry about bus schedules in Trondheim. You should consider what information you seek before you make the inquiry. Remember that you can ask questions about only one bus schedule at a time. You do not have to provide all the information for your inquiry at once.

2.2.2.2 A dialogue from the second WOZ experiment

A dialogue from the second WOZ experiment is given in (10). This dialogue is based on the scenario presented in (7).

10

DS: Velkommen til bussinformasjonen i Trondheim. Du kan spørre fritt om bussruter og reisetider for vilkårlige strekninger. Du kan spørre fra nå av.

"Welcome to the bus information service in Trondheim. You can ask freely about bus schedules and travelling times for any distance. You can start asking now." 1

U: hei jeg skal fra dragvoll til lerkendal stadion

"Hi I want to travel from Dragvoll to Lerkendal stadium" 2

DS: Vennligst vent. Du vil dra til Lerkendal stadion fra Dragvoll. Når vil du dra?

"Please wait. You want to travel to Lerkendal stadium from Dragvoll. When do you want to travel?" 3

U: skal være på lerkendal før klokken åtte

"Should be at Lerkendal before eight o'clock" 4

DS: Du vil dra til Lerkendal stadion før klokken tjue. Buss fem går fra Dragvoll klokken nitten tjue til Studentersamfundet holdeplass to klokken nitten trettito og buss sekstiseks går fra Studentersamfundet holdeplass en klokken nitten førtitre til Lerkendal stadion klokken nitten førtiseks. Ønsker du flere opplysninger kan du spørre nå eller legge på røret.

"You want to go to Lerkendal stadium before twenty o'clock. Bus five leaves from Dragvoll nineteen twenty to Studentersamfundet bus stop two at nineteen thirty two"

and bus sixty six leaves from Studentersamfundet bus stop one at nineteen forty three to Lerkendal stadium nineteen forty six. If you want additional information, ask now, or hang up the phone."

2.2.3 The third Trondheim WOZ experiment

The third Trondheim WOZ experiment consisted of 79 dialogues in total. The dialogues in the third experiment were recorded during four days between September 9 and 14, 2004.

Information about the third experiment is given in Table D.

Table D. Information about the third WOZ experiment

3rd WOZ experiment	
No. participants	30
Men	28
Women	2
Mean age	24.5
No. dialogues	79
Time	1 h 46 min.
No. user turns	241

The participants in the third WOZ experiment were students from the Faculty of Information Technology, Mathematics and Electrical Engineering at NTNU. The average age was 24.5 years. The participants were asked to make three inquiries each, which would add up to 90 dialogues. However, some of the participants made two or all three inquiries in just one dialogue. Consequently, the number of dialogues totals to 79, even though the number of inquiries was 90. The amount of speech data, including both the utterances from the participants and the answers from the system, totalled to one hour and 46 minutes. The experiment consisted of 241 user turns. The average number of turns in these dialogues was 3.0, ranging from one to nineteen user turns. However, if we disregard the dialogues that contained three inquiries in one go, the average drops to 2.5, which was the same average as in the previous experiments. The median was 2 as in the previous experiments.

The instructions and the information given to the participants in the third experiment were essentially the same as in the second experiment. The names of the bus stops and the time of travel were changed in all scenarios, but the five groups and the information and instructions given were the same. In the unrestricted inquiry however, the information was shortened to: *"You should freely formulate an inquiry about bus schedules in Trondheim. You should consider what information you seek before making the inquiry"*.

2.2.4 Summary and discussion of experimental design

The data from the three Trondheim WOZ experiments can be collapsed into the information given in Table E.

Table E. Information about the three Trondheim WOZ experiments

TOTAL	
No. subjects	64
Men	56
Women	8
No. dialogues	163
Time	3 h 12 min.
No. user turns	457
No. user turns without the "external talk"	453

The total number of dialogues was 163. The total time of the speech data was 3 hours and 12 minutes, which includes the answers from the system. The data material consists of 457 user turns, which can be just a confirmation like *yes* or several clauses in a single turn. I have classified four turns as "external talk" which means that the participant either directs the speech at another person in the room, or burst out with an *oj* (woops) because he accidentally drops the phone. I have chosen to disregard these turns in the investigation of the material. The external talk and noise is a difficult task for a dialogue system to handle, but it is not something I will discuss further in this thesis. If we look at the data material at the word level, the user turns amount to 4063 tokens.⁹

I have not included the average age of the participants since the first experiment did not contain this information, but since the participants in the first experiment were recruited from the staff at the NTNU and SINTEF, it is reasonable to believe that the total average will not be below 27 years, which is the average age in the second and third experiment.

I would like to point out some variables in the Trondheim WOZ experiment that could have influenced the characteristics of the data material. If the data material is biased due to experimental circumstances, these should be taken into account when explaining the findings. These variables are numerous (see for example Wooffitt et al. (1997)), but I have confined my discussion to the ones that I believe should be discussed due to their possible influence on the syntactic structures found in the user turns.

Table E shows that only 12.5% of the participants were women. This is not surprising, considering the fact that the participants were all recruited from technological departments either from NTNU or SINTEF. In Norway, the percentage of women in these departments is

⁹ Token refers to the total number of running words.

known to be low. This skewed distribution in the experiments is not desirable because the data obviously do not reflect the population of possible users of system. The relationship between language and gender is an area of investigation of its own, and outside the scope of my thesis. However, I would like to refer to Cameron (2001), who claims that the results from both expert and popular literature about male-female language differences have not been sufficiently tested and that without such testing, the alleged male-female differences are matters of speculation (ibid. p. 117).

As noted in 2.2.2.1, the participants were instructed to present their inquiry in one sentence in the Complete inquiry, while they were to divide up their questions in the Partitioned inquiry. As a consequence, both the number of user turns in the dialogue and the pieces of information revealed in each turn should be a result of these direct instructions. A paired one-tailed t-test supports the hypothesis that there is a highly significant difference in the number of user turns in the two groups (Complete versus Partitioned inquiry) where $p = <.001$. The same result is found in the second experiment with a highly significant difference ($p = <.001$) between the number of user turns in the Complete inquiry and the Partitioned inquiry. Also, the result of the third experiment reveals a statistically significant difference with respect to the number of user turns ($p = <.005$) in the Complete and the Partitioned inquiries. As expected, the statistical tests strongly suggest that the instructions are decisive with respect to the number of user turn found in the dialogues. This means that the number of user turns in the Complete and the Partitioned inquiries are a direct result of the written task instructions given to the participants, and further investigations of the data material should take this into account.

The scenarios Narrative and Unrestricted, however, show no significant difference, $p = >.05$. This finding is expected since the participants were not instructed as to how to present their inquiry. This means that the dialogues obtained from the Narrative and the Unrestricted inquiries will be more suitable for investigations of dialogue structure and number of user turns.

For my investigation, it is important to note that the participants were not explicitly instructed with respect to syntax, and this applies to all the inquiry groups, with one possible exception that will be discussed later. However, the instruction to use "one sentence" for the Complete inquiry group can perhaps be considered a syntactical instruction. If the participants were influenced by this instruction, this might for instance cause all the participants to ask their question in just one main sentence. Or perhaps they all would have chosen the same "one sentence" structure, for instance interrogatives. I have investigated whether this instruction

has affected the participants in their choice of syntactic structure in the Complete inquiry, and I conclude that the sentences found in the Complete inquiry are not limited to one particular structure. Both declarative and interrogative sentences are found in the material. There are also two examples of phrases as the participant's first turn, which is perhaps rather unexpected since the participants were instructed to use one *sentence*.¹⁰ There are also 3 adverbial clauses, 4 embedded questions and 9 co-ordinated clauses in the Complete scenarios. In fact, 34.6% of the utterances in this group contain more than just a single main clause. This shows that even though the majority of the participants *did* restrict their inquiry to just one clause, the variation in the main clauses, as well as the occurrences of subordinate clauses and co-ordinated clauses, indicate that this instruction did not lead the participants to choose just one particular syntactic structure.

I mentioned that the participants did not get any syntactic instructions, but there is one exception found in the Partitioned inquiry described in 2.2.2.1.2. Here, the participants were in fact exposed to a sentence structure in the general instruction of the scenario as shown in (6), here repeated as (11).

11

In the scenarios below, you should perform a partitioned inquiry, i.e. all the information necessary in order to find the answer in the database should not be included in the first sentence (for instance When does the next bus leave for Lade?)

The example sentence in parentheses could possibly have affected the participants, and resulted in a lot of utterances with this particular syntactic structure. However, this does not seem to be the case. The Partitioned inquiry amounts to 136 turns, and the syntactic structure explicitly mentioned in (11) is only found in 8 of these turns, which indicates that the participants have not just copied and used the example sentence mentioned in the scenario.

I conclude that even though the dialogue structure and number of user turns in some of the scenarios have clearly been governed by the instructions, the *structure* of the sentence has not. Each participant chose the form of their utterance individually, and it is unlikely that the syntactic structures have been influenced by the instructions. I will therefore use the utterances from all the scenarios. Consequently, the syntactic structures found in the user turns in the various scenarios mentioned in 2.2.2.1 will be treated together.

¹⁰ The participants' first turns are the NP phrase *buss fra Bakke gate til IKEA med ankomst før tretten* (bus from Bakke gate to IKEA with arrival at thirteen) and the PP phrase *fra Ankers gate til Nordre gate* (from Ankers gate to Nordre gate)

All of the participants in the Trondheim WOZ experiments either have jobs that demand higher education, or they are in the process of obtaining a degree at the university. According to Miller and Weinert (1998) higher education is likely to be a very important factor when looking at spoken language, cf. (12).

12

"While full participation in secondary education affects the written language of speakers and to some extent their spoken language, we advance the plausible hypothesis, based on our experience of school pupils and university students, that the greatest effect of written on spoken language comes from higher education. [...] The variation in knowledge and skill is important because speakers with knowledge and control of written language use written structures in their speech, whether narrative or informal conversation" (ibid. p. 20).

The hypothesis advanced by Miller and Weinert is relevant in the Trondheim WOZ experiments since all the participants have higher education, and therefore the data material could be biased towards more "written structures". In other words, it is a possibility that my findings of syntactic structures are only applicable to the part of the population with higher education, which is obviously not a desirable result. However, the outlook might not be that bad, because the definition of higher education includes college, and the percentage of people who have completed higher education in Norway was 79.9% in 2003.¹¹ The Trondheim WOZ is therefore not tremendously skewed with regard to the educational level in Norway, even though the preferred situation would be a sample of participants less alike both with respect to age and level of education.

¹¹ Information available at Statistisk Sentralbyrå <http://www.ssb.no/aarbok/>

2.3 Characteristics of the material

I will now turn to the results obtained in the three TWOZ experiments. I will start by looking at the various turn types into which the data material can be divided. For example, there are 50 occurrences of user turns that consist of i) several main clauses, ii) several main clauses with one or more subordinate clauses/phrases, iii) co-ordinated clauses with one or more main clauses and/or more than one subordinate clause/phrases. I wanted to separate this group from user turns that consisted of just one main clause, or one main clause with one or more subordinate clauses and co-ordinated clauses. In order to categorize the turns described in (i-iii) mentioned above, I will use a category called "complex turn" which is further described in 2.3.1. The actual syntactic structures found in these complex turns will, however, be treated together with the presentation of the sentence types in 2.3.2.1-2.3.2.3.

In Chapter 2.3.2, I will argue that the syntax found in the material is homogeneous, and I support this by presenting the various syntactic structures. Chapter 2.3.2.1 gives an overview of the main clauses, and 2.3.2.2 gives an overview of the clause-external phrases.¹² Finally, 2.3.2.3 presents the subordinate clauses.

In Chapter 2.3.3, I investigate the occurrences of elliptical structures, repetitions, false starts and corrections. These phenomena are commonly found in spoken language. However, the investigation reveals a predominance of clauses *without* these features. This finding deviates from the characteristics usually found in spoken language, and I conclude that the data material mainly consists of complete sentences.

2.3.1 Turn types

The turns in the material were divided into four distinct groups, cf. Table A.

Table A. *The categorization of turn types*

TURN TYPE	CONTENT	No. of occur.
Fragment turn	-Prepositional phrase -Noun phrase -Adverbial phrase	78
Main clause turn	-Main clause -Main clause + one or more subordinate clauses -Co-ordinated clauses	303
Complex turn	-Several main clauses -Several main clauses + one or more subordinate	50

¹² Clause-external phrases mean that the user turn consists of just one phrase, or that the phrase is part of a co-ordinated structure.

	clauses/phrases -Co-ordinated clauses + one or more main clause and/or more than one subordinate clause/phrases.	
Backchannel turn	<i>Mmm, yes, thanks, ok, ah</i>	22
		453

The backchannel turns are restricted to a few words, some of which are exemplified in Table A. Since these turns consist of single words like "yes" or sounds like "mmm", I will not go into the possible syntactic structures of these phrases. These turns will be more interesting when discussing other features in human-computer interaction, for instance politeness and dialogue structure management.

Examples of complex turns are given in (13a) and (13b). In (13a) the user turn consists of four declarative clauses. (13b) shows a user turn with two coordinated declarative clauses plus a wh-question "*kva slags buss skal jeg ta da*" after the coordinated declarative clauses.¹³ (13c) exemplifies a fragment turn, and (13d) exemplifies a main clause turn.

13

- a ja jeg er på tyholt nå jeg skulle vært på lerkendal på fotballkamp den begynner klokka tjue jeg vil gjerne være der før klokka nitten
YES I AM AT TYHOLT NOW I SHOULD BE AT LERKENDAL ON A FOOTBALL MATCH IT STARTS AT O'CLOCK TWENTY I WOULD [LIKE-TO_{ADV}] BE THERE BEFORE O'CLOCK NINETEEN
"Yes I am at Tyholt now. I ought to be at Lerkendal for a football match. It starts at eight o'clock. I would like to be there before seven o'clock."
- b jeg skal fra trondheim sentralstasjon til rotvoll og må være på rotvoll seinest null ni tredve kva slags buss skal jeg ta da
I SHALL FROM TRONDHEIM CENTRAL STATION AND MUST BE AT ROTVOLL NO LATER THAN ZERO NINE THIRTY WHICH KIND-OF BUS SHOULD I TAKE THEN
"I need to go from Trondheim Central Station and (I) must be at Rotvoll no later than nine thirty. Which bus should I take then?"
- c buss fra bakke gate til ikea med ankomst før klokken tretten
BUS FROM BAKKE GATE TO IKEA WITH ARRIVAL BEFORE O'CLOCK THIRTEEN
"bus from Bakke gate to Ikea with arrival before one o'clock."
- d når går det buss fra munkvoll til kalvskinnnet på mandag slik at jeg kommer dit klokken fire
WHEN GOES IT BUS FROM MUNKVOLL TO KALVSKINNET SUCH THAT I COME THERE AT O'CLOCK FOUR
"When does the bus leave from Munkvoll to Kalvskinnnet in order for me to be there at four o'clock?"

My reason for counting the complex turns as a separate group was to see how frequent they were. Halliday (1989) maintains that spoken language disperses the content words over several clauses, resulting in a low lexical density. At the same time, more clauses with less content words result in what Halliday (1989) labels high grammatical intricacy. In order to

¹³ The subject is omitted in the second conjunct which is a frequent phenomenon of Norwegian. This will be further discussed in chapter 4.1.

compare my data material against Halliday's assertion, it was necessary to see how often the users preferred to express their inquiry in several clauses, i.e. dispersing the content words over a number of clauses.

As shown in Table A, there are 50 occurrences of the complex turn type. The data material consists of 453 turns, but since the users were instructed to perform their inquiry in just one sentence in the Complete inquiry, this group must be excluded when we look at the overall frequency of complex turns. This leaves us with 388 user turns, and thus 12.9% of these are complex turns. In the second and third Trondheim WOZ, the participants were given the general instruction to avoid complex sentences, cf. (4), and this could be a reason for the low percentage of complex turns. However, the explanation of the low percentage of complex turns is merely speculation, but it is clear that the syntactic structures in the Trondheim WOZ material do not follow the assertions concerning spoken language made by Halliday (1989).

The classification of syntactic structures presented in 2.3.2.1-2.3.2.3 will not separate the clauses found in the 50 complex turns from the rest of the material. As an example, (13a) is counted as four declarative clauses, and (13b) is counted as two declarative clauses and one interrogative clause. This classification relies on the assumption that the clause is the relevant analytic unit in syntax. Recognizing a clause in spoken language is not always easy, but according to Halliday (1989), the most important requirement is that the categorization is consistent (*ibid.* p. 67). In the Trondheim WOZ, I did not encounter any particular difficulties in categorizing the clauses. However, I acknowledge that this might be a greater challenge in a different register of spoken language.

2.3.2 The syntactic structures are homogeneous

As discussed in 2.2.4, there is no reason to believe that the written task instructions have governed the participant's choice of syntactic constructions. I believe that the participants chose the syntactic structure that they each considered appropriate in the given context. Bearing in mind that communication with a computer was an unfamiliar context for most of the participants, it is interesting to notice the similarity in the syntactic constructions. If the written instructions are disregarded as the source of syntactical similarity, the reason must be found somewhere else. Certainly, the structural uniformity cannot be a sheer coincidence. To be able to answer this and other related questions, a thorough presentation of the data material is required, which will be the topic for the following subsections.

2.3.2.1 Main clauses

Table B shows the main clauses found in the dialogues. Examples of the various clause types will be presented in the following subsections.

Table B. Main clauses in the WOZ dialogues

Clause type	Occurr.	% of total main clauses
Declarative clauses	257	62.1
Interrogative clauses (wh-questions)	88	21.3
Polar questions (yes/no-questions)	29	7
Topicalization in declarative clauses	22	5.6
Imperatives	12	2.9
Conditional clauses (only protasis)	5	1.2
	414	100.0

2.3.2.1.1 Declarative clauses

The declarative clauses are by far the most frequently used construction both in the opening sequence, cf. (14), and as an answer to the dialogue system's question, cf. (15).

14

Dialogue system: Velkommen til bussinformasjonen i Trondheim. Du kan spørre fritt om bussruter og reisetider for vilkårlige strekninger. Du kan spørre fra nå av.
"Welcome to the bus information service in Trondheim. You can ask freely about bus schedules and travelling times for any distance. You can start asking now."

User, 1. turn: morn jeg skulle hatt buss til tillerringen fra dragvoll
"Hi I want to take a bus to Tillerringen from Dragvoll."

15

Dialogue system: Vennligst vent. Du vil dra til Lerkendal stadion fra Dragvoll. Når vil du dra?
"Please hold. You want to go to Lerkendal stadion from Dragvoll. When do you want to go?"

User, 2. turn: jeg vil være der klokken åtte
"I want to be there at eight o'clock."

The declarative clauses can be divided into three rudimentary groups according to their initial constituents, illustrated in (16).¹⁴

16

- a jeg vil reise fra katternskogen
 [I WILL TRAVEL]_{NP+AUX+V} FROM KATTEMSKOGEN
"I want to travel from Katternskogen."

¹⁴ Phenomena such as topicalization and ellipsis will be discussed later and are not included here.

- b jeg skal fra ringve museum til strandveien
 [I SHALL]_{NP+V} FROM RINGVE MUSEUM TO STRANDVEIEN
 "I need to go from Ringve museum to Strandveien."
- c jeg skulle ha reist fra kuset til rosendal på tirsdag etter klokka tolv en gang jeg
 [I SHOULD HAVE TRAVELLED]_{NP+AUX+AUX+V} FROM Kuset TO ROSENDAL ON TUESDAY AFTER O'CLOCK
 TWELVE SOMETIME I
 "I would like to travel from Kuset to Rosendal on Tuesday sometime after twelve o'clock.."

The pronoun used in all groups is either *jeg* (I) or *vi* (we). The first group, illustrated by (16a) consists of a subject NP followed by an auxiliary and a main verb. The auxiliaries are *skal*, *vil*, *må* and *skulle* (shall/need to, will/want to, must and should). The majority of main verbs following the auxiliary denote ways of travelling, like *dra*, *reise*, *komme* and *kjøre* (go, travel, come and drive), but there are also quite a few examples of the verb *være* (be), *ha* (have) and *ta* (take).¹⁵ The constituent following the main verbs in the group with *dra*, *reise*, *komme* and *kjøre* is a PP, while *ha* and *ta* are followed by an NP. The most frequently used auxiliary verbs are *skal* (shall) and *vil* (will), which are classified as modal auxiliaries (as opposed to the non-modal auxiliaries *ha* and *bli* (have and be). The usual definition of modal auxiliaries in linguistic theory is that they cannot be the only verb in a sentence. By definition, they are specified for verbal complements, yielding sentences as illustrated in (16a). For this reason, the sentence in (16b) will cause trouble for this definition since there is no main verb following the modal. This particular use of modals has been noted by Eide (2005):

"Norwegian modals take adverbial complements, particularly adverbs and preposition phrases denoting directional locatives and resultatives, [...]" (p. 60). The occurrence of a modal auxiliary without a main verb, as in (16b), has been analysed as an occurrence of a phonetically empty verb of motion (van Riemsdijk, 2002). The structure in (16b) is one of the main topics in 4.3, where it will be thoroughly discussed.

The last group, illustrated in (16c), is not as frequent as the two previous ones. This type consists of two auxiliaries *skulle ha* (should have) followed by the same main verb types as presented in the previous group, i.e. *go*, *travel*, *come* and *drive*.

This categorization of the declarative sentences has focused on the structure of the verb phrase, and has not paid much attention to the constituent structure of the rest of the predicate. However, the examples in (16) indicate that the initial clause structure in the declaratives displays little variation.

¹⁵ *Være/vært* occurs 50 times after an auxiliary, *ta/tatt* occurs 26 times and *ha/hatt* occurs 13 times.

2.3.2.1.2 Interrogative clauses

The interrogative clauses can be divided into two main groups. The largest group is introduced by the interrogative *når* (when). There are 56 occurrences of interrogatives which start with this particular word.¹⁶ All *når* (when) are followed by the verb *går* (goes), cf. (17a). The other group is introduced by various *hv*-words; *hvilken*, *hvordan*, *hvor* (which, how, where). 28 occurrences of the interrogatives start with an *hv*-word, cf. (17b-d).

17

- a *når går neste buss fra stavset til nidarvoll*
WHEN GOES NEXT BUS FROM STAVSET TO NIDARVOLL
"When does the next bus from Stavset to Nidarvoll leave?"
- b *hvilken buss går fra ankers gate til nordre gate før klokka ni om morgenen*
WHICH BUS GOES FROM ANKERS GATE TO NORDRE GATE BEFORE O'CLOCK NINE IN MORNING-THE
"Which bus leaves from Ankers gate to Nordre gate before nine o'clock in the morning?"
- c *hvordan kommer jeg meg fra valentinglystsenteret til rostenhallen på lørdag formiddag*
HOW COME I ME FROM VALENTINLYSTSENTERET TO ROSTENHALLEN ON SATURDAY BEFORE-NOON
"How do I get from Valentinlystsenteret to rostenhallen on Saturday morning?"
- d *hvor lang tid tar det*
HOW LONG TIME TAKES THAT
"How long does that take?"

In addition, there are 3 utterances containing the interrogative *når*, which differ from the construction shown in (17a). In (18a) we find a use of *når* modifying an NP, here *tid* (time). The two other constructions (18b-c) are very similar to (17a). The only difference is the use of modal verbs; *kan* (could) and *skal* (should).

18

- a *når tid går den fra samfundet mot stavset*
WHEN TIME LEAVES IT FROM SAMFUNDET TOWARDS STAVSET
"At which time does it leave from Samfundet towards Stavset?"
- b *når kan jeg ta bussen i fra trondheim sentralbanestasjon til sankt olavs hospital*
WHEN CAN I TAKE BUS-THE IN FROM TRONDHEIM CENTRAL STATION TO ST. OLAV'S HOSPITAL
"When can I take the bus from Trondheim Station to St. Olav's Hospital?"
- c *når skal jeg da ta bussen*
WHEN SHALL I THEN TAKE BUS-THE
"When should I then take the bus?"

¹⁶ One of the utterances in this group deviates from this pattern, and I have chosen to disregard this sentence, counting it as a performance error. The utterance is *på når går neste buss fra nardokrysset til valentinglyst* (On when leaves the next bus from Nardokrysset to Valentinglyst). The difficulty lies in the preposition *på*. There is no sign of a false start or hesitation in the utterance. Even though I have categorized it as an ordinary interrogative clause, it is not possible to be absolutely certain whether the utterance is meant as such, or whether it is meant to be part of a main clause *Jeg lurte på* (GLOSS: I WONDERED ON. Translated: "I wondered if"). The latter solution would lead to an assumption that *jeg lurte* was omitted. Since this sentence stems from the one non-native Norwegian in the experiment, the syntax could be influenced by the speaker's mother tongue, leading to this deviant construction.

2.3.2.1.3 Polar questions

Of the 29 polar questions in the material, only 3 are found in the opening sequence. Polar questions usually occur as a response to an unsatisfactory answer from the dialogue system. The user then employs polar questions to check the answer from the system, or to introduce other possibilities, cf. (19), 5th user turn.

19

User, 4. turn: jeg vil gjerne inn til midtbyen fra dragvoll så fort som mulig
"I would like to go to the City centre from Dragvoll as soon as possible."

Dialogue System: Vennligst vent. Du vil dra til sentrum fra Dragvoll etter klokken 15:13. Buss 9 passerer Dragvoll klokken 15:15 og sentrum klokken 15:40. Ønsker du flere opplysninger kan du spørre nå eller legge på røret.
"Please hold. You want to go to the City centre from Dragvoll after 15:13. Bus 9 passes Dragvoll 15:15 and City centre at 15:40. If you want additional information, you can ask now or hang up the phone."

User, 5. turn: kan jeg ta buss fem
"Can I take bus number five?"

Polar questions are also frequently used by the participants when they are asking for confirmation: "Can you repeat?" In this material, they are also used for asking about later departures, i.e. "Can I get a later departure?"

2.3.2.1.4 Imperatives

Imperatives occur mainly as an answer to a system utterance in the first TWOZ experiment. The system ended its information by *"If you want additional information you can ask now or terminate"*. The users thought they had to say *avslutt* (terminate) in order to end the session. Nine of the imperatives consist of the word *avslutt*. When the system's prompt was altered to *"[...] ask now or hang up the phone"*, the *avslutt*-imperatives disappeared. This leaves only 3 occurrences, cf. (20).

20

- a gjenta siste opplysning
"Repeat the last information!"
- b endre fra-sted til travbanen
"Change departure-place to the trotting track!"
- c ha en fin dag
"Have a nice day!"

2.3.2.1.5 Conditional clauses

The occurrences of conditional clauses in the data material are rare. They are not part of a protasis-apodosis relationship.¹⁷ The users seem to employ the protasis to suggest a situation distinct from the one presented in their previous utterance, cf. (21), 6th user turn.¹⁸ The exclamation mark ! is the annotation for emphasis in the following constituent.

21

User, 5. turn: vi skal på uka i morgen kveld har du noen nattbuss fra uka til huseby
"We're going to Uka tomorrow night. Do you have any late night busses from Uka to Huseby?"

Dialogue system: Jeg har ingen informasjon om ruter på denne dato.
"I do not have any information about bus schedules on that date."

User, 6. turn: hvis vi tar nattbuss i !kveld da fra uka til huseby
"If we take a late night bus !tonight then from Uka to Huseby."

The protasis clauses never occur in the users' opening sequence. This observation comports with the participants' use of the protasis as a way of changing their inquiry. In the opening sequence, there is no previous inquiry to change yet.

2.3.2.1.6 Topicalization in main clauses

In addition to the clauses presented in Table B, I found 22 clauses with topicalization. The main tendency is for only one-syllable constituents to be topicalized, like *da* and *så* (then), cf. (22a-b). This also holds for the pronouns *det* and *den* (it), cf. (22c), and the adverb *der* (there). Twelve clauses have one-syllable constituents as their topic.

22

- a mm så vil jeg ta en annen fra tyholtårnet til city syd
MM THEN WOULD I TAKE ANOTHER FROM TYHOLTTÅRNET TO CITY SYD
"hmm I would then like to take another from Tyholtårnet to City Syd"
- b da må jeg være på city syd klokka syv i kveld
THEN MUST I BE AT CITY SYD SEVEN O'CLOCK TONIGHT
"I must then be at City Syd at seven o'clock tonight"
- c den vet jeg også går til stavset
IT KNOW I ALSO GOES TO STAVSET
"I know that this one also goes to Stavset"

The other group of topicalization amounts to 5 occurrences. The topicalizations in this group are idiomatic, cf. (23).

¹⁷ The protasis is the antecedent of a conditional clause. The truth value of the protasis determines the truth value of the apodosis. The protasis is often introduced by *hvis* (if). The apodosis expresses the consequence of the conditional clause. The apodosis can be introduced by *så* (then).

¹⁸ The dialogue system could not answer the question from the user because the proper name *Uka* was not part of the system's vocabulary. *Uka* is the name of a student festival in Trondheim.

23

- a takk skal du ha
THANKS SHALL YOU HAVE
"Thank you"
- b nå må du skynde deg
NOW YOU MUST HURRY YOU
"Hurry up"

In addition, I found one left-dislocation of a phrase *på fredag* (on Friday) followed by *så*, cf. (24a). There are also two examples of topicalized phrases with pre- or postmodifiers, cf. (24b-c), and finally, one example of a topicalized phrase consisting of more than one syllable.

24

- a på fredag så skal jeg reise ifra jarleveien til saupstadringen
[ON FRIDAY] [THEN] SHOULD I TRAVEL FROM JARLEVEIEN TO SAUPSTADRINGEN
"On Friday then I want to travel from Jarleveien til Saupstadringen."
- b i morgen tidlig klokken åtte skal jeg fra blomsterbyen til othilienborg senter
[IN TOMORROW EARLY CLOCK EIGHT] SHALL I FROM BLOMSTERBYEN TO OTHILIENBORG SENTER
"Tomorrow morning at eight o'clock, I want to go from Blomsterbyen to Othilienborg centre."
- c ja i steden for dokkparken vil jeg dra til munkegata
YES [INSTEAD OF DOKKPARKEN] WOULD I GO TO MUNKEGATA
"Yes instead of Dokkparken I would like to go to Munkegata."
- d ja etterpå vil eg vidare til risvolla senter cirka klokka ni
YES [AFTERWARDS] WILL I AHEAD TO RISVOLLAN CENTRE CIRCA O'CLOCK NINE
"Yes, later I would continue to Risvolla centre around nine o'clock."

2.3.2.2 Phrases

Clause-external phrases are not so common in the opening sequence, and only ten phrases have been found as the user's first turn. Seventy-eight of the phrases are direct answers to a question from the dialog system, cf. (25).

25

- Dialog system:** vennligst vent. Du vil dra til Dokkparken fra Klokkerplassen. Når vil du dra?
"Please hold. You want to go to Dokkparken from Klokkerplassen. When do you want to go?"
- User, 2. turn:** i morgen tidlig
"Tomorrow morning"

I have also included the occurrences of eleven phrases that are co-ordinated as part of a declarative clause, cf. (26a), because I wanted to separate these structures from the ones illustrated by (26b), where there is no conjunction. As will be discussed in 4.1, the user utterances in (25) and (26a) can be considered elliptical structures.

26

- a jeg skal fra skansen og til lerkendal
I SHALL FROM SKANSEN AND TO LERKENDAL

- "I want to go from Skansen and to Lerkendal."*
- b hei jeg skal fra dragvoll til lerkendal stadion
 HI I SHALL FROM DRAGVOLL TO LERKENDAL STADIUM
"hi I want to go from Dragvoll to Lerkendal stadium."

The occurrences of fragments and phrase constituents in a co-ordination are shown in Table C.

Table C. *Clause-external and co-ordinated phrases*

Phrase type	Occurr.	% of total clause-external and co-ordinated phrases
PP	58	58.6
NP	40	40.4
ADV	1	1.0
	99	100.0

The noun phrases that occur as the only constituent in a user turn are references to bus stops (proper names), the time of arrival/departure, or references to first/next/last bus. The noun phrases have generally one pre- and/or postmodifier. Still, some occurrences of noun phrases with more than one pre- and/or postmodifier are found in the material. The example in (27) illustrates one of these complex noun phrases.

27

- a mm [den samme buss fra samfundet til stavset] hvilket bussnummer var det
"mm [that same bus from Samfundet to Stavset] Which bus number was that?"

Only one adverb occurs as a whole user turn, and this is the adverb *nå* (now).

The fragments and co-ordinated phrases are interesting because they contain more information than what is actually uttered, cf. (28) taken from Faarlund et al. (1997:964).

28

I dialogar er setningsfragment svært vanlege. Ofte består ein replikk berre av den nye informasjonen, mens den kjende informasjonen ligg i replikken (replikkane) før. Dette ser ein tydeleg i svar på spørsmål med spørjeord:

- A. *Kvar skal de feriere i sommar, da?*
 B. *På fjellet*

"Fragments are very common in dialogues. The fragment will often consist of only the new information, while the known information is found in the previous utterance (utterances). An answer to a wh-question shows this very clearly:

- A. *Where are you spending the summer holiday then?*
 B. *In the mountains"*

The fragment in B cannot be given the right interpretation unless the previous utterance is considered. The fragment can either be regarded as an abbreviation of an underlying syntactic structure or as a preposition phrase without any underlying clause structure. The former would presuppose a structure that has structurally empty positions for all the elements needed to give the fragment an interpretation, i.e. [CP _(we) [IP _(are) [VP _(spending) [NP _(the summer holiday) [PP in the mountain]]]]]. The other possibility means that the fragment is "what-you-see-is-what-you-get", i.e. just a preposition phrase, and that the fragment is enriched at some pragmatic level. I will come back to this difference in the chapter treating ellipsis in the TWOZ.

2.3.2.3 Subordinate clauses

There are 89 subordinate clauses divided into 5 different clause types, cf. Table D. As with the main clauses, the internal variation and the distribution of subordinate clauses are limited. For instance, the adverbial clauses are confined to sentences expressing consequence (such that) or condition (if). None of the subordinate clauses are topicalized.

Table D. Subordinate clauses

Clause type	Occur.	% of total subordinate clauses
Infinitive clauses	31	34.8
Relative clauses	23	25.8
Embedded questions	19	21.3
Adverbial clauses (<i>such that/if</i>)	12	13.5
Complement clauses (<i>that</i> -clauses)	4	4.5
	89	100

2.3.2.3.1 Infinitival clauses

The infinitive is the most common construction and amounts to almost 35 % of the subordinate clauses. 20 of the 31 infinitives are preceded by the verb *ønsker* (wish), cf. (29a). 6 occurrences are preceded by the preposition *for*, cf. (29b). All utterances where the infinitival is preceded by *for* are interrogative clauses introduced by the phrase *hvilken buss* (which bus).

29

- a jeg ønsker å reise fra munkegata til romolslia
 I WISH [[TO TRAVEL_{INF}] FROM MUNKEGATA TO ROMOLSLIA]
 "I want to travel from Munkegata to Romolslia"

- b hei hvilken buss må jeg ta for å være på rosenborg skole på mandag før klokken ti
 HI WHICH BUS MUST I TAKE FOR [[TO BE_{INF}] ON ROSENBERG SKOLE ON MONDAY BEFORE O'CLOCK-THE
 TEN]
*"Hi! Which bus do I have to take in order to be at Rosenborg skole on Monday before
 ten o'clock?"*

In addition, there is one infinitive clause after the preposition *til*, cf. (30a), two after the verb *tenke*, cf. (30b) and finally, two of the infinitives are not a complement of any kind. This latter group has no infinitival marker, *å* (to), cf. (30c).

30

- a jeg har lyst til å reise fra samfundet til rotvoll i morgen
 I HAVE WANT TO [[TO TRAVEL_{INF}] FROM SAMFUNDET TO ROTVOLL IN MORNING]
"I would like to travel from Samfundet to Rotvoll tomorrow."
- b jeg har tenkt å ta bussen fra heggstadmoen og opp til vestre rosten
 I HAVE THOUGHT [[TO TAKE_{INF}] BUS-THE FROM HEGGSTADMOREN AND UP TO VESTRE ROSTEN]
"I was thinking about taking the bus from Heggstadmoen and up to Vestre Rosten."
- c ankomst komme frem nitten null null
 ARRIVAL [[COME_{INF} THERE] NINETEEN ZERO ZERO]
"Arrival get there at nineteen hundred."

2.3.2.3.2 Relative clauses

Relative clauses constitute 26 % of the total number of subordinate clauses. These relative clauses have some minor variations, cf. (31). In (31a) the complementizer *som* linearly follows the NP, while the preposition phrases denoting departure/arrival (here: *fra pirterminalen til gløshaugen*) are found in the relative clause. In (31b), the preposition phrases (here: *fra kystad til dalen hageby*) follow directly after the NP phrase.

31

- a jeg vil ha første buss som går fra pirterminalen til gløshaugen klokken halv ni om
 morgenen
 I WILL HAVE [FIRST BUS WHICH GOES FROM PIRTERMINALEN TO GLØSHAUGEN O'CLOCK HALF NINE IN
 MORNING-THE]
*"I would like the first bus that leaves from Pirterminalen to Gløshaugen at eight thirty
 in the morning."*
- b når går bussen fra kystad til dalen hageby som er fremme før klokka sju på kvelden
 WHEN GOES [BUS-THE FROM KYSTAD TO DALEN HAGEBY WHICH IS ARRIVE BEFORE O'CLOCK SEVEN ON
 EVENING-THE]
*"When does the bus from Kystad to Dalen Hageby leave in order to get there before
 seven o'clock in the evening?"*
- c kan du gjenta det du sa nå
 CAN YOU REPEAT [IT [COMPL-ELLI] YOU SAID NOW]
"Can you repeat what you just said?"
- d hvilken buss går litt tidligere enn den du nettopp ga meg
 WHICH BUS GOES LITTLE EARLIER THAN [IT [COMPL-ELLI] YOU JUST GAVE ME]
"Which bus leaves a bit earlier than the one you just gave me?"

In the WOZ material, the structure in (31a) occurs only with declarative clauses or wh-questions, while the structure in (31b) only occurs with an interrogative clause starting with *Når går bussen* (When does the bus leave).

The third group have no realization of the complementizer *som*. Two of the occurrences with no audible *som* are part of polar questions, cf. (31c). The two others are hv-questions, which are almost identical syntactically and semantically, illustrated by (31d).

2.3.2.3.3 *Embedded questions*

Embedded questions constitute 21.3 % of the subordinated clauses. The largest subgroup of syntactic constructions in this group starts with *jeg vil gjerne vite* or *jeg lurer på* (gloss: I WILL LIKE_{ADV} KNOW/I WONDER ON. Translation: "*I would like to know/I wonder if*") followed by the embedded question, introduced by *når* (when), cf. (32). Thirteen of the 19 occurrences, or 72 % of the embedded questions, have this syntactic realization.

32

- a jeg vil gjerne vite når det går en buss fra hospitalkirka til fagerheim etter klokka tretten
I WILL LIKE_{ADV} KNOW [WHEN IT GOES A BUS FROM HOSPITALKIRKA TO FAGERHEIM AFTER CLOCK-THE THIRTEEN]
"I would like to know when the bus leaves from Hospitalkirka to Fagerheim after one o'clock."
- b jeg lurer på når bussen går fra trondheim sentralstasjon til sankt olavs hospital
I WONDER ON [WHEN BUS-THE GOES FROM TRONDHEIM SENTRALSTASJON TO SANKT OLAVS HOSPITAL]
"I wonder when the bus leaves from Trondheim Station to St. Olav's Hospital?"

There are two occurrences of *jeg lurte på* (I wondered if) followed by an hv-question, cf. (33a) and one occurrence followed by a polar question, cf. (33b).¹⁹

33

- a ja jeg lurte på hvordan jeg kan komme meg til skistua
YES I WONDERED ON [HOW I CAN COME ME TO SKISTUA]
"Yes I was wondering how I can get to Skistua."
- b lurte på går det an å ta bussen fra kong inges gate og til byen
WONDERED ON [GOES IT TO TO TAKE BUS-THE FROM KONG INGES GATE AND TO CITY-THE]
"(I) was wondering; is it possible to take the bus from Kong Inges gate and to the City?"

The clause *jeg ønsker* (I wish) is followed by a NP *opplysning* (information), cf. (34a). This NP is modified by a preposition phrase. The other occurrence of *jeg ønsker* (I wish) is followed by an infinitival, *å vite* (to know), cf. (34b).

¹⁹ There is in fact another example of an utterance starting with *jeg lurte på* followed by a polar question, but since this question obviously was an attempt to fool the system, I will not include an analysis of this utterance. The utterance was: "*I was wondering is it Volvo or Mercedes buses?*"

- a jeg ønsker opplysning om når første buss i morgen etter klokka fjorten tredve går fra lade til saupstad
I WISH INFORMATION ABOUT [WHEN FIRST BUS IN MORNING AFTER O'CLOCK FOURTEEN THIRTY GOES FROM LADE TO SAUPSTAD]
"I want to know when the first bus leaves from Lade to Saupstad tomorrow after two thirty."
- b jeg ønsker å vite om det går buss fra kroppanmarka
I WISH TO KNOW [ABOUT IT GOES BUS FROM KROPPANMARKA]
"I wish to know if there's a bus from Kroppanmarka."

2.3.2.3.4 Adverbial clauses

All adverbial clauses but one are introduced by the complementizer *slik at/sånn at* (such that, so that). *Slik at* and *sånn at* are used arbitrarily. The subject in the adverbial clause is *jeg* (I) followed by either *er* (is), cf. (35a), or *kommer* (come_{PRES}), cf. (35b)

- a eg skal i fra fiolsvingen til uglå sånn at eg er framme klokka seksten på mandag
I SHALL IN FROM FIOLSVINGEN TO UGLA SUCH THAT I AM ARRIVE_{ADV} CLOCK-THE SIXTEEN ON MONDAY.
"I'm going from Fiolsvingen to Uglå so that I'm arriving at four o'clock on Monday."
- b hei jeg lurer på når neste buss fra nygård til dora går slik at jeg kommer dit senest kvart på seks
HI I WONDER ON WHEN NEXT BUS FROM NYGÅRD TO DORA GOES SUCH THAT I COME_{PRES} THERE LATEST QUARTER ON SIX.
"Hi! I'm wondering when the next bus from Nygård to Dora leaves so that I get there no later than quarter to six."

According to Faarlund et al. (1997), the complementizer *slik at* can be analysed as an adverb *slik* (such) followed by an ordinary *that*-clause. By adopting this analysis, the clauses illustrated in (35) would be ordinary *that*-clauses. If the clause indeed consists of an adverb *slik* and a *that*-clause, it should be possible to insert a constituent between them (ibid. p. 1041). (36a) shows a grammatical insertion of a constituent between *slik* and *at*, while this is clearly not grammatical in (36b-c).

- a Han tale [sic!] slik til elevane at dei ikkje forstod noko (Faarlund et al., 1997:1041).
HE SPEAK [SUCH TO] STUDENTS-THE [THAT] THEY NOT UNDERSTOOD ANYTHING
"He speaks in such a manner [to the students] that they did not understand anything."
- b *eg skal i fra fiolsvingen til uglå sånn [med buss] at eg er framme klokka seksten på mandag
"I'm going from Fiolsvingen to Uglå in such a manner [with bus] that I'm arriving at four o'clock on Monday."
- c *hei jeg lurer på når neste buss fra nygård går slik [til dora] at jeg kommer dit senest kvart på seks
"Hi! I'm wondering when the next bus from Nygård leaves in such a manner [to Dora] that I get there no later than quarter to six."

Faarlund et al. (1997) maintain that certain idiomatic collocations can be regarded as complementizers, among them *slik at* (ibid. p. 1035). Based on this possibility together with the ungrammaticality of (36b-c), I will treat *slik at* as a complementizer introducing an adverbial clause.

In addition to the *slik at*-clauses, there is one adverbial clause introduced by *når*, cf. (37a).

37

- a når går det buss fra sandbakken til bjørndalsbrua på fredag når man skal være ved bjørndalsbrua før klokka tju
 WHEN GOES IT BUS FROM SANDBAKKEN TO BJØRNDALSBRUA ON FRIDAY [IF ONE SHOULD BE BY BJØRNDALSBRUA BEFORE O'CLOCK-THE TWENTY]
"When does the bus leave from Sandbakken to Bjørndalsbrua on Friday if one should be at Bjørndalsbrua before eight o'clock?"

2.3.2.3.5 Complement clauses

There are only four examples of complement clauses in the data. None of them have an audible complementizer *at* (that), cf. (38).

38

- a ja jeg tror jeg heller vil reise fra lohove
 YES I THINK [[COMPL-ELLI] I RATHER WILL TRAVEL FROM LOHOVE]
"Yes I think I would rather leave from Lohove"
- b jeg tror jeg vil dra fra teknostallen
 I THINK [[COMPL-ELLI] I WILL GO FROM TEKNOSTALLEN]
"I think I would go from Teknostallen."
- c altså jeg tenkte jeg skulle være der rundt tolv på formiddagen midt på dagen ikke på natta
 WELL I THOUGHT [[COMPL-ELLI] I SHOULD BE THERE AROUND TWELVE IN MORNING-THE MIDDLE OF DAY-THE NOT AT NIGHT- THE]
"Well, I thought I should be there around twelve in the morning not in the evening."
- d den vet eg også går til stavset
 IT KNOW I [[COMPL-ELLI] ALSO LEAVES TO STAVSET]
"I also know that that one goes to Stavset."

The complement clauses in (38a-d) are preceded by a declarative clause *jeg tror/tenkte* (I believe/think). In (38d) the subject in the complement clause *den* (it) is topicalized in front of the main clause *jeg vet* (I know).

2.3.2.4 Summary and discussion

I have divided the user turns into four main groups: complex turns, main clause turns, fragment turns and backchannel turns. I then categorized the syntactic structures found in the various turns according to which clause type/phrase type they belong to. The main clauses are the syntactic constructions most frequently used in this data material. The various types of

main clauses were divided into five distinct groups: declaratives, interrogatives, polar questions, imperatives and conditional clauses. The two latter clause types are not very frequent. A closer investigation revealed that the structures found within each of these groups were limited. The declaratives could further be divided into three main groups based on their initial sentence structure, and the interrogatives into only two.

Due to the restricted topic of the dialogues, I expected to find a limited vocabulary, but the discovery that the participants displayed the same uniformity on the syntactic level was rather surprising. Likewise, the observation that the majority of sentences were declaratives (62.1 %), was rather unexpected as well. The intuition is that in a question-answer system, such as BUSTER (Johnsen et al., 2003), the participants would ask questions, while the system's job would be to answer them. Normally, questions are associated with interrogative sentence structure. This puzzle can be explained by looking at the dialogue structure, and by using the insights from Conversation Analysis. The adjacency pair Question-Answer states that a question is more likely to be followed by an answer, and an answer often implies a declarative structure. As illustrated in the example dialogues in 2.3.2.2, example (25), the system asks for additional information if the needed information is not stated in the user's first turn. Consequently, it is the system that poses questions most frequently, forcing the participant to answer – with a declarative or a phrase. Interestingly, in the first Trondheim WOZ experiment, the system ended its opening prompt with a interrogative "*Hva ønsker du å vite*" (What do you want to know?); while the two other experiments ended the opening prompt with a declarative clause "*Du kan spørre fra nå av*" (You can start asking now). One might expect that the first Trondheim WOZ experiment had a higher frequency of declarative sentences in the user's first turn, due to the Question-Answer adjacency pair. Table E shows the distribution of interrogatives and declaratives after the various prompts.

Table E. Syntactic structures after prompt:interrogative and prompt:declarative

User's first turn:	1 st experiment: Opening prompt ends with an interrogative	2 nd +3 rd experiment: Opening prompt ends with a declarative
Interrogative	17%	36%
Declarative	78%	54%
Phrases/Combination of interrogative/declarative	5%	13%

In fact, the first experiment does have a higher frequency of declarative sentences in the user's first turn, as is shown by Table E. The interrogative prompt "*Hva ønsker du å vite?*" seems to

trigger more declaratives (78 %) in the user's first turn than the declarative prompt "*Du kan spørre fra nå av*" (54 %). The declarative prompt in the second and third experiment does not enter into any particular adjacency pair, and therefore the participants vary more between interrogative and declarative.

From the uniformity of constructions described in the preceding chapters, it naturally follows that there are many clause constructions *not* present in the WOZ material. There are, for instance, no examples of passives, verbal small clauses or clefting constructions. A syntactic phenomenon like topicalization is quite rare. There are no occurrences of topicalized clauses, and only four topicalizations consist of phrases larger than a monosyllabic word. The lack of topicalization also adds to the limited variation of the syntactic structures found in the WOZ material. Based on these observations, I conclude that the syntactic structures in the WOZ material are quite homogeneous.

The focus of my investigation is the syntactic structures above the phrase level, and therefore counting and categorizing all the phrases in the material is outside the scope of this thesis. My investigation of phrases is limited to the ones not included in any main or subordinate clause structure. These are usually a response to the dialogue system's questions, and consist primarily of NPs or PPs. As already mentioned, these fragments can be regarded as either being part of an underlying syntactic structure, or as isolated phrases enriched on the pragmatic level.

If we look at the subordinate clauses, they amount to 14.8% of my data material. Miller and Weinert (1998) give an overview of the number of finite and non-finite subordinate clauses in written text, reproduced in Table F. The last row is of most interest here.

Table F. Frequency of subordinate clauses (Miller and Weinert, 1998:91)

TABLE 3.3(b). Finite and non-finite subordinate clauses in written texts						
	GM	JH	PL1	PL2	IT1	IT2
Number of non-finite clauses	62	67	31	49	20	28
Total number of clauses	178	184	131	149	120	128
Total number of finite and non-finite subordinate clauses	114	96	52	81	58	72
Finite and non-finite subordinate clauses as a % of the total number of clauses	62	52	40	54	48	56

GM = "Conflict of Interests", *Geographical Magazine*, Dec. 1990, 18-22

JH = James Herbert, *Lair* (1988), 148-50

PL1 = Penelope Lively, *Judgement Day* (Penguin, 1982), 26-9

PL2 = Penelope Lively, *Judgement Day* (Penguin, 1982), 116-19
IT1= *The Independent*, 30 Jan. 1996, Editorials
IT2= *The Independent*, 30 Jan. 1996, Readers' letters

Geographic Magazine, which contains many articles by academics, has the greatest amount of subordinate clauses, i.e. 62%. The novel written by Penelope Lively (PL1 and PL2) has the smallest percentage of subordinate clauses with 40% and 54% respectively. PL1 and PL2 refer to different pages in the novel "Judgement Day". All the figures in Table F are well above the 14.8% found in the WOZ material. The findings in the WOZ agree more with the figures presented for a spoken corpus (The Map Task Corpus), also presented in Miller and Weinert (1998). There they find that the percentage of subordinate clauses is 20% with eye contact, and 14.5% with no eye contact. Miller and Weinert (1998) maintain that "*The lack of non-verbal communication is accompanied by an increase in the number of clauses but also a decrease in the number of subordinate clauses*" (ibid. p. 90-1). The 14.8% of subordinate clauses found in the Trondheim WOZ material therefore coincides to a large degree with the 14.5% of subordinate clauses with no eye contact in the Map Task Corpus.

Miller and Weinert (1998) also comment on the absent of various English syntactic constructions in spoken corpora which are common in written texts. This applies to adverbial clauses introduced by *although*, *since* and *as* (ibid. p. 81). Likewise, there are no examples of accusative constructions, cf. (39a), in their spoken corpora (ibid. p. 85). Infinitival constructions are present in the spoken corpora, but never in the subject position, cf. (39b), and never with auxiliaries (ibid. p. 87), cf. (39c).²⁰

39

- a Celia believes him to be a liar
- b To leave the dog in the car on a hot day was just stupid
- c She intended to have left before the police arrived but they were too quick

The Norwegian equivalents of the English examples in (39) are not found in the TWOZ corpus either. My findings therefore support Miller and Weinert's (1998) statement that the constructions represented in (39) are typical of written language, and not commonly employed in spoken language.

An important point we must not overlook is that the properties of a spoken corpus are determined by the speakers and what they are doing. Conversation is different from a narration. Conversation between adults is different from conversation between teenagers, and so forth. Even though the TWOZ material exhibits a very limited set of subordinate clause

²⁰ All these examples are taken from Miller and Weinert (1998).

types, and no occurrences of accusative constructions, these findings cannot be extended to spoken language in general.

However, the main and subordinate sentence structures presented in 2.3 warrant the conclusion that the syntactic structures are quite homogeneous across the Trondheim WOZ experiments and across the various participants.

2.3.3 The majority of the sentences are complete structures

The following section will conclude that the participants prefer complete sentences when undertaking their query. This goes against the commonly held view that spoken language is fragmented, ungrammatical and filled with errors (Chomsky, 1965:4). Phenomena such as grammatical intricacy, elliptical structures, false starts and repetitions are presumably responsible for this characteristic of spoken language. First, I will give a short introduction to the terms lexical density vs. grammatical intricacy, which is important in order to explain the differences found in spoken and written language as presented in Halliday (1989). Then, I will give a presentation of elliptic structures and disfluencies found in the Trondheim WOZ, and relate my findings to the properties of lexical density vs. grammatical intricacy.

2.3.3.1 Lexical density vs. grammatical intricacy

Halliday (1989) maintains that spoken language is just as structured as written language, but in a different way. To illustrate his point, Halliday (1989) compares a sentence from a written text to a possible rendering of it in spoken form, cf. (40).²¹

40

a ||| The use of this method of control unquestionably leads to safer and faster train running in the most adverse weather conditions. ||| [...]

A more natural spoken version might go something like the following:

b ||| You can control the trains this way || and if you do that || you can be quite sure || that they'll be able to run more safely and more quickly [[than they would otherwise]] || no matter how bad the weather gets ||| (Halliday, 1989:79)

According to Halliday (1989), the foremost characteristic of spoken language is grammatical intricacy, which means that the speaker prefers to disperse the content words over several clauses as illustrated in (40b). The content words in (40a-b) are practically the same, but in (40a), the content words are rendered in just one clause. Even though the idea behind Halliday's (1989) assertion is simple, i.e. people use more clauses to express the same content in spoken language compared to written, the actual calculation of the lexical density is not so

²¹ Transcription symbols: ||| sentence (clause complex) boundary, || clause boundary, [[]] embedded clause

straightforward. Halliday maintains that the lexical density in (40a) is twelve; lexical density is the number of lexical items in a clause. I discovered that it was not easy to decide what should count as a lexical item. Is *most* a lexical item? Should *weather conditions* and *train running* count as one or two lexical items each?

Even though the calculation of lexical density was not so self-evident, it is clear that the sentences found in the TWOZ material resemble the structure in (40a) more than the "typical" spoken version in (40b). Thus, Halliday's (1989) characteristic of spoken language does not coincide with the findings in the TWOZ material. I categorized the turns according to how many clauses and clause-external phrases they consisted of, with the results presented in Table G. As discussed in 2.2.2.1.1, the participants were instructed to use just one clause in the Complete inquiry. The overwhelming number of turns consisting of just one clause could perhaps be due to this inquiry group, but as shown in the last two columns in Table G, the frequency stays the same even though the user turns from the Complete inquiry have been removed from the calculation.

Table G. Number of clauses/clause external phrases in user turns

Number of clauses	All Turns	% of total user turns	Turns except Complete inquiry	% of turns except Complete inquiry
1 clause/phrase	304	67.1	255	67.5
2 clauses and/or phrases	118	26.0	96	25.4
3 clauses and/or phrases	23	5.1	20	5.3
4 clauses and/or phrases	6	1.3	6	1.6
5 clauses and/or phrases	2	0.4	1	0.3
Total number of turns:	453	100.0	378	100.0

The removal of Complete inquiry had no effect on the frequency of the different groups. The largest group still consists of just one clause or phrase, while user turns with 4 or more clauses are very rare. Therefore, I will only comment on the columns "All turns" and "% of total user turns" in Table G.

Fully 304 of the user turns, or 67.1 %, consisted of one single clause or phrase. Another 26% of the user turns consisted of two clauses or clause-external phrases, and only 6.8% of the material contained more than two clauses or clause-external phrases in a user turn. This suggests that the syntax in the user turns is more similar to Halliday's characteristics for written language. The lexical items are not dispersed over several clauses but mostly rendered within one or two clauses.

2.3.3.2 Elliptical structures

The frequent use of elliptical structures in spoken language is a feature that has given rise to the "myth of formlessness" (Halliday, 1989:76). An investigation of the possible elliptical structures in the data material shows that 10.6 % of the user turns contains omitted elements.²² The content of the omitted phrases is shown in Table H.²³ The 12 occurrences of imperatives are not included, since this is an obligatory ellipsis in Norwegian (Faarlund et al., 1997:683).

Table H. Elliptic structures – preliminary overview

Elided phrase	Occurr.	% of total elided phrases
Subject (pronoun)	17	35.4
Subject (pronoun after coordination)	12	25.0
Elided auxiliary after coordination	8	16.7
Elided complementizers <i>at</i> and <i>som</i>	7	14.6
Elided main verb	1	2.1
Elided noun	1	2.1
Other	2	4.2
TOTAL	48	100.0

The omission of the subject phrase in co-ordinated structures is equally common in both written and spoken Norwegian, cf. (41).

41

-Sideordning av setningar: Når subjektet er identisk i to setningar som er bundne saman med ein konjunksjon, kan det strykast i den andre setninga:
Knut fekk eit brev og opna det med ein gong
Knut fekk eit brev og han opna det med ein gong
 (Faarlund et al., 1997:683-84)

Co-ordination of sentences: When the subject is identical in two sentences that are combined with a conjunction, the subject can be omitted in the second clause:
Knut got a letter and opened it right away
Knut got a letter and he opened it right away

Twenty-five percent of the elliptical structures in Table H are composed of a subject elided after a co-ordination. When the subject is elided after the conjunction *og* (and), the auxiliary is also frequently missing. Nine of the 12 sentences with elided subjects do not have an auxiliary

²² Omitted elements will be further discussed in chapter 4.1, but as the term "omitted" indicates, the syntactic structure is assumed to be missing an element.

²³ These figures are only preliminary, and will be revised when some of the constructions are dismissed as examples of syntactic ellipsis, see 4.1.4.

verb either, but are simply followed by the infinitival form *være* (be). The omission of the subject alone, or the subject along with an auxiliary, are both features found in written Norwegian. Similarly, the omission of complementizers like *at* and *som* (that) is also characteristic of written Norwegian.

However, the majority of the omitted phrases (60.4%) are pronouns in the subject position. To omit the subject phrase is more common of spoken Norwegian, cf. (42).

42

"Vi har nå sett mange eksempler der subjektet i setningen er utelatt eller ikke synliggjort, tilstrekkelig mange til å hevde at dette virker å være et frekvent trekk ved talespråket" (Nygård, 2004:135).

We have now seen many examples where the subject in the sentence is omitted or not made visible, enough to claim that this seems to be a frequent feature of spoken language.

Written Norwegian usually does not omit the subject, but these elliptical structures can be observed in informal written language. Personal letters and the style used in e-mail and chat programmes are inclined to exhibit this feature. Maynor's (1994) studies of "the e-style" in chat programmes noted that *"Pronoun subjects are often omitted, with context indicating the intended subject, [...]"* (ibid. p. 50). Even though omission of subject phrases does occur in writing, it is nevertheless a feature more commonly found in spoken language.

Apart from the omitted subjects, auxiliaries and complementizers, there are only four occurrences of possible ellipsis in the material given in (43).

43

- a mm så vil eg ta en annen fra tyholttårnet til city syd
MM NEXT WOULD I TAKE ONE DIFFERENT [_ELLI] FROM TYHOLTTÅRNET TO CITY SYD
"mm next I would like to take a different one from Tyholttårnet to City Syd."
- b mm skulle eg ha kommet meg fra persaunet til sentrum klokken tjueto
MM [_ELLI] SHOULD I HAVE COME ME FROM PERSAUNET TO CENTRE O'CLOCK-THE TWENTY-TWO
"Mm I should travel from Persaunet to the Centre at ten o'clock."
- c jeg vil gjerne vite når siste buss hjem fra byen til singsaker på lørdag
I WOULD LIKE_{ADV} KNOW WHEN LAST BUSS HOME FROM CITY-THE TO SINGSAKER [_ELLI] ON SATURDAY
"I would like to know when the last bus home from the Centre to Singsaker on Saturday."
- d fra østmarkveien men jeg vil før klokka fjorten tredve nei etter klokken fjorten tredve.
FROM ØSTMARKVEIEN BUT I WILL [_ELLI] BEFORE O'CLOCK-THE FOURTEEN THIRTY NO AFTER O'CLOCK-THE FOURTEEN THIRTY
"From Østmarkveien but I would before fourteen thirty no after fourteen thirty."

I will briefly discuss the possible elided element in the various sentences, and come back to the detailed analysis in 4.1.2. In (43a), a constituent is assumed to be missing from the phrase *en annen* (different). *En* (a) is a determiner, and *annen* (different) is analysed as an adjective. Determiners are considered a constituent of a noun phrase, not a constituent of an adjective

phrase. Therefore, the natural assumption is that *en annen* (a different) lacks a head noun. In (43b), the subject *jeg* follows the finite verb *skulle*, and this word order indicates that there is a fronted element in the sentence that is elided.

According to Faarlund et al. (1997), a sentence necessarily contains a nominal and a finite verb phrase. However, the subordinate clause in (43c) has no finite verb, and the question is whether the structure should be treated as an ellipsis or a performance error.

In (43d), the gloss indicates that a constituent is missing after the modal auxiliary. Given the assumption that auxiliaries can never be the only verb in a sentence, it is possible to analyse the sentence in (43d) as an ellipsis of the main verb. As already mentioned, Eide (2005) maintains that modals followed by adverbial complements should be analysed as structures containing a phonetically empty main verb. Further, she assumes that modal verbs followed by an empty verb always have a directional locative as complement. I will leave this issue for now, but I will return to a more thorough discussion of the analysis of ellipsis in Chapter 4.1.

2.3.3.3 Repetitions, false starts and corrections

Other features of spoken language such as hesitations, false starts and repetitions, have added to the belief that spoken language is fragmented (Halliday, 1989:76). In the WOZ material, I found 38 occurrences of repetitions, false starts and corrections (8.3% of the total 453 user turns). I divided the disfluencies into groups using the following criteria: False starts consist of sounds that cannot be recognized as a word, cf. (44a-b). Repetitions are a recognisable word or words that are repeated, cf. (44c). Corrections are a word or strings of words in which the correction is understood as a replacement of the preceding words, cf. (44d). Corrections are often accompanied by additional words like *nei*, *unnskyld* or *eller* (no, sorry, and or).

44

- a <åvi> siste buss som er ved rosten cirka halv elleve
 "<åvi> last bus that is at Rosten circa half past ten."
- b hvilken <gu> buss går fra ankers gate til nordre gate før klokka ni om morgenen
 "Which <gu> bus leaves from Ankers gate to Nordre gate before nine o'clock in the morning?"
- c <hvilken> hvilken buss er det som går etter den du nettopp oppga
 <Which> which bus is it that leaves after the one you just mentioned?
- d kva tid går <bussen> <fra> <eller> første buss fra kroppanmarka til breidablikk
 "What time leaves <the bus> <from> <or> first bus from Kroppanmarka to Breidablikk?"

The figures are shown in Table I.

Table I. Overview of disfluencies in the TWOZ.

Type of disfluency	Occurr.
Corrections	18
False starts	13
Repetitions	6
TOTAL	38

Heeman and Allen (1997) examine the speech repairs in a corpus of dialogue where one person plays a user, and another plays a system. This was not a Wizard of Oz experiment since the user knew that the "system" really was a person. The data is nevertheless interesting since it reports on speech repairs in dialogues. The corpus studied by Heeman and Allen consists of 6163 turns, and the various repairs amounts to 2396 (38.9%). The percentage of speech repair is considerably higher than in the TWOZ material. Speech repairs create a disruption of the syntactic structures, and the more speech repairs, the more fragmented syntax. Since the TWOZ material contains little disfluency, as seen in Table I, the majority of utterances will not have any elements disrupting the syntactic constructions. I will return to a possible explanation for the difference between the findings in Heeman and Allen (1997) and the TWOZ in 2.3.3.4.

2.3.3.4 Summary and discussion

I have now looked at various phenomena in the WOZ material which, taken together, lead to the conclusion that the corpus mainly consists of complete clauses. The low frequency of elliptical structures and disfluencies in the WOZ material contradicts earlier assertions about spoken language, and at the same time their absence adds to the predominance of complete clauses. In addition, the majority of the turns (92.9%) typically consist of one or two clauses. According to Halliday's (1989) distinction between grammatical intricacy and lexical density, the material does not exhibit the grammatical intricacy that is seen as typical of spoken language.

The next question is why the material exhibits these features. The only way to approach this question is to examine various factors that influence, or could have influenced the participants. First of all, the context for these utterances is quite special, and I argue that this language should be classified as *semi-planned spoken language*. The topic in the TWOZ material is bus schedules, and the participant's job in the experiment is to obtain information about these bus schedules. To obtain the information desired, the participants necessarily need

to plan, at least on some level, what they are going to ask. Miller and Weinert (1998) maintain that "*Planned or semi-planned spoken language is different [from spontaneous spoken language], but typically is heavily influenced by the units and organisation of written language*" (ibid. p. 71). This planning is probably a reason for the high frequency of complete clauses. The participants do not run into serious disfluencies because they already have partially planned what to say. One might argue that the semi-planned spoken language found in these experiments undermines the usability of the obtained results, i.e. that the findings in the TWOZ will not reflect how people will talk to the system when the dialogue is real. However, it is reasonable to assume that a person calling a bus information system *has* partially planned what to ask, and that this planning still holds even if the person is not involved in an experiment. Therefore, I argue that the findings in the TWOZ are relevant for this particular type of spoken language, but the characteristics should not be transferred to spoken language in general. In turn, this indicates that Halliday's dichotomy between spoken and written language is too coarse-grained. Obviously, modality is not the only dimension influencing the language.

The next dimension that influences how we address a person or a computer, is our knowledge or belief of the interlocutor. Knowledge is a complex concept, and its substance has been discussed for centuries in the context of the philosophy of mind, and will not be presented here. Nevertheless, I want to discuss suggestions that have been made in the cognitive tradition to shed some light on what "knowledge of the recipient" can be. Johnson-Laird (1993) maintains that we use our cognitive abilities, such as perception, memory, language and fantasy, to create mental models of the world, which in turn will influence how we interact with it. Consequently, the mental model that we have of "computers" includes previous experience with computers, knowledge about computers, and beliefs about computers, which will affect the way we interact with computers. Fischer (2006) points out that "*we have become acquainted with the fact that most computers need to be addressed using special, formal, languages, and that they are restricted in their capacities, such that they do not feel anything*" (ibid p. 80). From our own experience, we know that a wrong slash or a wrong letter in the input to the computer will cause problems. The participants in the TWOZ dialogues might assume that avoiding errors and using complete, formal clauses in their speech will make it easier for the computer to understand them. Therefore, they make an effort to produce complete and flawless syntactic constructions. This might also explain why Heeman and Allen (1997) report a much higher frequency with respect to speech repairs than I found in the TWOZ material. The participants in the Heeman and Allen experiment knew

that a human was pretending to be the computer system. Even though they were supposed to act as if they were participating in a "real" HCI, the knowledge of human involvement could have influenced the participants to be less attentive to mistakes and disfluencies.

According to Rubin (1980), dimensions such as "spatial commonality" and "concreteness of referents" also influence the language. The dimension "spatial commonality" relates to whether the speaker-hearer shares a spatial context, and the dimension "concreteness of referents" relates to whether the objects/events are visually present (Rubin, 1980:416-17). Since the dialogues in the TWOZ material are conducted via a telephone, and no extra-linguistic communication is possible, the only alternative for the participants is to express meaning through words and sentences. To compensate for the lack of spatial commonality and concreteness of referents, the participants depend on complete sentences to reduce the possibility of misunderstandings.

2.4 The advantages of the Trondheim WOZ

To my knowledge, no previous study of syntactic structures in computer-oriented talk has been conducted for Norwegian. In international research on HCI, the majority of studies that concern sentence structure are typically based on written interaction (Thompson (1980), Guindon et al. (1987), Reilly (1987)) while syntactic investigation of speech-based HCI is rather sparse. Studies of spoken HCI tend to focus on dialogue structure, turn taking, repair strategies and politeness (Richards and Underwood (1984), Guyomard and Siroux (1988), Morel (1989), Wooffitt et al. (1997)). Since the TWOZ material contains spoken HCI in Norwegian, this corpus is a unique resource for investigating syntactic structures in speech-based HCI, and the investigation will be beneficial in both national and international HCI research. I will further support these statements in 2.4.1.

Until recently, syntactic structures in spoken language have received little attention in theoretical linguistics. A reason for this lack of interest of actual utterances can be traced to Chomsky's (1965) sharp distinction between competence and performance, where the linguist's focus should be competence: *"In actual fact, it [performance] could not directly reflect competence. A record of natural speech will show numerous false starts, deviations from rules, changes of plans in mid-course, and so on"* (ibid. p. 4). Language in actual use was viewed as contaminated with features irrelevant in the study of the innate language faculty. This led to a disregard of spoken language as a theoretically uninteresting object. In 2.4.2, I will argue that the investigation of spoken language can contribute new insights to linguistic theories, which normally have focused on written data. In fact, it is especially important to investigate spoken language if the task is to explain how humans acquire a language. After all, it is spoken language that is acquired spontaneously by the child. The mastering of written language is learnt through years of laborious training in school, and cannot be argued to be subject to the same obstacles as those encountered when learning spoken language, e.g. lack of instruction and haphazard inventory of sentence structures. As already pointed out, the TWOZ cannot be seen as representative of spoken language as such. The various dimensions that influence the language must be taken into account. Likewise, the fact that the utterances must be classified as planned or semi-planned needs to be taken into consideration when using this material. Still, data taken from a corpus consisting of spoken utterances can add new insights to linguistic theories.

It is interesting to note that performance (in the Chomskian sense) is attracting more interest in theoretical linguistics. For Norwegian, see for instance Sollid (2003) and Nygård

(2004), who use spoken language to investigate assertions made in GB theory and the Minimalist Program. The establishment in 2005 of the project Scandinavian Dialect Syntax (<http://uit.no/scandiasyn/projects/>) illustrates the growing focus on spoken language. In Norway, two corpora of spoken Norwegian language, the *Norsk Talemålskorpus* (Norwegian Spoken Language Corpus) and the Big Brother Corpus were made available on the Internet in 2005. The investigation of the syntactic structures in the Trondheim WOZ can also be seen as broadening the view in theoretical linguistics from the rather narrow focus on written texts, which has often occupied centre stage, despite claims to the contrary.

I will start with a presentation of human-computer interaction topics, both international and national in nature, which are tangential to my own investigation. I will then discuss the hegemony of written language in theoretical linguistics, and give an overview of the investigation of spoken Norwegian language.

2.4.1 Computer-oriented talk

Investigations of computer-oriented talk are part of the field of Human-Computer Interaction (HCI). This term emerged in the mid-1980s (Preece et al., 1994), and developed from the understanding that the interaction between humans and computers relies on more than just the user interface. A definition of HCI is given in Preece et al. (1994), cf. (45).

45

"Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them" (Preece et al., 1994:7).

This quote shows that HCI embraces many areas of interaction, and I will start by focusing on those aspects that are relevant to my topic. First of all, my focus is on dialogue systems.

Dialogue, as defined in Preece et al. (1994) is *"the exchange of instruction and information that takes place between a user and a computer system"* (ibid. p. 262). Examples are information retrieval systems and advisory systems. The design and implementation of dialogue systems must consider many aspects of HCI. I will restrict my investigation to the input *from* the human *to* the computer. The input to the computer can either be given via a keyboard, by clicking on menus/symbols on a screen, or by speech. A combination of these input methods is also possible. However, the notion "computer-oriented talk" means in this context that I will be investigating speech-based HCI.

The investigation of dialogue systems has primarily focussed on written input (and output); see Thompson (1980), Guindon et al. (1987), Reilly (1987). The results in these

investigations are not irrelevant to spoken dialogue systems, since some of the properties in dialogues arise because of the interaction type: which is a monologue versus dialogue, not because of the modality, which is written versus spoken (Dahlbäck, 1997).

There are some investigations of spoken input to dialogue systems in the literature, see for instance Richards and Underwood (1985), Guyomard and Siroux (1988), Morel (1989) and Wooffitt et al. (1997). I will briefly present the main ideas in these papers in order to show that the syntax has not been a priority in their work.

Richards and Underwood (1985) investigated the variables "explicitness" and "politeness" in the system's initial message to see if they had an impact on the regularity and the conciseness of the user's requests or responses. With respect to regularity, they investigated whether the information was given in a particular order, and conciseness was calculated on the basis of ratio of non-essential words divided by total number of word spoken in the basic request (ibid. p. 217). Neither regularity nor conciseness was directly tied to syntactic structure. However, they mentioned that the users "*asked questions in a more direct manner*", but at the same time asserted that "*a tendency towards politeness was observed in subjects addressing either system*" (ibid. p. 216). These statements could be referring to various syntactic structures, but no examples were given.

In Guyomard and Siroux's (1988) experiments, the users were instructed to get information from an automatic Yellow Pages system. The focus of the investigation was primarily on the dialogue management in this and comparable dialogue systems. The article discussed issues such as the dialogue structure, rules for co-operative behaviour and the opportunities for user intervention (ibid. p. 500). They presented no information about the syntactic structures in the user utterances, but maintained that "*the majority of utterances made by subjects were marred by hesitations, false starts, re-starts and self-corrections*" (ibid. p. 499).

Morel (1989) compared the linguistic features found in human-computer dialogues with those found in human-human dialogues. She pointed out differences in aspects such as turn taking (humans never interrupt the computer) or phonetic features (pronunciation is better when confronted with a computer). The utterances were reported to be "concise and stereotyped", and Morel defined the syntax in her material as "rigid" (ibid. p. 330). In addition, she also maintained that there are many ellipses, especially of the verb. However, she did not give any examples of which syntactic structures were classified as concise and stereotyped, and did not reveal anything about how classifications such as concise, rigid and stereotyped relate to syntactic entities such as infinitivals, complement clauses, clefting or passives.

Wooffitt et al.'s (1997) investigation was anchored in Conversation Analysis, and they compared the findings from the human-computer oriented talk to human-human dialogues. They investigated phenomena like response tokens, hesitation items, problem handling in the dialogue, features of turn taking, overlap and closings and repair strategies. They also investigated "request formulation". This was not used to refer to any particular syntactic structures, but how the user presented the information in the request. Wooffitt et al. (1997) divided turns into *simple requests*, which meant that the caller indicated early in the production of the turn what service he required, while *non-simple request formulations* were turns that deviated from this format (ibid p. 76).

This brief survey of investigations of dialogue systems illustrates two distinct areas of research. First, the research concerning syntactic properties was conducted using written input. Second, the research conducted using spoken input, i.e. "computer-oriented talk", focused on properties of the discourse and the dialogue, such as turn taking, politeness, speech acts or various speech disfluencies.

Since the researchers working with spoken language have prioritized other aspects of language than syntax, an investigation of the syntactic structures found in the *spoken* input to a computer seems to be missing. It could be that the prevalent hypothesis has been that the syntactic structures of spoken input have only minor differences compared to the written input. But in order to confirm or dismiss this hypothesis, the syntactic structures in spoken input must be investigated. The belief that the syntax in spoken and written input are practically identical, has probably resulted in a one-sided focus of the "problematic" phenomena in spoken language, like ellipsis, false starts, repetitions and other disfluencies. These phenomena strike us as the real challenge when constructing a speech-based dialogue system. There is no doubt that the system needs to handle these spoken language phenomena, but the syntactic structures typically found in human-computer interaction cannot be ignored in spoken HCI either.

Even though the literature referred to in this subsection focuses on various aspects of computer talk, all of the articles conclude that this style is different from human-human conversations. This conclusion is taken to be the same across different languages and different cultures. Certainly, I agree that differences in human-computer and human-human dialogues will be found regardless of the language investigated, but the characteristics of the differences might vary. An illustrative example is noted in Cameron (2001), where she discusses different cultural practices for the management of turn taking in a dialogue. Cameron's example is an Argentinean student struggling to learn Swedish turn-taking conventions, cf. (46).

In Argentina, she said, the rule had been roughly "grab the floor and then talk until someone interrupts you"; in Sweden the rule appeared to be something like "wait for the other to finish before you start speaking" (Cameron, 2001:94).

Cameron points out that we must acknowledge these variations in spoken discourse, and that universal claims concerning spoken discourse must be handled with caution. In other words, Morel's (1989) observation "*The user never interrupts the computer*" (ibid. p. 326) might not be the same in an Argentinean HCI experiment. In this respect, previous work that has been conducted on computer-oriented talk focussing on *Norwegian* syntax would be relevant to my work. However, a thorough literature search has not provided any results. Neither has personal communication with Norwegian scientists in relevant areas of investigation. Even books with the promising titles *Kommunikasjon Menneske-datamaskin* (Anon, 1988) and *Menneske/datamaskin-kommunikasjon: om brukervennlig dialog mellom mennesket og datamaskinen, basert på gjennomtenkt struktur, språk og visualisering* (Holter, 1988) do not mention aspects of spoken interaction with a computer.²⁴ This means that my investigation of the TWOZ experiments is the first study of syntactic structures in Norwegian computer-oriented talk.

2.4.2 Syntactic structures of spoken language

As mentioned in 2.4.1, HCI research largely agrees that there are traceable differences in the language when humans talk to a computer versus another human. I have already presented various factors that influence language use in 2.3.3.4, but in the current section I will concentrate on the modality. Since I have labelled the data as semi-planned spoken language, I will view the TWOZ material in light of some previous statements concerning the modality of spoken language. It is also difficult to get beyond the spoken-written dichotomy when discussing syntactic theories. As I have already pointed out in the beginning of chapter 2.4, the written modality has received the majority of attention in theoretical linguistics.

Linell (1982), Halliday (1989) and Miller and Weinert (1998) maintain that the main concern within theoretical linguistics is written language. Linell (1982) states that the linguistic investigation is mainly focused around the functions that are specific to written language. According to Linell, this bias in linguistics has its origin in the historical development of linguistics as a science, but generative linguistics and its descendants have

²⁴ Communication Human-computer (Anon, 1988) and Human/computer-communication: about a user friendly dialogue between the human and the computer based on thought-through structure, language and visualization (Holter, 1988)

strengthened this one-sided focus of written language. This has led to the “*the written language bias in linguistics*” (Linell, 1982).

Miller and Weinert (1998) find it disturbing that the major differences on the syntactical level found in written and spoken language are mainly overlooked in theoretical linguistics. They also question the overwhelming focus on written language syntax in generative linguistics, which is passed off as insights about the innate language faculty and language acquisition, cf. (47).

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(The irony is that the theory of grammar which has had the greatest impact on theories of first language acquisition is based largely on written language, and not just on the written language of children’s stories, but on the complex written language of well-educated adults.) (ibid. p. 383)

GB theory and its descendants are supposedly a theory explaining the human language faculty. This faculty is undeniably linked to spoken language. However, the theoretical claims are built solely upon sophisticated sentences that are typical of written language, and judgements of grammaticality are undertaken by highly educated people who have mastered the syntax of written language to its fullest. This can be clearly seen by opening almost any book on linguistics and looking at the sentences presented as examples. (48a-c) is taken from Pinker (1994), and (48d) is from Cinque (1999).

48

- a Remarkable is the rapidity of the motion of the wing of the hummingbird (1994:203).
- b The hummingbird’s wing’s motion’s rapidity is remarkable (1994:204).
- c The policies that the students I know object to most strenuously are those pertaining to smoking (1994:206).
- d Nå skjønner tydeligvis allerede ikke lenger alltid Per alt helt godt (1999:112).
"Now understands evidently already no longer always Per everything completely well."

These sentences are used as examples of how the human language faculty works. They are perhaps marginally possible as written texts, but I doubt that they will be found in spoken language. The division between competence and performance in generative linguistics has led to a theory that has regarded examples from authentic spoken language as "*deviations from rules*" (Chomsky, 1965:4). The arguments have been pervasive, claiming that idealization is needed if one wants progress and success in linguistics.

The modality in WOZ Corpus is spoken language, and to investigate syntactic structures found here will require a different approach than commonly encountered in

theoretical linguistics. First, the investigation will be based on utterances that actually occur in the language. The sentences are not constructed to demonstrate some theoretical feature. Second, the utterances are not the result of laborious editing as we often find in written texts. The syntactic properties found in the TWOZ corpus can shed some new insights on how the innate human language faculty works. If we are to make claims about the biological endowment that makes us capable of learning and using a language, we should at least base our claims on the investigation of spoken language syntax, not written language syntax, which is acquired after many years of teaching and training. Reading and writing complex sentences are not unconscious tasks that happen in a deterministic way if the child is exposed to a book, pen and paper. To the contrary, written language is the result of tedious training throughout many years of education.

On the other hand, investigations of written language are not insignificant for the study of the human language faculty. Since spoken and written language in a speech community usually shares a major portion of syntactic features, it is unlikely that these two should originate from two different language systems.²⁵ I think that the same core grammatical machinery underlies both spoken and written language. Historically, written language evolved later than spoken language, and the documentation of languages which until now only have spoken variants is an ongoing task.²⁶ If writing was developed from speech in order to fill a different function in society, it is reasonable to believe that the syntactic structures we find in writing originate from the same core system as the spoken language.

Neither do I claim that spoken language has been ignored totally in linguistics. Sociolinguistics, Conversation Analysis, Critical Discourse Analysis and Phonology all study principles in spoken language. However, their primary concern has never been to develop a theory of syntax.

2.4.2.1 Studies of syntactic structures in spoken Norwegian

Norway has a rich tradition of language studies conducted from a dialectological angle. The approaches belonging to this tradition have no alternative but to use spoken language as their data. After all, dialects do not have a corresponding written variant. The main focus of the dialectological investigations has primarily been phonological and morphological characteristics of the dialect in question, either in a diachronic or synchronic perspective. In

²⁵ There are examples of speech communities that use different language systems for speech and writing. In the Middle Ages, Latin was used as the written language in many European countries.

²⁶ For example, the language Ndegeleko found in Tanzania does not (yet) have a literary language (Ström, 2007). Thanks to Dorothee Beermann Hellan for helping me with my questions about undocumented languages.

the 1970s, studies of dialects from a sociolinguistic perspective gained considerable ground in this tradition as well (Skjekkeland, 2005). Although spoken language has been at the centre stage in the dialectological tradition, its syntax has received little attention.

Sandøy (1996), who includes a chapter called *Grammatisk struktur* (Grammatical structure) in his work, focuses on the morpho-phonological and syntactic-phonological rules in the dialects. The main goal of the syntactic investigation is to "*dra fram slikt som klårt vik frå det vi reknar som vanligast i norsk*" (to focus on features that deviate considerably from the usual traits in Norwegian) (Sandøy, 1996:74). The presentation of syntax is limited to (i) a list of constructions demanding dative case in the Hol dialect, (ii) a statement that several dialects do not need to invert the subject and the finite verb in a wh-question,²⁷ (iii) the use of *det* (it) or *der* (there) in expletive constructions in the Lyngdal dialect, and (iv) the use of oblique pronouns in extraposition in the Vålerenga dialect.

Skjekkeland (2005) takes a diachronic approach to dialects, and the investigation of the grammatical system in the dialects is a systematic description of the morphology and phonology. Syntax is mentioned in connection with language changes. Examples are the loss of dative case, less use of agreement in the past participle, and the more frequent use of *ha* (have) at the expense of *være* (be) as an auxiliary. He also states that "*Endringar som gjeld syntaktiske tilhøve i dialektane, er elles til nå lite utforska*" (Changes that concern the syntactic situation in the dialects, are otherwise little explored.) (Skjekkeland, 2005:147). I agree with Skjekkeland, but I want to sharpen his statement, and claim that, generally, the investigation of syntactic structures in dialects has received little attention, and not only the syntactic *changes*. However, as mentioned in the introduction to 2.4, there seems to be an increasing interest towards dialect syntax. This statement can be supported by the existence of more research and articles about spoken language syntax, the development of Norwegian spoken language corpora and the establishment of a project in Scandinavian Dialect Syntax.

The most comprehensive study of spoken language in Norway is called TAUS, conducted in Oslo during the period from 1971-1976. This project was a sociolinguistic study of spoken language in the Oslo region, and the syntactic constructions studied in the TAUS project were so-called incomplete utterances. Wiggen (1986) described different types of incomplete utterances. He specified which phrase categories can be deleted and where in the sentence the deletion can occur. The frequency of different incomplete utterances was then related to populations that differed with respect to age, gender, education and region, to

²⁷ Dialects in Trøndelag, north and northwest of Norway. According to Nordgård, T. (p.c.), this phenomenon is actually found from Rogaland and north along the coast.

determine where these constructions occurred most frequently. Wiggen questioned the assertions made by Diderichsen (1976), since the TAUS material clearly showed that subject phrases can be omitted in Norwegian. Diderichsen claimed that every sentence except yes/no-questions, imperatives, conditionals and subordinate sentences must have a phrase in the “fundamentfeltet”. Wiggen maintained that their results differed because Diderichsen’s assertions about Norwegian language were based only on written texts.

Fintoft and Mjaavatn (1980) carried out a study similar to the TAUS project where they investigated the dialect spoken in Trondheim. Their main concern was to see how various social factors like age, income, education, political affiliation etc. were related to variables in the language. These variables concerned phonetic realizations of phrases, i.e. whether the participants in the study said ['kɔm:] versus [²kɔm:ə] (come), [æ] versus [jæi] (I).²⁸ All in all 14 variables were investigated, and none of them were related to syntactic structure.

The project "Talemål hos ungdom i Bergen" (The language spoken by youths in Bergen) resulted in a series of reports published from 1983 to 1994 (Sandøy (ed.), 1983). As in the Oslo and Trondheim project, the main focus was the sociolinguistic tendencies that could be found in the data material, and the variables studied were related to different phonetic realizations of phrases, for example variation in the first person singular pronoun [eg], [e] or [jei] (I). One exception is Myking (1983) who presented the various syntactic positions of the adverbials *då* (then) and *no* (now) which is a determinant as to whether they function as sentence adverbs or adjuncts.

Sollid (2003) gave an extensive analysis of syntactic structure in a dialect in Nordreisa. She employed insights and theories from creole linguistics to shed light on various syntactic structures in the Nordreisa-dialect. The structures in question were idiosyncrasies that deviated from the norm in written Norwegian. She focused her investigation on four different syntactic structures i) the lack of inversion ii) unexpected position of the direct object iii) agent phrase positioned between subject and finite verb in passives and iv) double negation with *ikke+aldri* (not+never).

Nygård (2004) discussed an approach to incomplete (elliptical) constructions in a neo-constructional framework. The data material used in Nygård's investigation was mainly taken

²⁸ The difference with respect to *come* relates to the apocope of the [e] at the end of the verb. The ² is a symbol signaling accent 2 in Norwegian which contrasts with accent 1. Even though the accent opposition has a phonemic status in Norwegian, it is not relevant here.

from the first electronically available spoken language corpus in Norway, The Big Brother Corpus.

Åfarli (1986) and (1998) studied the lack of inversion in *wh*-questions in various Norwegian dialects, and offered an analysis of this syntactic construction in a generative framework.

I have only presented a few examples of the research on Norwegian spoken language, but they illustrate the main point. The majority of investigations focused solely on the morphological and phonological inventory of the various dialects. In recent years, however, investigations of Norwegian spoken language have shown a tendency to be oriented more towards syntactic phenomena. However, these investigations are often limited to particular constructions, usually those that depart from written language. Obviously, the phenomena most easily detected as typical of spoken language are those that are distinct from written language structures, i.e. the inversion/lack of inversion in *wh*-questions. Therefore, an "ordinary" spoken sentence escapes the interest of researchers because it presents no novelty. Why study adverbial subordinate sentences in spoken language when they have been thoroughly examined by researchers such as Faarlund et al. (1997) or Åfarli (1997)? Åfarli (1997) concluded for instance that "*den adverbiale setninga [er] tematisert, noko som er svært vanleg*" (the adverbial subordinate clause is topicalized, a very common feature) (ibid. p. 146). Åfarli's example is reproduced in (49).

49

- a Mens vi pratet om trollkjerringer, kom jeg plutselig på en riktig fin historie.
"*While we were talking about trolls, I suddenly remembered a really nice story.*"

A search in the Big Brother Corpus yields 30 subordinate clauses with the complementizer *mens* (while), but *none* is topicalized. Based on these findings, topicalization of subordinate clauses appears to be rather *uncommon* in spoken Norwegian. Obviously, it is not possible to conclude anything certain about adverbial clauses in spoken language based on 30 examples, but still it reveals a tendency that might be interesting to pursue further. However, the question of topicalized subordinate clauses in spoken Norwegian lies beyond the scope of this thesis. The purpose of this example is to illustrate that assertions about written language should not uncritically be transferred to spoken language.

2.4.3 Summary

In this section, I have given a brief and illustrative overview of the national and international investigations of computer-oriented talk. In Norway, there has been no previous study of the

syntactic structures of computer oriented-talk. International research seems to be more oriented towards dialogue structure, disfluencies and politeness, while the studies of syntax are mainly concentrated around written input. It might of course turn out that the syntactic structures found in spoken and written input have more similarities than differences, but in order to confirm or dismiss this possibility, the syntax of computer-oriented talk must at least be properly investigated.

Since this is a syntactic study of the sentences in computer-oriented talk, the analysis and classification of the sentences have been done according to well-established theoretical notions in theoretical linguistics, using concepts such as declaratives, interrogatives, subordinate clauses, etc. In this way, I believe that the result will be better founded than if I use vague characteristics such as explicit, concise and strict, which are often encountered in articles about computer-oriented talk.

The investigation of the WOZ material will also be a counter-weight to the one-sided focus on written language in theoretical linguistics, thereby contributing to a more balanced theory, which takes what actually is uttered in spoken language into account.

3 Theory

As mentioned in chapter 1, the theoretical discussion in this thesis is triggered by the findings in the TWOZ material along with the assumption that spoken language contains prefabricated chunks (Miller and Weinert, 1998:394). That spoken language uses ready-made chunks of language to ease the encoding and decoding, leads to a question of how this observation could be incorporated into a theory of syntax. In the pursuit of an answer, I will investigate how the relationship between the lexicon and the syntactic structure are explained in two distinct linguistic theories; the endo-skeletal approach and the exo-skeletal approach. The central questions are: what do we perceive as the fundamental building blocks of syntactic structure, and where do the structures come from? A closely related question is how the lexicon is organized, and what kind of information we can expect to find there. The answers in the different theories will be put under scrutiny to see if they offer any insight as to why speakers often prefer to use ready-made memorized sequences (Miller and Weinert, 1998:387). Since these answers relate to more fundamental issues, the theoretical discussion will necessarily have to surpass the documented sentences in chapter 2.3, and employ example sentences that are constructed in order to shed light on the frameworks.

In this chapter, I will start by presenting some characteristics of grammars classified as endo-skeletal (lexically driven), which means they view the information in the lexicon as the source of syntactic structure. I will mainly focus on Government and Binding Theory, (Chomsky, 1981) and its descendants, but this information can easily be transferred to other varieties of generative grammar, like the Minimalist Program (Chomsky, 1995), Lexical-Functional Grammar (LFG) (Bresnan, 2000) and Head Phrase Structure Grammar (HPSG) (Pollard and Sag, 1994). I will investigate the hypotheses derived from the models related to the above-mentioned topics, and point out several difficulties that the endo-skeletal approach faces in this respect. In Chapter 3.3, I will present the exo-skeletal approaches, with particular focus on the neo-constructional approach. I will examine how the models and hypotheses in this approach fit the observed data. On the basis of this investigation, I conclude that the exo-skeletal approach is able to account for several linguistic phenomena that the endo-skeletal approach has difficulties in explaining. Since the syntax module in the neo-constructional approach employs a sort of "ready-made chunks", i.e. the argument structure frames, this approach seems to better reflect the observation that the use of prefabricated sequences is an essential property of human language.

3.1 Endo-skeletal approach (lexically driven grammars)

One important idea in lexically driven grammars is the notion of a kernel or head. A definition of a lexical head is given in Trask (1993), cf. (50).

50

"That element of a constituent which is syntactically central in that it is primarily responsible for the syntactic character of the constituent. [...] Today almost all constituents are generally regarded as projections of lexical heads" (ibid. p. 125-26).

Given this definition, the essential idea is that every lexical item projects its lexical-semantic content into syntax, cf. (51) taken from Chomsky (1981).

51

"(38) Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical item.

Let us call this principle and later refinements the "projection principle" for syntactic representations" (ibid. p. 29).

The Projection Principle ensures that information stored as part of the lexical item is transferred into the syntax, and consequently, the lexical information contributes to the determination of the syntactic structure. This view highlights the importance of the lexicon, since syntactic structure originates as lexical argument structure. The words that constitute the lexicon are assumed to be learnt individually by each child. Pinker (1994) gives a description of how this word learning happens, cf. (52).

52

"The brain seems to be reserving an especially capacious storage space and an especially rapid transcribing mechanism for the mental dictionary" (ibid. p. 151).

The transcribing mechanism Pinker refers to is the lexical-semantic content attached to each word stored in the mental dictionary.²⁹ The string of speech segments that the child hears, for instance [k^hɪk^h], is stored together with information about the form and the meaning. The meaning must at least contain semantic roles. In addition, the [k^hɪk^h] must be linked to information about the syntactic category. This information will be stored in the child's lexicon, while for instance encyclopaedic information is stored elsewhere. In other words, generative

²⁹ Pinker (1994) notes that the term "word" can have at least two senses: 1) the smallest linguistic unit that the syntactic rules can operate on (a syntactic atom), and 2) a linguistic unit, or string of units, associated with a particular meaning (ibid. p. 148). In other words, it consists of two parts form and meaning. The syntactic rules can operate solely on the form.

syntax anticipates a modular view of the mind. The syntactic rules operating on the lexical entries take only the lexical argument structure into consideration. The other lexical meaning of a word is not directly relevant in the process of building syntactic structures. To learn a language, is to find, categorize, and label the words in the mother tongue, and the ability to perform this "lexicon building" is something that children are genetically predisposed to do. Furthermore, children are born with a highly specialized module called Universal Grammar (UG), which is the initial state of the innate language faculty. Depending on the syntactic input that children are exposed to, the UG will be fixed in a particular setting referred to as the I(nternal)-language. The rules of the I-language can then manipulate the lexical entries on the basis of their syntactically relevant information and organize them in particular syntactic patterns.

There are several ways of representing the lexical entry as the source for the syntactic structure. A common denotation that illustrates a type of information that the syntactic rules can operate on is shown in (53a). Underlining is commonly used to indicate that an argument is external.

53

a Kick_{VERB}: θ_{NP}, θ_{NP}.

This rudimentary lexical argument structure contains information about the word class and the semantic roles tied to the lexical entry *kick*. According to stipulated universal rules, the external θ-role must project outside the VP. Put differently, since *kick* occurs in sentences like the one illustrated in (54a), the conclusion is that the lexical entry *kick* must have one θ-role to give to the subject NP (*Bob*). The internal role of *kick* is projected as the direct object in the sentence, and it is also specified as NP. In (54a) the internal θ-role is realized as the NP *the car*.

54

a Bob kicks the car.

The lexical entries can be thought of as the fuel in the grammar engine: Without them and their additional information, such as category features, there would be no syntactic structure. Even though every category of words is believed to have lexical-semantic properties, the main focus of generative syntax has been directed towards verbs and adjectives.³⁰

³⁰ I will therefore concentrate on verbs as well. According to generative theory, it is the verb that dictates the structure of the sentence by selecting/merging with the right number and type of arguments. However, categories

The lexical entry as the basic source of grammatical structure is also crucial in the minimalist program (Chomsky, 1995). According to this research program, the lexical entry is represented as a bundle of features. Instead of saying that each lexical entry projects into the syntax, it is the different features, or bundles of features, which determine which lexical entries can be merged to form a syntactic structure. The relationship between the lexicon, the features, and the syntactic structure in the minimalist program are presented in Adger (2003), cf. (55).

55

"A c[ategorical]-selectional feature is a categorial feature on a lexical item, which does not determine the distribution of the lexical item itself; rather it determines the category of the elements which will be able to Merge with that lexical item" (Adger, 2003:84).

The notions of feature and feature structure are also essential in Head Phrase Structure Grammar. The lexical entry is not treated as an atomic unit, but as a complex of grammatical properties. These feature structures are used as the building blocks for syntax, and all relevant information is stored in the lexicon, cf. (56).

56

We broke grammatical categories down into features, and then we broke the values of features down into features, as well. In the process, we moved more and more syntactic information out of the grammar rules and into the lexicon. [...] Details about which expressions can go with which are specified in lexical entries in terms of valence features (Sag and Wasow, 1999:127).

Whether the lexical entry itself (as in GB theory) or the features (as in the minimalist program and HPSG) are viewed as the building blocks of syntax is of minor importance. The essential idea is that the syntactic structure comes into existence based on the information tied to each lexical entry or bundle of features in the lexicon. The information needed to project the syntactic structures is stored in the lexicon. The approaches that assume that the locus for argument structure is found in the lexical entry, can, according to Borer (2003), be grouped under the collective term "endo-skeletal", because they "*focus[ing], as they do, on the listed item as the skeleton around which the structure is built*" (ibid. p. 33).

other than verbs and adjectives have also been suggested as having argument structure, for instance derived nominals (Borer, 2003).

3.2 Problems with the endo-skeletal approach

In the previous section, I presented the main models for explaining the relationship between the lexicon and the syntactic structure in the endo-skeletal approach. In the following sections I will discuss how these models fit the phenomena they are trying to explain. I will start by addressing the issue of facultative θ -roles. The postulation of argument structure tied to each verb will encounter problems when confronted with verbs emerging in syntactic structures with different argument structure realizations. I will illustrate how this problem is solved, and conclude that the explanation proposed in the endo-skeletal approach rests on a circular argument. I will also discuss the ideas used to describe the thematic relation in a sentence, viz. agent, patient and recipient, and conclude that these terms are not without problems either.

I will then look at phenomena such as "made-up"-verbs and the possibility of using verbs in syntactic environments that are contrary to their conceptual structure. This constitutes another problem for the endo-skeletal approach, since it is the semantic properties of each verb that are viewed as the underlying source for the θ -roles in the argument structure.

Finally, I will turn to some problems regarding the theoretical design of the endo-skeletal model, explaining the relationship between the entries in the lexicon and the realization of syntactic structure. If the lexical entries contain every piece of information that the syntax needs in order to build syntactic structure, the syntax module would then be merely a repetition of the information already stated in the lexical entries. This duplication leads to theoretical redundancy. The theoretical assumptions made in the endo-skeletal approach do not exclude the possibility of marking the patient θ -role as the external argument in a lexical entry, yet this combination of structural position and thematic role is not found. This means that the linking of an agent role with a subject position rests upon pure stipulation. In addition, the model does not in any way exclude the co-existence of SVO and SOV verbs in the same language. However, no language seems to allow both these possibilities, which mean that the model allows for alternatives that are in fact not found in reality.

3.2.1 Facultative θ -roles

The argument structure tied to the verbs must permit some kind of optionality because sentences display alternations in the number of realized arguments. The observation is that some arguments must project into syntax, while others are optional. In (57a) there is no direct or indirect object present in the sentence, and the verb *fortelle* (tell) must therefore be classified as intransitive. In (57b) there is obviously a direct object present in the sentence,

namely *en utrolig historie* (an amazing story). Hence, the verb *fortelle* (tell) in this sentence must be classified as a transitive verb.

57

- a Lisa forteller, men ingen hører på henne.
LISA TELL_{V-PRES-INTRANS}, BUT NOBODY LISTEN_{V-PRES} ON HER.
"Lisa tells but nobody listens to her."
- b Hun fortalte en utrolig historie.
SHE TOLD_{V-PAST-TRANS} [AN AMAZING STORY_{DO}].
"She told an amazing story."

This optionality can be accounted for in two different ways. One solution is to posit facultative θ -roles in the argument structure tied to the verb in the lexicon. The other solution implies that the same verb has several entries with different argument structure in the lexicon.

3.2.1.1 Argument structure as stipulation in the lexicon

A common notation for a rudimentary argument structure, with no specification of the categories of arguments, is represented in (58a). The parentheses indicate that the semantic roles in question are optional.

58

- a Fortelle_{VERB}: $\theta_{\text{AGENT}}, (\theta_{\text{PATIENT}}), (\theta_{\text{RECIPIENT}})$

However, this notation gives us no explanation as to why the thematic roles in *fortelle* (tell) are optional. In addition, the optionality in the argument structure cannot account for why it is not possible to omit the direct object and keep the indirect object, cf. (59a).

59

- a *Hun fortalte studentene.
SHE TOLD STUDENTS-THE
"She told the students."

The argument structure in (58a) offers no explanation as to why the indirect object is dependent upon the direct object for its realization. Nor can the argument structure in (58a) explain why the recipient role ends up as the indirect object and the patient role as the direct object. An additional stipulation is needed in order to make sure that the internal semantic roles turn up in their correct slots in the structure.

The matter is also complicated by the fact that the direct and the indirect object have different restrictions concerning their realization. The indirect object must be an NP or a sentence headed by an NP, cf. (60a). A sentence as indirect object will yield an ungrammatical sentence, cf. (60b).

60

- a De gav det at renta auka, skulda for gjeldskrisa. (Faarlund et al.,1997:723)
THEY GAVE [IT THAT INTEREST-THE INCREASED]_{IO}, [BLAME-THE FOR DEBTS CRISIS-THE]_{DO}
"They gave the fact that the interest increased, the blame for the debts crisis."
- b *De gav at renta auka, skulda for gjeldskrisa. (Faarlund et al.,1997:723)
THEY GAVE [THAT INTEREST-THE INCREASED]_{IO}, [BLAME-THE FOR DEBTS CRISIS-THE]_{DO}
"They gave that the interest increased, the blame for the debts crisis."

The direct object on the other hand can be realized both as a sentence and a NP. The difference between realizations of the internal arguments must somehow be represented in the lexicon together with the argument structure, yielding an argument structure like (61a).

61

- a Fortelle VERB: $\theta_{\text{AGENT}\langle\text{NP}\rangle}$, ($\theta_{\text{PATIENT}\langle\text{NP}\rangle}$ <S>), ($\theta_{\text{RECIPIENT}\langle\text{NP}\rangle}$)

It is also rather remarkable that if the argument structure of Norwegian verbs is represented in the lexicon as shown in (58a), why doesn't the grammar allow for argument structures where the patient role is marked as the external argument? Cf. (62a).

62

- a VERB: θ_{PATIENT} , θ_{AGENT}

This possibility of marking the patient as the external argument should be just as unproblematic as marking the agent role as the external argument. Yet we do not find any examples of a patient subject in Norwegian.³¹ To solve this puzzle, there is a need for another stipulation that states that only the agent role, if present, can be projected as the external argument.

The argument structure tied to the verbs in the lexicon is believed to stem from the semantics of the verb in question. For instance, a verb like *hit* describes a hitting event that presupposes an agent performing the hitting, and a patient that is exposed to the hitting. A verb like *run* on the other hand, only presupposes an agent performing a running activity. Transferred into argument structure, these verbs are represented as illustrated in (63).

63

- a Hit VERB-TRANS: θ, θ
b Run VERB-INTRANS: θ

³¹ The existence of patient roles as external arguments, i.e. with unaccusative or passive verbs, is not relevant to this matter since the agent role is assumed to be missing in these constructions.

The prediction would be that verbs with similar semantic content, like *å fortelle* (to tell) and *å si* (to say) would have the same argument structure. As shown in (58a), the verb *fortelle* (tell) has facultative patient and recipient roles, which means that the direct and indirect object are not necessarily realized in the syntactic structure. However, the verb *å si* (to say) does not allow for this optionality, cf. (64).

64

- a *Hun sier, men ingen hører på henne.
"She tells but nobody listens to her."
- b Hun sa en løgn.
"She told a lie."
- c Si_{VERB}: $\theta_{\text{AGENT}}, \theta_{\text{PATIENT}}, (\theta_{\text{RECIPIENT}})$

Both *fortelle* and *si* (tell and say) have the same thematic roles present in their argument structure, and both verbs denote a speaking event. Still, the syntactic realization of the argument structures differs. Put differently, similarity in semantic content does not yield similarity in syntactic realization. Yet again, the argument structure must be stipulated on no other grounds than the actual structural environment of the verb. It seems that the further one plunges into the argument structure of various verbs and their possibilities and restrictions, the more stipulations are needed to account for the different properties of the verb in question.

3.2.1.2 Multiple entries for the same verb

The other solution to the problem of facultative θ -roles is to multiply the entries in the lexicon. Instead of having one lexical entry *fortelle* (tell) as shown in (58a), we have one entry for each possible argument structure, cf. (65).

65

- a Fortelle_{VERB-INTRANS}: θ
- b Fortelle_{VERB-TRANS}: θ, θ
- c Fortelle_{VERB-DITRANS}: θ, θ, θ

In addition to stating the different roles associated with the variants of the verb *fortelle* (tell), the argument structures in (65) also need some kind of specification as to what categories can instantiate the different roles like those shown in (61a). The argument structure in (65b) must also be restricted so that it will not yield ungrammatical sentences, as shown in (59a).

A theory that posits different lexical entries for one unitary concept faces a problem in explaining how different argument structures can relate differently to the same concept. The facultativity is still present in the theory, but now it involves how the lexical entries in (65)

can select their relevant bits of the concept FORTELLE. Obviously, each entry does not need to incorporate all syntactic relevant information latent in the concept.

Even though the approach suggested in (65) seems to solve some of the problems raised by the existence of facultative θ -roles, it results in an enormous duplication of the lexical entries. Each verb, adjective and possibly derived nouns, would have several different argument structures correlated with the variation in the syntactic structures. This multiplication of the lexicon is contrary to one of the assumptions made in many sciences, amongst them generative syntax, namely to avoid redundancy. This principle of economy in a theoretical model originates in Occam's maxim "*Do not multiply (theoretical) entities beyond necessity*" (Culicover and Jackendoff, 2005:4). What "beyond necessity" implies within various models of explanation is of course a difficult matter to decide. However, the postulation of several distinct lexical entries for one concept like FORTELLE does seem like an unnecessary multiplication, especially if there are other explanations available.

There is also something counter-intuitive about the organization of the lexicon suggested in (65). This solution implies that the different variants of *fortelle* (tell) have no more than the phonetic realization in common. All other information concerning the various verbs will be stored uniquely together with each entry.³² The relation between the underlying concepts and their representation in the lexicon becomes very opaque. How do the different lexical entries in (65) relate to the concept FORTELLE and to each other? By positing distinct argument structures for a single concept like FORTELLE, the relation between *fortelle* in (65a) and *fortelle* in (65b) would be diffuse and unclear. Is the relation between the different *fortelle* in (65) of a different sort than the relation that holds among *fortelle* and other verbs that denote acts of saying something to someone, for instance *nevne, si, berette, betro, melde* (mention, say, recount, entrust, report)? Presumably, there is a different relationship between *fortelle* and *si* (tell and say) than between *fortelle*₁ and *fortelle*₂. However, when postulating (65), this is no longer the case.

3.2.1.3 Circularity

As discussed in the previous sections, the argument structures in (58a) and (65) turn out to be stipulations based on the syntactic configuration in which the verb is found. As a result, the models rest upon a circular explanation, since the observed phenomenon and the alleged cause explicate each other. The observed phenomenon is that various verbs occur in different

³² A way around this enormous duplication of information in the lexical entries would be to posit various hierarchies where the word in question inherits features from more general types in the hierarchy. This is fully exploited in HPSG, as one example.

syntactic environment. The explanation postulates various argument structures tied to each verb that control the syntactic environment. However, the exact argument structure of a verb cannot be defined unless we observe the syntactic environment of the verb, which is the phenomenon we were trying to explain in the first place.

The verb *fortelle* (tell) can occur in sentences like (57). The first solution is that the verb has facultative θ -roles in the argument structure as illustrated in (58a). Which one of the θ -roles is facultative can only be postulated on the basis of the sentences in (57). The second solution has several argument structures as illustrated in (65). Also the postulation of various argument structures can only be done on the basis of the sentences in (57) which contain the phenomenon the models was trying to explain.

3.2.2 Agent, patient and recipient as semantic primitives

In the previous sections, I have used the conventional labels for thematic roles as found in the Government and Binding Theory, cf. (58a) here repeated as (66a).

66

- a Fortelle_{VERB}: θ_{AGENT} , (θ_{PATIENT}), ($\theta_{\text{RECIPIENT}}$)

Thus, the three thematic roles are agent, patient and recipient. The agent role is conventionally tied to the subject position, the patient role is given to the direct object, and the indirect object, if present, gets the recipient role. The prototypical sentence correlating to this schema is given in (67).

67

- a Bestemor ga barna is.
 GRANDMA_{AGENT} GAVE_{V-PAST} CHILDREN-THE_{RECIPIENT} ICE CREAM_{PATIENT}
 "Grandma gave the children ice cream."

The agent *bestemor* (grandma) performs the activity described by the verb, the patient *is* is the entity that is exposed to the activity described by the verb, and the recipient *barna* (the children) is the entity that receives whatever the direct object describes. It is, however, clear that the subject does not always have an agent role, the direct object a patient role, or the indirect object a recipient role, cf. (68).

68

- a Hun fortalte en historie.
 SHE_{SUBJECT} TOLD A STORY_{DIRECT OBJECT}
 "She told a story."
 b Studenten fikk hjelp.
 STUDENT-THE_{SUBJECT} GOT HELP_{DIRECT OBJECT}

- "The student got help."
- c Forfatteren mottok prisen.
AUTHOR-THE_{SUBJECT} RECEIVED PRIZE-THE_{DIRECT OBJECT}
"The author received the prize."
- d Bestemor nektet barna is.
GRANDMA_{SUBJECT} REFUSED [CHILDREN-THE_{INDIRECT OBJECT}] ICE CREAM_{DIRECT OBJECT}
"Grandma refused the children ice cream."
- e Bestemor ga ikke barna is.
GRANDMA_{SUBJECT} GAVE NOT [CHILDREN-THE_{INDIRECT OBJECT}] ICE CREAM_{DIRECT OBJECT}
"Grandma did not give the children ice cream."
- f Det irriterer meg at han kan ha sagt det.
IT IRRITATE_{PRES} ME_{DIRECT OBJECT} THAT HE COULD HAVE SAID IT.
"It annoys me that he could have said it."

The direct object *en historie* (a story) in (68a) does not exhibit a typical patient role. The story is not exposed to the activity denoted by the verb *fortelle* (tell). Rather, *en historie* (a story) is more a **result** of the *fortelle*-event. In (68b), the subject does not have an agent role; it is not the case that the student performs the event denoted by the verb *få* (get). Likewise, in (68c) the author's role is more similar to a recipient in that he/she is awarded a prize. The indirect object in (68d) does not have a recipient role since the verb *nekte* (refuse) means to prevent somebody from getting something. In (68e), the sentence is negated; the children did **not** get any ice cream, and the label recipient seems inappropriate here. With the psych-verb *irritere* (irritate) in (68f), the pronoun *meg* (me), which can be interpreted as experiencing the irritate-activity, is found as an internal argument. The subject *at han kan ha sagt det* (that he could have said it) is extraposed, while the expletive pronoun *det* (it) fills the subject position (Bech, 1998:109).

The three thematic roles agent, patient and recipient do not seem to account for the various thematic roles that are found, and therefore various other labels have been proposed: theme, experiencer, benefactive, goal, source and location (Haegeman, 1994:49-50). As noted by Haegeman (1994), the θ -theory is somewhat intangible:

69

"Although many linguists agree on the importance of thematic structure for certain syntactic processes, the theory of thematic roles is still very sketchy. For example, at the present stage of the theory there is no agreement about how many such specific thematic roles there are and what their labels are" (ibid. p. 49).

This brings us back to the question of how an argument structure such as the one illustrated in (66a) can be the source of syntactic structure if nobody really can limit the class of relevant θ -roles, nor precisely define the structural position of a particular role. To remedy the last problem, Baker (1988) proposed the UTAH (Uniform Theta-assignment hypothesis), which

states that each theta-role assigned by a particular type of predicate is canonically associated with a specific syntactic position. For example, the spec-vP is associated with an agent argument. Hence, subjects displaying other thematic roles, as in (68b-c), must originate elsewhere in the structure. Even though the UTAH is an attractive solution in that it tries to formalize the relationship between θ -roles and syntactic structure, it also raises some questions. First, the set of possible theta roles is still not agreed upon. This leads to the problem of when it is appropriate to postulate a new theta role (and accordingly, a new structural position), rather than viewing the theta role as a variation of an already existing one. Second, the UTAH leads to a syntactic structure that is really based on nothing but semantic criteria. The interpretation of an argument as a result, instead of a patient exposed to some activity, would have consequences for the structural representation of the sentence, cf. (70).

70

- a Paret kjøpte huset.
COUPLE-THE BOUGHT HOUSE-THE
"The couple bought the house."
- b Paret danset valsen.
COUPLE-THE DANCED WALTZ-THE
"The couple danced the waltz."

Because *valsen* (the waltz) in (70a) is not something that is exposed to the dancing activity, but rather denotes a specification of the activity, this NP must be structurally placed in another position than *huset* (the house) in (70b). As will be discussed in 3.3.6, these two NPs do not display any difference in syntactic behaviour, and the alleged different structural positions are only founded on semantics.

3.2.3 Flexibility and "made-up" verbs

Another observation that weakens the claim that the lexical-semantic content of the verb is the source for the syntactic structure is the occurrence of verbs in sentences that do not correspond to their conceptual structure. An example of this flexibility is given in Åfarli (2005) where he shows that a verb like *å danse* (to dance), which is normally characterized as an intransitive verb, can occur with different realizations of internal arguments as well. The examples are given by Åfarli (2005), cf. (71).

71

- a Per dansa.
PER DANCED_{V-INTRANS}
"Per danced."
- b Per dansa Marit som Marit aldri er blitt dansa før.
PER DANCED_{V-TRANS} MARIT AS MARIT NEVER IS BEEN DANCED BEFORE

- "Per danced Marit like Marit never had been danced before."
- c Per dansa Marit ein vals.
 PER DANCED_{V-DITRANS} MARIT_{IO} [A WALTZ_{DO}]
 "Per danced a waltz for Marit."
- d Per dansa valsen i ryggen på Ola.
 Per danced_{V-RE} [waltz-the in back-the on Ola_{DO}]³³
 "As a result of Per's dancing, the waltz ended up in the back of Ola."
- e Per dansa_{V-DITRANS} RE Ola valsen i ryggen.
 Per danced [Ola_{IO}] [waltz-the in back-the_{DO}]
 "As a result of Per's dancing, Ola got the waltz in his back."

The sentence in (71a) is the intransitive structure, which is normally associated with the verb *danse* (dance). (71b) contains a direct object *Marit*, and the verb is classified as transitive. *Marit* has a patient role in this sentence, i.e. the person who is exposed to Per's dancing. (71c) is an example of *danse* (dance) with an indirect and direct object, and the verb must be defined as ditransitive. (71d) contains a small clause with a resultative interpretation; "as a result of Per's dancing, the waltz ended up in Ola's back". The resultative reading of (71d) suggests that *danse* is involved in a different structure here than in (71b). (71e) has an indirect object in addition to a small clause with a resultative reading. This constitutes yet another variation of the syntactic surroundings of the verb *danse* (dance). I will not discuss the details of these sentences any further here.³⁴ The main point of the sentences in (71) was to show that the linking of conceptual roles with syntactic structure is complicated by the fact that verbs can and do occur with arguments that are not normally considered a part of their conceptual frame. The flexibility of verbs is difficult to solve within an endo-skeletal framework that assumes that the argument structure of the verb is the source of the syntactic structure. To account for the sentences in (71), the endo-skeletal approach must list the verb *danse* (dance) in the lexicon as intransitive, transitive, ditransitive and resultative. In addition, the endo-skeletal approach could offer no explanation for the fact that even though all the sentences in (71) are possible, the argument structure of (71a) is the most salient one.

Another related question is the occurrence of so-called made-up verbs. Áfarli (2005) gives two examples given in (72a-b). The other examples (72c-e) are found in Færavaag and Birkeland (1995). According to the authors, they have collected these words from "[...]

³³ RE is an abbreviation for Resultative.

³⁴ Some of these examples might be judged to be questionable by native speakers. The use of the verb *danse* in all the sentences was chosen for explanatory reasons, and authentic examples are presented in the next section.

*private og offentlige diskusjoner og debatter, artikler og andre tilflynne utsagn i løpet av de siste to-tre årene.*³⁵

72

- a How to Russell a Frege-Church (title of article by David Kaplan)
- b Pene jenter i TV2 værer solskinn og regn.
NICE GIRLS IN TV2 WEATHER-PRESENT SUNSHINE AND RAIN
"Nice girls on TV2 forecast sunshine and rain."
- c Å muskle noen ut av markedet.
TO MUSCLE-INF SOMEBODY OUT OF MARKED-THE
"To use force to push somebody out of the market."
- d Å fjese noen/Å fjese seg
TO FACE-INF SOMEBODY/TO FACE-INF ONESELF
"To publicly announce other people's secrets without their consent/To publicly confess a personal problem."
- e Å erme seg.
TO SLEEVE ONESELF
"To use one's public status to achieve unjust advantages."

In (72a), the proper name *Russell* is used as a verb with a PRO subject due to the infinitival clause, and a direct object; a *Frege-Church*. In (72b) the mass noun *vær* (weather) appears to be a verb in present tense.³⁶ All the sentences in (72) are examples of a phenomenon called coercion, which means that nouns undergo a type-shifting that turns them into verbs. The words *Russell*, *vær*, *muskel*, *fjes* and *erme* (weather, muscle, face and sleeve) are normally conceived as proper nouns or nouns, but as shown in (72) the same words are used as verbs.

In an endo-skeletal framework where the lexical-semantic properties of each word are the source of syntactic structure, proper names as in (72a) must be listed as ordinary proper names, but in addition, they also need to be listed with an argument structure to account for the facts presented here. This means that all proper names must be listed twice in the lexicon. In (72c-e) the words *muskel*, *fjes* and *erme* must be listed both as nouns and as verbs with an argument structure.

3.2.4 Issues concerning theoretical design

These issues relate to redundancy in the model, the theoretical possibility of having patient roles as external arguments, and the fact that SVO- and SOV-languages do not show alternation in the structural position of the direct object.

³⁵ "Private or public discussions and debates, articles and other accrued statements during the last two-three years."

³⁶ This is a possible explanation, but not the only one. In Norwegian, there is also a verb *være* which means sniff or get the scent of something. The sentence could therefore be translated into something like "The nice girls in TV2 get the scent of sunshine and rain" meaning that they know what weather to predict. Of course, there is no coincidence when a journalist uses the verb *være* instead of, say, *vise* (show) or *forutsi* (predict). The sentence thus plays with the phonetic similarity of *vær* (weather) and *være* (sniff).

The endo-skeletal model displays redundancy in the theoretical design since the same information is repeated twice. According to the Government and Binding Theory, a lexical entry like *kill* contains a θ -grid specifying the thematic roles, the roles' positions in the structure, and categorial features, cf. (73a). This information results in the grammatical structure in (73b).

73

- a Kill_{VERB}: θ_{NP} , θ_{NP}
- b [VP John_{AGENT} [V' killed Bob_{PATIENT}]]
- c *[VP Bob_{PATIENT} [V' killed John_{AGENT}]]
- d *[VP[V' killed [PP John_{AGENT}] [PP Bob_{PATIENT}]]]

The ungrammaticality in (73c-d) is explained by the structures' failure to agree with the properties defined in *kill*.

As Borer (2005a) points out, cf. (74), there is some theoretical redundancy in the model when the properties of each lexical entry in the lexicon merely are repeated in the projection in the syntactic structure.

74

*"Likewise, by assumption, the lexical properties of the listeme **kick** entail the knowledge that it is a verb and that it means a particular act involving some specified arguments. Repeating this information through the projection of a syntactic structure is thus redundant"* (ibid. p. 7).

The syntactic structure, lexical or functional, is, in the endo-skeletal approach, just another way of denoting exactly the same information already present in the lexical entry. Structure is thus only an agreement relation with the lexical properties. A reasonable question would be why we need a syntactic structure at all to get to the meaning, if all the relevant information already lies in the lexicon.

As noted in (62a), here repeated as (75a), there is nothing in the theoretical design that prevents the patient from being marked as the external argument. If the only thing that dictates which argument should go where is the argument structure of the particular verb, the existence of verbs that mark their patient argument as external should be as equally possible as the existence of verbs that mark their agent argument as external. In fact, the theory allows for intransitive verb to be marked differently with respect to their single argument. Unaccusative verbs mark their only argument as internal, cf. (75b), while unergative verbs mark their only argument as external, cf. (75c).

75

- a VERB: $\theta_{PATIENT}$, θ_{AGENT}
- b UNACCUSATIVE VERB: $\theta_{PATIENT}$

- c UNERGATIVE VERB: θ_{AGENT}
- d VERB: $\theta_{\text{AGENT}}, \theta_{\text{PATIENT}}$

The puzzle is why there is no verb group that has an argument structure as shown in (75a), because (75a) and (75d) should be equally possible in the Government and Binding Theory. However, the argument structure in (75a) leads to ungrammatical sentences, and an additional stipulation is needed to account for why agents, if present in the argument structure, are projected as external arguments. It has been suggested that this fact can be explained by theta hierarchies. An example of a theta hierarchy is illustrated in (76a).

76

- a Agent > beneficiary > experiencer/goal > instrument > patient/theme > location.

The theta hierarchy in (76a) would explain the subject role in (68b-c) by asserting that verbs like *få* (get) and *motta* (receive) do not have an agent role, and consequently the next role in the hierarchy is a beneficiary. Also, the hierarchy states that if an agent role is present, it necessarily needs to be associated with the subject. The postulation of a hierarchy of theta roles faces the same problem as thematic roles in general, cf. (69), namely that the number and category labels are not agreed upon. Secondly, a theta hierarchy does not say anything about certain aspects of the internal distribution of thematic roles. For instance, it gives no explanation of the fact that a recipient/experiencer/goal in a double object construction is dependent upon a patient/theme, cf. (59a), here repeated as (77a).

77

- a *Hun fortalte studentene.
 $\text{SHE}_{\text{AGENT}} \text{ TOLD STUDENTS-THE}_{\text{RECIPIENT}}$
"She told the students."

The endo-skeletal approach also runs into problems in relation to the structural placement of the direct object. The distinction between SOV and SVO languages is a well documented fact, and is explained by referring to parameter settings in the Universal Grammar. Some languages place their objects before the verb and some don't. Obviously, both positions are possible. However, if both structural positions are possible, and the structure is decided by each verb in the lexicon, why doesn't the same language allow for both alternatives? If each verb's argument structure is specified in the lexicon, there should be nothing that prevents a verb from being categorized as yielding a SOV structure in an otherwise SVO language. As noted by Goldberg (2006) languages do not seem to exhibit such alternations (ibid. p. 58), and

it is reasonable to ask why. If the basis for syntactic structure is found in each individual verb, to have both SOV and SVO verbs in the same language is no more unreasonable than to have both unergative and unaccusative verbs.

3.2.5 Summary

The existence of facultative θ -roles and made-up verbs, along with the flexibility of verbs, undermine the explanatory force of argument structure as the origin of syntactic structure. The explanatory power of the syntactic model would also be reduced, since argument structure results in nothing more than an enlistment of the different syntactic configurations a given lexical item can occur in. The proposed solutions to the linking problem (between lexicon and syntax) consist in either postulating facultative θ -roles or duplicating the lexical entries for the same verb. The former encounters problems because optionality is not a feature that can be formally captured in a model. The latter implies a multiplicity of forms in the lexicon, identical in phonetic form, but distinct as to argument structure. This solution implies a rather counterintuitive organization of the lexicon, suggesting that intransitive and transitive version of *fortelle* (tell) have no more in common than the intransitive *fortelle* and the transitive *heise* (hoist). Finally, both solutions are circular in that the phenomenon and cause explicate each other, and no independent evidence is supplied.

The proposal in the endo-skeletal approach also raises some issues concerning theoretical design. The syntactic structures are licensed solely by the argument structure properties in each lexical item. This means that the syntactic structure stands in an agreement relation to the lexical item, reflecting the same information that is already listed in the lexicon. Syntactic structure in the endo-skeletal approach is a mirror image of the information in the lexicon, where the only discrepancy is the difference in notation conventions. In addition, the endo-skeletal approach must postulate that agents, if present, are projected externally since there is nothing in the model itself that prevents patients from being marked for this feature. Furthermore, the endo-skeletal approach cannot give a satisfactory explanation for why there are no languages that mix the SOV and the SVO pattern. If argument structure is stored together with each individual verb, there should be nothing preventing these two patterns from co-occurring in the same language, since SOV does not logically exclude SVO in any way. I will now turn to the exo-skeletal approach, which gives some promising answers to the problems just discussed.

3.3 *Exo-skeletal approach*

The term "exo-skeletal" is used by Borer (2005a) to capture "[...] *the view that it is the properties of the "outside", larger structure which ultimately determine the overall "shape" of what is within, rather than the other way around* (ibid. p. 15). The exo-skeletal approach, or approaches, belong to a group of theoretical assumptions often assembled under "Constructional approaches to grammar", or "Construction Grammars". They do not constitute a uniform theoretical framework, but they all share one vital assumption, namely that the syntactic constructions in a language carry meaning independently of the words in the lexicon. Accordingly, the sentences cannot be said to be projected on the basis of argument structure properties attached to the lexical items. Thus, the lexical items are no longer considered the source of syntactic structure, and the computational and interpretative burdens are to a large extent considered a structural issue.³⁷ Even though all the approaches regard the construction as a theoretical unit, they display differences regarding other theoretical assumptions. This thesis will be based on ideas found in the neo-constructional approach, and in order to position this particular approach within the exo-skeletal assemblage, I will give a brief presentation of the main assumptions found in other exo-skeletal models.

Fillmore et al. (1988) was an important impetus for the constructional approaches to grammar. Their theoretical framework, Construction Grammar, is based on the view that idiomatic expressions are the reflection of essential features of human language, and they should not be treated as uninteresting peculiarities. They maintained that a theory that could explain idiomatic expressions would in the long run also be "*powerful enough to be generalized to more familiar structures*" (ibid. p. 534). Fillmore et al.'s Construction Grammar differs from generative syntax in that it adopts a monostratal model. On the other hand, it conforms to the Universal Grammar hypothesis, and the objective of Fillmore et al.'s Construction Grammar is to build a formal model of UG.

Unlike Fillmore et al.'s Construction Grammar, the theories often assembled under the generic term "Cognitive approaches to grammar" (Evans and Green, 2006) deny the existence of a Universal Grammar. Instead, they maintain that the acquisition of language can be explained by a collection of more general cognitive capacities and that language structure emerges from language use. The grammars developed in line with these assumptions do not

³⁷ A main assumption in cognitive science is that the mind functions as a computational system that manipulates a finite set of primitive symbols in order to create more complex ones. Category labels like NP and VP are regarded as primitive symbols upon which the computation can operate. In constructional approaches to grammar, not only are the NPs and VPs regarded as primitive symbols, but the constructions can also be stored as primitives.

necessarily need to be constructionally orientated, but they exist. Goldberg (1995, 2006) is classified as a constructionalist because her theory is based on the assumption that the meaning of a sentence is not the sum of each word present, but that the construction itself has meaning, cf. (78).

78

"A central thesis of this work is that basic sentences of English are instances of constructions – form-meaning correspondences that exist independently of particular verbs. That is, it is argued that constructions themselves carry meaning, independently of the words in the sentence" (Goldberg, 1995:1).

Goldberg's (1995) constructional approach to grammar does not postulate a Universal Grammar, and consequently this theory does not have the same objective as the Construction Grammar developed by Fillmore et al.

The neo-constructional approaches represented by Borer (2005a, 2005b), Áfarli (2005) and Ramchand (2006) have adopted the basic assumptions in Fillmore et al.'s Construction Grammar, i.e. that constructions are a part of a Universal Grammar. Borer (2005a) says that *"all neo-constructionist models reject the claim that constructions are language specific, and that syntactic structure is language specific in general, put forth in Goldberg (1995) and Croft (2001)"* (ibid. p. 15). Unlike Goldberg's Construction Grammar, the neo-constructional models allow for transformations, functional projections and empty categories. The neo-constructional approach tries to merge the insights and accomplishments achieved in the generative framework with the acknowledgement that linguistic items larger than words contribute to meaning.

As has already been stated, the various exo-skeletal approaches are united in the assumption that words are not the source of grammatical structure. Hence, they cannot refer to any argument structure in order to explain how syntactic structure comes into existence. Notions like the Projection Principle, which is essential in Government and Binding Theory, have no implications within an exo-skeletal approach. This means that other principles must be developed. As a consequence, the structure itself is given more emphasis, and many of the features that in generative syntax are attributed the lexicon must be explained by structure.

I will now look at Borer (2005a, 2005b) in order to present the neo-constructional grammar's view of the notion word and the relation between word and syntax. However, I would like to underscore an essential point made by Borer with respect to the theoretical framework developed in her book, cf. (79).

"However, the validity of postulating an impoverished lexicon, in the sense employed here, is quite independent of the validity of any specific functional structure I will propose. In other words, it may very well turn out that the lexicon is every bit as impoverished as I suggest, but that the syntactic structure required in the presence of such an impoverished lexicon is different from that proposed below" (Borer, 2005b:10).

Thus, it is possible to adhere to Borer's view of an impoverished lexicon without adopting her particular analysis. Therefore, I will use Borer to illustrate some theoretical assumptions in the neo-constructional approach, *but* the analysis I will be adopting in this thesis will be more in line with Åfarli (2005).

Since the neo-constructional approach does not postulate any argument structure attached to the lexical entries in the lexicon, the relationship between words and structure must be defined differently from that found in the endo-skeletal approach presented in the previous section. The lexicon is viewed as a combination of just sound and meaning, which means that the elements found in the lexicon don't contain any instruction for the syntactic rules. Borer (2005a, 2005b) divides the lexical entries into two different categories: closed-class items and open-class items.³⁸

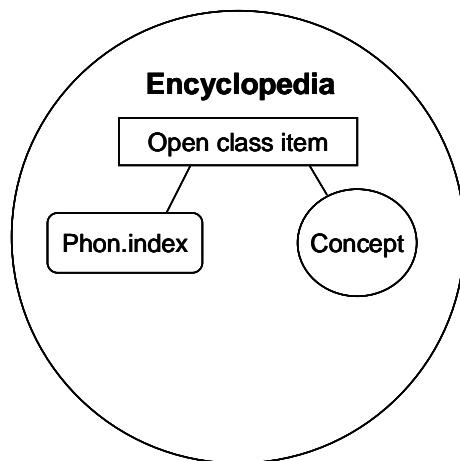
Closed-class items are also known as grammatical words. They do not refer to a particular concept outside language, but rather are used to add certain properties to the open-class items. An example would be the demonstrative determiner *that* and the indefinite article *a*. The open class-item *dog* refers to the same concept in both the phrases *a dog* and *that dog*. However, the indefinite article *a* signals that the first dog is merely identifiable, i.e. the hearer/reader can access a concept that is described by the open-class item *dog*, while the *that* signalizes more familiarity with the open-class item, which means that the hearer/reader already has the intended referent in mind. This implies that the dog in question either already has been mentioned in the previous discourse, the hearer/reader knows of this particular dog from shared personal experience with the speaker, or the referent is in the immediate spatio-temporal context (Gundel et al., 1993). Closed-class items also include temporal indications such as *-ed* in *liked*. This closed-class item *-ed* signals to the hearer/reader that the event described by the open-class item *like* happened before the time of utterance, and has ended before the time of utterance.

³⁸ In fact, Borer uses Listeme and Substantive item for Open-class item, and Grammatical formative for Closed-class item. To avoid unnecessary confusion, I decided to use the terms that probably are more commonly known, used by Haegeman and Guéron (1999), Trask (1993), as two examples.

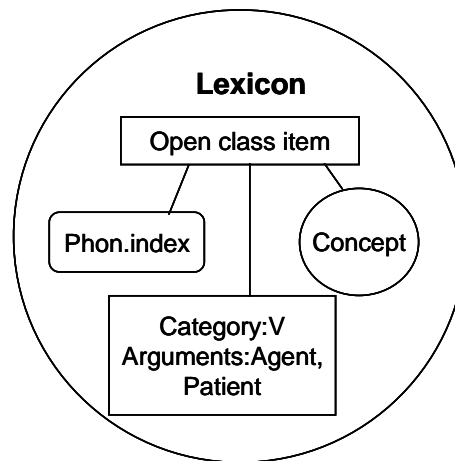
Open-class items, on the other hand, are said to be defined in terms of their meaning. Verbs, nouns, adjectives, and adverbs are usually counted as members of this open class.³⁹ Both the exo-skeletal approach and the endo-skeletal approach agree upon the necessity of open-class items like *wise* being related to some meaning concepts, or encyclopaedic items (EI), one way or another.⁴⁰ The open-class item is also tied to information about the phonological realization of the particular word. This information is referred to as "Phon(etic) Index" in (80). Both the meaning and the sound are linked to the word in question, and the information is stored in our brain, in the lexicon (or encyclopaedia, in Borer's terminology). An illustration of this relation is shown in (80). The exo-skeletal view is presented in (80a), and the endo-skeletal view in (80b).

80

a) Exo-skeletal



b) Endo-skeletal



A concept can be thought of as a complex arrangement of knowledge and beliefs (scientific information, personal experiences, assumptions, images and former observations). Open-class items like *raisins*, or more abstract entities like *forgiveness* can be thought of as prompts evoking concepts in our mind. Bower and Clapper (1989) give the following definition of a concept, cf. (81)

81

"A concept can be thought of as an internal summary or model that captures some of the commonalities that exist across a particular collection of stimulus patterns or situations. A concept can also be thought of as a "decision rule" for discriminating members from

³⁹ The boundaries between open class and closed class items are not always easy to draw. The category P (preposition/postposition) seems to exhibit properties from both the open class and closed class group. The prepositions are meaningful items like the open class group because they denote a spatial relationship between entities. At the same time, the category P does not easily allow for new members, and has similarities to complementizers (Tungseth, 2006).

⁴⁰ Borer's (2005a, 2005b) terminology.

nonmembers. [...] Thus our concept of dogs is our model of what dogs are like; [...]" (ibid. p. 272)

Since the concept that fills the open-class item with meaning is such a complex arrangement of knowledge and beliefs, it is difficult to imagine how this conglomerate of various meaning layers could be the origin of uniform and rigid argument structures, as is the core idea in generative grammar. The tendency for the meaning of a word to be easier to capture when the surrounding structure is present has been noted in Saeed (1997), cf. (82).

82

"As every speaker knows if asked the meaning of a particular word, word meaning is slippery. Different native speakers might feel they know the meaning of a word, but then come up with somewhat different definitions. [...] Usually it is easier to define a word if you are given the phrase or sentence it occurs in" (Saeed, 1997:60).

With homonymous expression, the problem of deciding the "right" meaning of an open-class item will become even clearer. A word like *lyse* can in Norwegian either refer to an event, cf. (83a), or an entity, cf. (83b). If a person utters the word *lyse* without any additional structure, there is no way of deciding the word class, and accordingly which of the meanings in (83) the speaker is referring to.

83

- a *lyse*: a verb denoting the act of shining.
- b *lyse*: a noun denoting a little flare.

However, once some structure, manifested by closed-class items, is added to these words, their meaning is no longer ambiguous. (84a) can only be a verb denoting an act of shining/lighting, and (84b) can only be a noun referring to a flare.

84

- a Å *lyse*
To shine/light
- b En *lyse*
A flare

Borer (2005a) maintains that closed-class items (along with movement) are manifestations of functional structure. It is the functional structure instantiated by the infinitival marker *å* that gives *lyse* in (84a) its verbal meaning. Likewise in (84b), it is the functional structure instantiated by the indefinite determiner *en* that gives *lyse* the nominal meaning. The examples illustrate the idea that the structure itself is decisive with respect to word meaning. The open-class item *lyse* does not contain enough information for us to decode what the

meaning of this particular word is. We need structure, manifested by for instance closed-class items.

As argued in the previous section, the lexical-semantic information (mainly understood as θ -role specification) in a verb does not appear to be a solid foundation for positing an argument structure. Instead of saying that the open-class items define the structure, the neo-constructional approach maintains that the open-class items *enrich* the structure. Every word makes its meaning contribution to the structure in question. Since the meaning of an open-class item is impossible to define once and for all, the part of the concept referred to by the open-class item varies, depending upon the other items in the context. Fodor (1998) expresses similar thoughts in that he denies that there are various concepts involved in an open-class item like *keep*, illustrated by the sentences in (85).

85

- a Susan kept the money.
- b Sam kept the crowd happy.

The examples are originally taken from Jackendoff (1992) who maintains that *keep* in all sentences shares the same functional structure, but has different semantic field features, or meanings. Fodor, on the other hand, does not believe that the different meanings of *keep* (85a) and (85b) reside in the verb itself, cf. (86).

86

"There is, surely, another alternative; viz. to say that "keep" means the same thing in both – it expresses the same relation – but that, in one case, the relation it expresses holds between NP and the crowd's being happy, and in the other case it holds between NP and the money. Since, on anybody's story, the money and the crowd's being happy are quite different sorts of things, why do we also need a difference between the meanings of "keep" to explain what's going on in the examples?" (Fodor, 1998:54).

Even though Fodor (1998) is not actually arguing for an exo-skeletal approach to grammar, his view supports the exo-skeletal view. It is the insertion of *keep* into different structural relations/frames that causes the different interpretations of the *keep* event.

The consequence of rejecting lexical-semantic features attached to open-class items in the lexicon is that syntactic structure no longer can be viewed as something "growing" out of these various features. Instead, the syntactic structures are believed to exist independently and be meaningful units in their own right. The impoverished lexicon will inevitably impose a heavy explanatory burden on the structure because it needs to account for phenomena earlier explained by reference to lexical features.

I will now turn to the problems presented in the previous chapter and outline how these problems can be explained within the neo-constructional approach. First I will present the PrP-projection, which offers an alternative to the endo-skeletal explanation to the subject requirement. Then I will present the neo-constructional approach suggested by Åfarli (2005), focussing on the five argument structure frames proposed for Norwegian. In relation to these frames, I will address topics such as flexibility in argument structure, made-up verbs and theoretical design. I will discuss Goldberg's (2005) proposal with respect to the restriction of arguments in constructions, and I conclude that it has several problematic features. I compare Åfarli (2005) to Ramchand (2006), and I argue that the latter proposal encounters many of the same difficulties as the endo-skeletal approach. I will then present a different theory concerning the realization of thematic roles in syntax: the Proto-Role Hypothesis (Dowty, 1991). Next, I will discuss the issue of the functional domain, and will argue that the functional domain can be regarded a construction as well. Finally, I consider a proposal from Roeper (1999) who claims that people possess context-dependent grammars. I maintain that this view makes it possible to combine observation of grammar and grammatical structure with context-dependent factors like recipient design, which I believe is an important issue in computer-oriented talk.

3.3.1 The PrP projection

This functional projection is assumed to be present in all sentences, with the canonical subject position as the <spec, PrP> position. The postulation of functional projections outside the V domain has a long tradition in mainstream generative frameworks. The functional projections CP and IP date back to Chomsky (1986). Chomsky (1995) introduces yet another functional projection called vP (little-v). The function of little-v is to impose an agentive role on the external argument, cf. (87).

87

"[...] the v-VP configuration can be taken to express the causative or agentive role of the external argument" (ibid. p. 315).

The little-v projection and the PrP both take the VP as a complement, and their specifier positions are taken to be the canonical position for the subject. However, the status of the PrP is founded on more than just the existence of an agentive role. Moreover, since the PrP is postulated in every sentence, the PrP seems more suitable in a constructional approach than a little v-projection, which is postulated only in the presence of an agentive role. As already noted, the constructional approach embraces the idea of fixed frames into which words are

inserted. The assumption that a Pr projection is present in every sentence ties in nicely with the constructional idea of fixed structures with inherent meaning.

Bowers' (1993) motivation for the Pr projection was to develop a structural unified definition of the external argument across sentence types, and to make the relation between semantics and syntax transparent. Predication is the relationship that exists between a property and an entity. A property such as *talk* in itself does not predicate anything. Neither does the entity *parrot*. It is only when we put these words together that they can make a predication, cf. (88).

88

a Parrot talk

Now the property *talk* is attributed to the entity *parrot*.⁴¹ Note that properties and entities are semantic notions, while the subject and predicate are grammatical notions. Bowers (1993) maintains that the semantic function of Pr is predication, and this leads to a transparent relation between the syntax (subject-predicate) and the semantics (entity-property).⁴²

Syntactically, the *talk* is placed in <comp, PrP> and *parrot* is placed in <spec, PrP>. The Pr projection can therefore be viewed as the syntactic realization of the predication relation between the argument placed in <spec, PrP> and the complement of Pr (Bowers, 1993:596).

The Pr projection suggests the question of whether realized phonetic material must be present in order to postulate a functional projection. I will use the Pr projection as an example to support the possibility of having phonetically empty FPs. In this respect, I lean upon Áfarli and Eide (2003) who maintain that FPs, as opposed to lexical projections, do not necessarily have a realized item in their head position (ibid p 35), which is also argued to be the case in (89b) and (89c).

The PrP can take various projections as its complement. According to Bowers (1993), a verb projection as a complement to Pr yields main clause predication, cf. (89a), while an adjective phrase, cf. (89b), preposition phrase, cf. (89c), or noun phrase, cf. (89d), yield small clause predication (ibid. p. 593).

89

- a Lisa kjøpte is.
"Lisa bought ice cream."
- b Lisa spiste [kjøleskapet tomt].
"Lisa ate the fridge empty."
Paraphrase: "As a result of Lisa's eating activity, the fridge ended up empty."

⁴¹ The proposition *Parrot talk* has no tense. If we add tense, the proposition will also be a statement about the world.

⁴² The predicate is defined as the part of the clause representing what is said, or predicated, of the subject.

- c Lisa rev [brevet i småbiter].
"Lisa tore the letter into pieces"
 Paraphrase: "As a result of Lisa's tearing activity, the letter ended up in small pieces".
- d Lisa anser [mannen som psykopat].
"Lisa considers the man a psychopath".
 Paraphrase: "Lisa believes that the proposition the man is psychopath is true".

The Pr head in small clauses *can* be manifested as *som* (as), which is the case in (89d), or the copula *være* (be). The hypothesis in Eide and Åfarli (1997) is that the noun phrase *psykopat* in (89d) needs Case, and that *som* is a Case transmitter. Adjectives and preposition phrases do not need Case, and *som* is prohibited from occurring in these surroundings (ibid p 38).⁴³ The question that naturally arises is how we rightfully can claim that (89a-c) also contains a predication projection. As has already been mentioned in relation to (88a), predication is assumed to be present in all main sentences. In (89a), the property *kjøpe* is clearly ascribed to the entity *Lisa*, and since the hypothesis is that the PrP needs to be present in order for predication to occur, we can maintain that (89a) contains a Pr projection.

The relationship between the property *tomt* and the entity *kjøleskapet* in (89b) is obviously of such a kind that the property *tomt* is attributed to *kjøleskapet*. This sentence can be contrasted to (90a) in which no predication projection is assumed to be present between the entity *kjøleskapet* and the property *raskt*.

90

- a Lisa ryddet kjøleskapet raskt.
"Lisa cleaned the fridge quickly."

It is *not* the case that *kjøleskapet* is attributed the property *raskt*. The difference in meaning between (89b) and (90a) can be captured by assuming that a predication projection is present in (89b) even though there is no phonetically realized predication element, while no such functional projection is present in (90a). The same argument goes for (89c). The property *i småbiter* is attributed to the entity *brevet*, while no such relationship exists in (91).

91

- a Lisa spiste eplet i bassenget.
"Lisa ate the apple in the pool."

The property *i vannet* is not attributed to the entity *eplet*. Rather, Lisa ate the apple while being in the pool.

⁴³ In fact, *som* can occur with adjectives in Norwegian sentences like *Vi anser [dette [*(som) korrekt]]* (We consider this as correct). Eide and Åfarli (1997) suggests that: "[...] this is due to the main verb's modal marking of the proposition expressed in the small clause" (ibid. p. 44). Thus, verbs like *å anse* (to consider) select a PrP which must contain a phonetically realized element.

Summing up, I assume that the functional projection PrP is necessarily present in order for a predication relation to occur. The main purpose of the projection is to assign a property to an entity in order to create a predicate. Syntactically, this means that the predication relation holds between the element in <spec, PrP> and the element in <comp, PrP>. In (89a), the predicate *kjøpte is* is ascribed to the subject *Marit*. In (89b-d), the AP *tomt* is ascribed to *kjøleskapet*, the PP *i småbiter* is ascribed to *brevet* and the NP *psykopat* is ascribed to *mannen*. All the sentences in (89) contain a predication relation between the subject/small clause subject and the predicate. It is therefore reasonable to assume that a PrP is present here. In contrast, the AP *raskt* in (90a) cannot be ascribed to *kjøleskapet*. It is not the fridge that has the property of being quick. Likewise, the PP *i bassenget* cannot be ascribed to *eplet*. Rather, Lisa is eating the apple while *she* is in the pool.⁴⁴

3.3.2 The neo-constructional approach (Åfarli, 2005)

In the endo-skeletal approach, the fact that verbs occur in various syntactic structures must be explained by the argument structure tied to each verb, since argument structure is the source for syntactic structure. The solution is either to postulate facultative θ -roles, or to multiply the lexical entries for the same verb. As discussed in 3.2, both these solutions have undesirable effects for the model: the use of optionality in a theory or the expansive growth of the lexicon. In addition, both explanations rest on circular argumentation.

In the neo-constructional approach, the syntactic structure cannot be explained by referring to argument structure in the verbs. The syntactic constructions are instead postulated as theoretical units, meaningful in their own right. The facultativity of θ -roles can therefore be explained as a result of the combination of verb and various frames. If a verb is inserted into a transitive frame, the verb emerges with one internal argument. If the same verb is inserted into an intransitive frame, the verb emerges with no internal argument. The examples in (57), here repeated as (92), are possible due to the fact that the verb *fortelle* (tell) can be inserted into both an intransitive frame, cf. (92a), and a transitive frame, cf. (92b).

92

- a Lisa forteller, men ingen hører på henne.
LISA TELLS_{-INTRANS}, BUT NOBODY LISTENS TO HER
"Lisa tells but nobody listens to her."
- b Hun fortalte en utrolig historie.
SHE TOLD_{V-TRANS} [AN AMAZING STORY_{DO}]

⁴⁴ Still, it is possible to interpret the sentence *Lisa spiste eplet i bassenget* as denoting an event where Lisa ate an apple which was floating around in the pool. In this particular interpretation, the apple does in fact have the property of being in the pool. One might argue that this interpretation arises when we interpret [eplet i bassenget] as the NP *eplet* modified by the PP *i bassenget*.

"She told an amazing story."

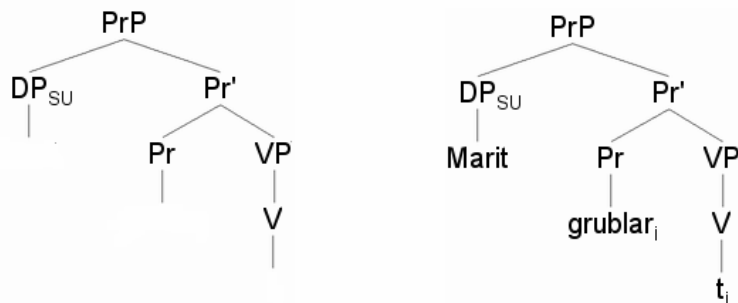
In Åfarli (2005), five different frames, or constructions, are proposed to be able to account for the argument structure realizations in Norwegian.⁴⁵ I will start by presenting the intransitive and transitive frames. In relation to these, I will also discuss the θ -roles related to the subject and the direct object, and show that the notion agent and patient do not seem to be adequate notions for the external and internal argument. I will then move on to the ditransitive frame, the structural position of the indirect object and the interpretation associated with this argument. Finally, I will present the resultative and the ditransitive-resultative frame.

3.3.2.1 The intransitive and transitive frame

The intransitive frame is illustrated in (93a). It consists of a PrP and a VP. Thus, this frame is a construction that exists independently of any lexical items. In (93b), the intransitive frame is instantiated by an NP *Marit* in the subject position, and a verb *grublar* (ponders) in the V-projection. If we insert the verb *fortelle* (tell) into this intransitive frame, we get the sentence in (92b).⁴⁶

93

a Intransitive frame b Instantiated intransitive frame

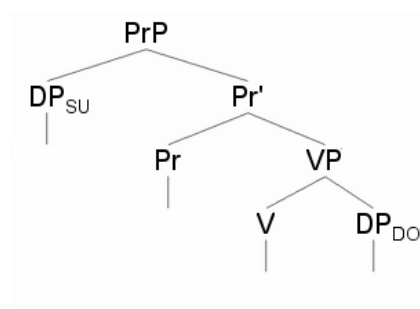


The transitive frame is illustrated in (94a). It consists of the same projections as the intransitive frame, but in addition, the transitive frame offers an argument structure position for the direct object in <comp, VP>.

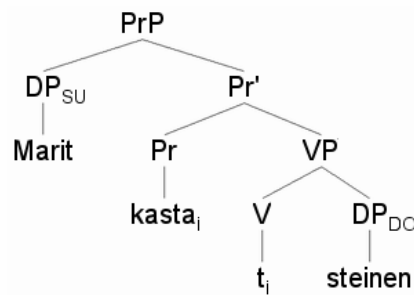
⁴⁵ The notation DP in the argument structure frame is Åfarli's (2005). I have chosen to keep DP in the presentation of the frames, elsewhere I will use the term NP.

⁴⁶ The argument structure frames are assumed to be augmented with a layer of functional projections, which will be discussed later in 3.4. For the sake of clarity, I have omitted the FPs in this section.

a Transitive frame



b Instantiated transitive frame



In (94b), the transitive frame is instantiated with a NP *Marit* in the subject position, the verb *kasta* (threw) in the V-projection, and the NP *steinen* (the stone) is the direct object-position of the frame. Thus, (92a) is the result of inserting *fortelle* (tell) in this transitive frame illustrated in (94a)

The syntactic frames in (93a) and (94a) are fixed in the sense that they contain different slots into which the various phrases can be inserted. The definition of an argument structure frame is given in Åfarli (2005), cf. (95).

95

"Ei syntaktisk-semantisk ramme er ein formell representasjon av syntaktiske og semantiske relasjonar [...]" (ibid. p. 318).

"A syntactic-semantic frame is a formal representation of syntactic and semantic relations."

In some sense, the definition in (95) resembles the usual apprehension of what a syntactic structure is, but a frame should not be perceived as an ordinary syntactic structure. It is a more abstract entity. A frame is a fixed template stored as a whole, and it can be filled with various words. A syntactic structure is a result of an instantiation of a frame. If we relate these assumptions to the argument structure frames in Norwegian, all sentences containing a direct object in Norwegian would originate from the transitive argument structure frame illustrated in (94a).

I will now go through the argument positions found in the five argument structure frames for Norwegian, starting with the subject position.

3.3.2.1.1 The subject position – frame independent

As described in the previous chapter, the endo-skeletal approach maintains that the putative argument structure in each verb is projected into syntax, and is responsible for the syntactic structure. However, the existence of expletive subjects constitutes a challenge for this explanation since expletives are said to be devoid of any semantic meaning. Consequently,

they cannot be deduced from any conceptual content of the verb or argument structure found in the verb. In the endo-skeletal approach, this subject requirement is known as the Extended Projection Principle (EPP), and it maintains that *regardless* of the verb's argument structure, sentences must have a subject. As noted by Åfarli and Eide (2000), the explanation for the subject requirement in the endo-skeletal approach rests solely upon a stipulation. They propose instead that the subject requirement can be explained as a consequence of predication. Following their line of argument, the subject requirement can be deduced from a semantic, and correspondingly syntactic, process. They assume that the predication operator present in the Pr-projection needs to be saturated with an entity, otherwise a proposition cannot be formed, cf. (96)

96

"[...] , the formation of a proposition invariably opens up an argument position, which has to be filled somehow" (Åfarli and Eide, 2000:36).

Even though I adopt the main idea presented in Åfarli and Eide (2000) with respect to the subject requirement, I will not adopt their hypothesis that the <spec, VP> is the canonical subject position, but adhere to the proposal in Åfarli (2005), which maintains that <spec, PrP> is the subject position.⁴⁷ Åfarli and Eide's (2000) analysis has two attractive features. First, the subject requirement is deduced from a general semantic and syntactic process. Second, the PrP is assumed to be present in every sentence that expresses a proposition. The latter fits the neo-constructional approach nicely, since this means that the PrP is structurally fixed, i.e. a part of the frames that constitute the basis for expressing a proposition.

The actual semantic role associated with the Pr position depends on the other lexical items in the construction. In (93b) and (94b), the argument placed in <spec, PrP> gets an agentive interpretation, but other combinations of words yield different roles, cf. (97).

97

- a Marit fikk meslinger.
"Marit got measles."
- b Forfatteren mottok prisen.
"The author received the price."
- c Lisa er ei snill jente.
"Lisa is a nice girl."
- d Isen smeltet.
"The ice melted."

⁴⁷ The advantage of adopting the <spec, PrP> as the canonical subject position is that the subject has the same structural position across various sentences types, i.e. small clauses and main clauses.

In (97a), *Marit* would hardly qualify as agent. Instead, the disease is viewed as something inflicted on *Marit*, and the thematic role has more in common with a recipient. Also in (97b) the subject *forfatteren* has more of a recipient interpretation than an agentive one. In (97c) the subject *Lisa* does not actively perform a being-event. In fact, *Lisa* does not have to do anything. Rather, the property *snill jente* is ascribed to the subject *Lisa*. The thematic role of *isen* in (97d) cannot be defined as agentive either. It is not the ice that is actively performing the melting. Instead, the ice melts because something or someone causes this melting to happen. The agent in (97d) is only implicit in the sentence, and can in fact be added in constructions like "*The sun melted the ice*". These variations seem to indicate that the structural position <spec, PrP>, which hosts the grammatical subject, is not restricted to agentive interpretation.

Even though the procedure of thematic role assignment is different in a neo-constructural vs. an endo-skeletal model, the latter also maintains that the thematic role of the subject is compositionally interpreted, cf. (98).

98

*"The theta role assigned to the subject is assigned **compositionally**: it is determined by the semantics of the verb and other VP constituent"* (Haegeman, 1994:71, original emphasis).

Since the purpose of the predication projection is to assign a property to an entity in order to create a predicate, the actual semantic content of the subject is not determined until it is fused with the property. For instance, it is impossible to decide the thematic role of *papegøyen* in (99a) even though this noun is the subject in this sentence. The actual role of *papegøyen* cannot be determined unless one knows what the nonsense word *flimset* means.

99

- a Papegøyen flimset frøene.
"The parrot flimset_{PAST} the seeds."

If *flimset* means something like "eat", the parrot would be interpreted as an agent, but if *flimset* means something like "got", the parrot would be interpreted as a receiver. Thus, the variation of thematic roles associated with the subject is due to the PrP's mediation of the element in <comp, PrP> to the element in <spec, PrP>. If we assign different properties to an entity, it follows that we interpret the entity differently as well. If we ascribe the property *gi* (give) to an entity, we will interpret this entity as having "giving-properties". If we ascribe the property *motta* (receive) to an entity, we will interpret this entity as having "receiving-

properties". Consequently, there cannot be a thematic role like agent associated with the subject position.

Another characteristic for the subject position is that it can be filled with expletives, cf. (100a-b) which does not express a thematic role at all. In passive constructions, cf. (100c), the phrase in the subject position is interpreted as patient, which corresponds to the interpretation that it has in an ordinary active construction, cf. (100d).

100

- a Det regner.
"It rains."
- b Det forekommer meg at han kan ha sagt det.
"It seems to me that he could have said it."
- c Elgen ble skutt.
"The moose was shot."
- d Jegeren skjøt elgen.
"The hunter shot the moose."

In Åfarli and Eide (2000), expletives are explained as resulting from the predication operator's features. The predication operator needs to take an entity as the predication subject, or else no proposition is created, cf. (101).

101

"That is, an expletive is a syntactic element that fulfils not only a formal, syntactic saturation demand. It also performs a crucial semantic task by permitting the proposition to be formed." (Åfarli and Eide, 2000:36)

According to the assumption made here, the saturation of the predicate can be fulfilled in three ways. The first possibility is that an entity with semantic content, as illustrated in (97), can be inserted in the <spec, PrP>. The second strategy is to insert an expletive, as shown in (100a-b). The last possibility is raising an argument NP from inside the predicate, as illustrated in (100c). If we no longer assume that the <spec, PrP> is associated with any particular role, it is possible to maintain that even the argument *elgen* (the moose) in (100c) is directly inserted into this position. However, the insertion of an expletive into the structure can indicate whether a given argument is inserted directly into the subject position, or whether the argument in the subject position more likely stems from the direct object position. In (100c), it is possible to have an expletive in the subject position and keep the argument *the moose* in the direct object position, cf. (102a). The interpretation of the argument *the moose* stays the same.

102

- a Det ble skutt en elg ved jernbanelinja.

IT WAS SHOT A MOOSE BY RAILWAY-LINE-THE
"A moose was shot by the railway line."

The possibility of inserting an expletive (while the argument stays in the direct object position) along with the observation that the argument has the same interpretation in both subject and object position, makes it natural to assume that the argument originates in <comp, VP>.

The assumption that the Pr projection needs to be saturated with an entity in order to create a proposition is challenged by the possibility to elide subjects in Norwegian, but I will return to this issue in 4.1.

3.3.2.1.2 *The direct object position*

The next argument role position in (94a) is <comp, VP>. Items inserted in this position will be given status as the direct object, and interpreted as patient. Contrary to the subject, which can have both an agent and a recipient role, the typical interpretation of the direct object in Norwegian is patient (Faarlund et al., 1997). However, the association of the direct object with a patient role is not without problems. For instance, in (103) the direct objects do not exhibit the typical patient role.

103

- a Hun fortalte en historie.
SHE TOLD [A STORY_{DO}]
"She told a story."
- b Foreldrene gikk en tur.
PARENTS-THE WALKED [A WALK_{DO}]
"The parents went for a walk."
- c Marit fikk meslinger.
MARIT GOT [MEASLES_{DO}]
"Marit got measles."

En historie (a story) does not fit into the conventional patient role, but is perceived as the result of the telling-activity. Faarlund et al. (1997) maintain that there are various subtypes of the typical patient role (ibid. p. 717). The direct objects in (103a) would be classified as "*effisert objekt*", describing an entity that emerges due to the event described by the verb.⁴⁸ *En tur* (a walk) in (103b) cannot be classified as patient either. Faarlund et al. (1997) label these objects "*indre objekt*" (cognate object), which semantically more or less denote the same content as the verb (ibid. p. 718). Other examples of objects belonging to this group are *dream a dream, sing a song, laugh a laugh*, etc. *Meslinger* (measles) in (103c) denotes the entity that is inflicted upon *Marit*. It does not result from the getting-activity, nor does it denote the

⁴⁸ The equivalent English term for *effisert objekt* would be "product object".

same content as the verb. *Meslinger* (measles) might be labelled "theme" if we follow Haegeman's suggestion, indicating that "theme" is a thing moved by the action expressed by the predicate (Haegeman, 1994:49). We might perceive measles as moving from the surroundings into *Marit*, even though the movement is not intended or caused by an agent. On the whole, the sentences in (103) show that direct objects do not uniformly have a patient role. However, the fact that these direct objects can be divided into various subtypes based in their semantic interpretation is not a sufficient criterion to postulate distinct syntactic categories. Syntactically, these objects exhibit the same behaviour. This will be further discussed in relation to Ramchand's (2006) division of direct objects into RESULTEE and UNDERGOER, which according to Ramchand should result in different structural positions for these two objects, cf. 3.3.6.

3.3.2.2 The ditransitive frame and the indirect object position

The other problem that the endo-skeletal approach encountered when stipulating facultative θ -roles was related to the ditransitive construction, illustrated in (104a). Reference to facultativity in argument structure as proposed in the lexically driven grammars offers no explanation as to why it is considered ungrammatical to utter (104b), while (104c) is grammatical.

104

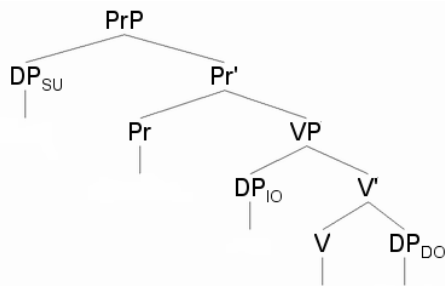
- a Hun fortalte studentene en historie.
She told the students a story.
- b *Hun fortalte studentene
She told the students.
- c Hun fortalte en historie.
She told a story.

The following discussion hinges on an assumption made in the lexically driven grammars that rule out syntactic structures by reference to derivation crashes in the grammar. According to this view, a grammar of Norwegian should allow for the direct object to be the only internal argument of a ditransitive verb, cf. (104c), while the indirect object can never be the only internal argument, cf. (104b). Put differently, if only the indirect object is inserted, the derivation crashes. Anticipating later discussion, the neo-constructional approach offers a different explanation as to why (104b) is judged as non-Norwegian, while (104c) is regarded as perfectly acceptable, but since this discussion also presupposes knowledge of the ditransitive construction, I will first present the characteristics of the ditransitive frame.

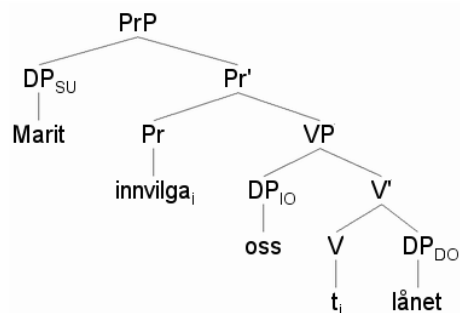
In Åfarli (2005), the sentence in (104a) is accounted for by a ditransitive syntactic frame as illustrated in (105a).

105

a Ditransitive frame



b Instantiated ditransitive frame



Thus, the sentence in (104a) is an instantiation of the syntactic frame presented in (105a). The subject and direct object are placed in the same structural position as I already have explained in relation to (94b). The structural position for the indirect object is <spec, VP>, which seems to yield a recipient interpretation. Brøseth's (1997) investigation of the indirect object in Norwegian concludes that the indirect object is structurally defined across various sentence types, and that the canonical position has an inherent experiencer/recipient/goal role (ibid. p. 125). The actual role depends on the meaning of the direct object and the verb. The structural position that allows for an indirect object is only available in the syntactic frame illustrated in (105), which *requires* an instantiation of the complement position of the verb as well. If we utter (104c), we will interpret these words as an instantiation of the *transitive* frame. The open-class item and the inherent meaning associated with the structural position match, since we know that *en historie* is a result of a *fortelle*-event. If we utter (104b), we will also interpret this sentence as an instantiation of the transitive construction presented in (94a). Then a mismatch between the inherent meaning of the structural position and our knowledge of the open-class item *studentene* occurs. Our encyclopaedic knowledge tells us that the noun *studentene* is not an entity that can undergo some kind of change or transition caused by the *fortelle*-action, and thus, the sentence is marked as ungrammatical. Note, however, that structurally both (104b) and (104c) fit the transitive frame.

Earlier in this section, I briefly presented how lexically driven grammars make reference to grammatical processes in order to explain the impossibility of (104b). For instance, the grammar allows for the direct object as the only argument with ditransitive verbs, while indirect objects cannot be the only argument. According to the endo-skeletal approach, the sentence in (104b) is ungrammatical because it does not follow this syntactic rule. In the

neo-constructural approach presented here, the sentence is not dismissed by native Norwegians because it is syntactically impossible but because it is a mismatch between the argument structure frame and our encyclopaedic knowledge of the words. The term ungrammatical is somewhat deceptive when explaining why (104b) is not an acceptable Norwegian sentence. I will try to illustrate my point with an example constructed with nonsense words, cf. (106a).

106

- a Trollmannen fortalte en *buzziwar* en *pluricum*.

WIZARD-THE TOLD A BUZZIWAR A PLURICUM

"The wizard told a buzzivar a pluricum"

Nobody knows what the words *buzziwar* and *pluricum* means because they are made up words. But still we can draw some meaning out of (106a). First, we can assume that the ditransitive frame is the source for this sentence because the observed syntactic structure matches the ditransitive frame. In our search for meaning in (106a), we would probably interpret the *buzziwar*, whatever that might be, as an entity capable of receiving or experiencing *pluricum*, whatever that might be. Since we do not know the word in question, we must base our interpretation entirely on the structural position. Furthermore, if we change the structure, and just keep one noun, cf. (107a), we would interpret the sentence as an instantiation of a transitive frame.

107

- a Trollmannen fortalte en *buzziwar*.

WIZARD-THE TOLD A BUZZIWAR

"The wizard told a buzzivar."

The structure in (107a) will lead us to interpret the *buzziwar* is the direct object. Hence, we will interpret the entity *buzziwar* as a patient or some of the other subtypes associated with the direct object in line with the structure in (104c), here repeated as (108a). With this interpretation in mind, we would have no problems with accepting that (107a) is a grammatical sentence.

108

- a Hun fortalte en historie.

"She told a story."

Let us now pretend that *buzziwar* in fact turns out to be the term for a student at the wizard academy. Then the sentence would have a similar meaning as found in the sentence in (104b), here repeated as (109a).

- a *Hun fortalte studentene
She told the students.

In the neo-constructional approach, the knowledge that the term *buzziwar* means student at the wizard academy would not change (107a)'s **grammatical** status. It would still be an instantiation of a transitive frame. The oddity arises as result of the mismatch between the inherent meaning of the structural position, and the semantics of the word in question, but this has nothing to do with grammatical processes.

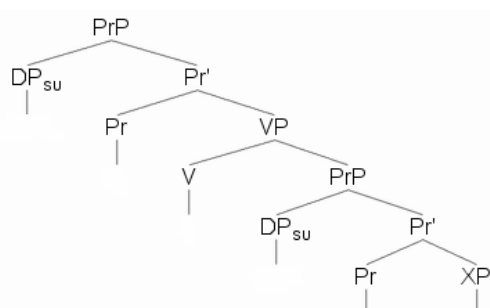
The endo-skeletal approach encounters some challenges with the example in (107a). This theory does not allow us to conclude if a sentence is grammatical or ungrammatical before the semantic content of the word in question is revealed. This is contrary to the strict separation of grammatically relevant content on the one hand, and conceptual content on the other. The latter should be irrelevant for syntactic rules, and play no part in whether a structure can be constructed by the syntax module. But with (107a), the endo-skeletal approach offers us no choice but to alter the status of the sentence from grammatical to ungrammatical based solely on the meaning of the word *buzziwar*.

3.3.2.3 The resultative and ditransitive-resultative frame

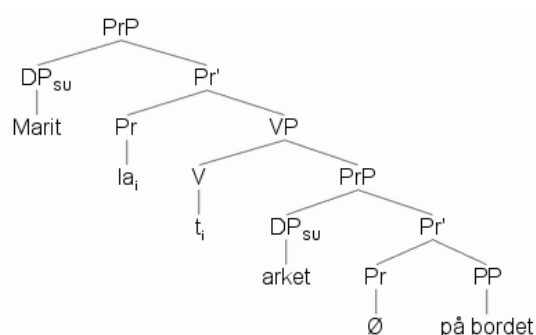
In the resultative frame, the DP in structure (94a) is exchanged for a PrP-structure and yields the resultative frame presented in (110a). The NP *Marit* is inserted into the <spec, PrP>, and it is interpreted as the subject. The verb *la* (put) is inserted into the V-projection.

110

a Resultative frame



b Instantiated resultative frame



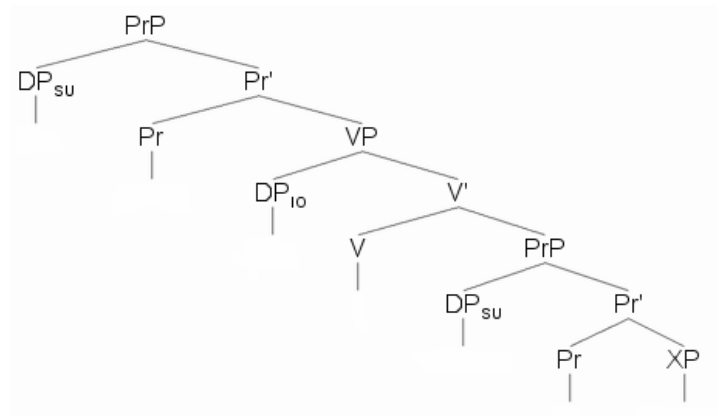
Further, the constituent *arket* (the sheet) is positioned in the <spec, PrP> of the small clause, while *på bordet* (on the table) is in the <comp, PrP>. As already discussed, the Pr projection is responsible for yielding a predication relation between a property (here: *på bordet*) and an entity (here: *arket*). The small clause *arket på bordet* (the sheet on the table) is interpreted as a

result of the putting-activity performed by *Marit*. Both *Marit* and *arket* (the sheet) are placed in <spec, PrP> and are therefore labelled as subjects. However, the thematic role of the main clause subject *Marit* and the small clause subject *arket* differ. *Marit* expresses an agentive role performing an activity, while *arket* (the sheet) does not *do* anything, but rather has the property of being on the table. That the subject can exhibit various semantic properties has already been discussed in 3.3.2.1.1. The fact that the two subject arguments in <spec, PrP> exhibit variation with respect to thematic content is expected under the current analysis, since the semantic of the subject is a result of the property assigned to this entity by the predication projection. The subject in the small clause is assigned the property "on the table", while the subject in the main clause is assigned the property "putting the sheet on the table".

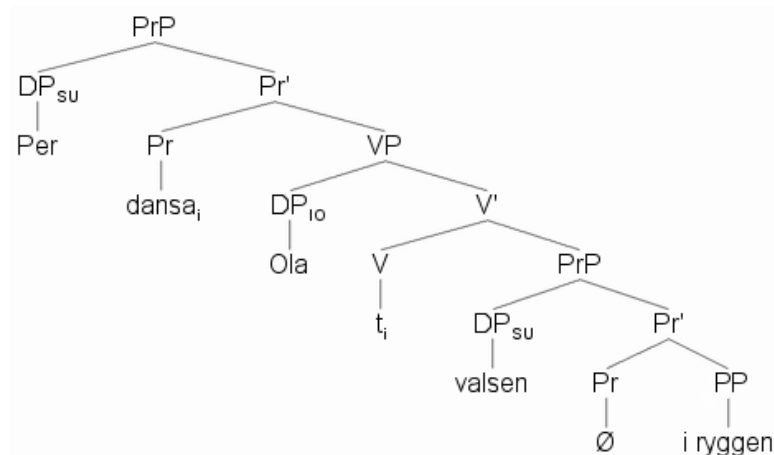
In the ditransitive-resultative frame, the argument in the <comp, VP> in structure (105) is altered from a DP to a PrP and yields the ditransitive-resultative in (111a).

111

a Ditransitive-resultative frame



b Instantiated ditransitive-resultative frame



The interpretation arising from this frame is basically "as a result of *Per's* dancing, the waltz ended up in the back of *Ola*". Åfarli admits that the ditransitive-resultative frame in (111a) is quite rare, but instances of this frame have been found in the literature, cf. (112).

112

- a De pisser oss god samvittighet oppetter ryggen. (Brøseth, 1997)
 THEY PISS_{V-PRES} US GOOD CONSCIENCE UP BACK-THE
"They piss us good conscience up our backs."
 Paraphrase: As a result of their pissing, the good conscience ends up on our backs.
- b Han nynnet oss et kjærtegn i nakkegropa. (Hundal, 2002)
 HE HUM_{V-PRET} US A CARESS IN NECK
"He hummed a caress into our necks."
 Paraphrase: As a result of his humming, a caress ends up in our necks.

The frame in (111a) is a combination of the ditransitive frame presented in 3.3.2.2 and the resultative frame presented in 3.3.2.3. The arguments found in the ditransitive-resultative frame have already been discussed in the above-mentioned sections, and the same properties can be related to the arguments found in (111a).

In addition, Åfarli maintains that each of the five frames can be enlarged by various adjuncts, typically adverbial phrases and preposition phrases. The five frames presented here will constitute the basis for the analysis presented in the next chapter.

3.3.3 Flexibility and made-up verbs in the exo-skeletal approach

As pointed out in the previous chapter, the endo-skeletal approach faces problems when argument structure and θ -roles are postulated on the basis of the conceptual roles that the verb usually implies. The classification of intransitive, transitive and ditransitive verbs cannot be explained in a straightforward manner by the endo-skeletal approach, since verbs that are classified as intransitive can occur with both a direct and an indirect object. If we postulate different syntactic frames that exist independently of the semantic content of the verb, there is nothing preventing various verbs from occurring in frames where they usually not are found, as long as there is nothing in the conceptual content of the verbs that contradicts the frame meaning. This explains why *å ro* (to row), normally conceived as an intransitive verb, can still be inserted in both the intransitive frame and the transitive frame presented in 3.3.2.1. In addition, *å ro* (to row) can be inserted into a ditransitive frame presented in 3.3.2.2. These combinations of the verb *å ro* (to row) with the various frames will yield the sentences presented in (113).

113

- a Per rodde.

- PER ROWED
"Per rowed."
- b Per rodde turistene.
 PER ROWED TOURISTS-THE.
"Per rowed the tourists."
- c Per rodde turistene en tur.
 PER ROWED TOURISTS-THE_{IO} [A TRIP_{DO}]
"Per rowed the tourists on a trip."
- d Per rodde hendene såre.
 PER ROWED [HANDS-THE SORE_{RE}]
"Per rowed his hands sore."

As already discussed, the exact semantic interpretation of the arguments is based upon a combination of the structural position of the arguments and our knowledge of the other words in the structure. The direct object *turistene* (the tourists) in (113b) will have a patient role, while the direct object *en tur* (a trip) in (113c) will be interpreted more as a product of the rowing-activity. This has to do with our knowledge of the words *turistene* (the tourists) and *en tur* (a trip). For instance, if we were informed that *turistene* in fact was the name of a waterfall, we would not interpret *turistene* as a patient anymore. By using the verb *ro* (row) in a ditransitive syntactic frame, *turistene* will automatically be interpreted as the recipient or beneficiary of the rowing-activity by virtue of its position in the structure. *Per* is placed in <spec, PrP> in all three sentences, and will be interpreted as the subject. In line with assumptions in the neo-constructional approach, the arguments in (113) are licensed by their structural position, not by any argument structure in the verb *ro* (row).

The possibility of creating new verbs out of nouns can also be explained if we follow the idea that the syntactic frames have independent meaning, disconnected from the particular words. A word that originally is not a verb can be inserted in the verb position in the structure, and the structure coerces the word into a verb interpretation. This is why we recognize the "odd" uses of nouns as verbs in the sentences presented in (72) here repeated as (114). The insertion of a noun into a verb slot also involves the transfer of verbal morphological properties to the noun, i.e. verbal inflections such as tense. It comes with the territory, so to speak.

114

- a How to Russell a Frege-Church (title of article by David Kaplan)
- b Pene jenter i TV2 værer solskinn og regn.
 NICE GIRLS IN TV2 WEATHER-PRESENT SUNSHINE AND RAIN
"Nice girls in TV2 forecast sunshine and rain."
- c Å muskle noen ut av markedet.
 TO MUSCLE-INF SOMEBODY OUT OF MARKED-THE
"To use force to pester somebody out of the marked."

- d Å fjese noen/Å fjese seg
TO FACE-INF SOMEBODY/TO FACE-INF ONESELF
"To publicly announce other people's secrets without their consent/To publicly confess a personal problem."
- e Å erme seg.
TO SLEEVE ONESELF
"To use one's public status to achieve unjust advantages."

The hypothesis that syntactic structure is indeed crucial for arriving at meaning would be supported if this strategy was shown to be at play in our primary years of language acquisition as well. Indeed, Gleitman (1990) suggests that children make use of the syntactic structure as a way of arriving at meaning. Her proposal opposes the view embedded in the endo-skeletal approach, which implies that the child needs to learn each word in its mother tongue by observing the environment in which the word is used. Pinker (1987) espouses the semantic bootstrapping hypothesis in language acquisition, and maintains that "*the lexical category of a word in an input sentence is inferred from its semantics*" (ibid. p. 407). An example of this semantic bootstrapping would be a parent pointing to an entity in the surroundings of the child, and uttering the word *dog*. As long as the examples are tied to observable entities and properties like *dog* and *red*, the semantic bootstrapping procedure seems like a common-sense explanation of how children acquire their lexicon. However, by extending the semantic bootstrapping procedure to events, i.e. verbs, matters get more complicated. It has been suggested (Pinker 1987) that repetitions of the event accompanied by the correct verb will ultimately lead the child to the correct meaning. This proposal suggests that the child and the speaker are always focussing on the same event or property in the environment, and that the speaker always refers to events and entities that are "here-and-now" such that the child can deduce the meaning from the observable environment. Gleitman (1990) discusses several problems with the semantic bootstrapping procedure. The points that Gleitman make cannot be discussed at length here, but I will focus on two phenomena that the semantic bootstrapping procedure has difficulties in explaining (paired verbs that describe the same event, and verbs that are not tied to observation at all). I will also present the solutions made possible by adopting a syntactic bootstrapping procedure.

Gleitman (1990) points out that the semantic bootstrapping procedure faces problems in accounting for the acquisition of verbs like *sell* and *buy*. It is clear that the exact same observable event can be described both as selling and buying. This property is not particular to *sell/buy*, but concerns many paired verbs, for instance *show/see*, *teach/learn*, *tell/listen*, *feed/eat*, *donate/receive*, etc. The question is how the child can decide whether an unknown

verb (for the child) accompanying such a scene/event means *sell* or *buy*. Sometimes the scene is followed by the verb *sell*, sometimes by the verb *buy*. Why doesn't the child interpret these verbs as synonyms, like *hund* (dog) and *vovvov* (child-oriented word for "dog")?

Gleitman (1990) points out that the common property of these verb pairs is the *focus shift* between the two participants in the same observable event. By using the first verbs in these pairs (*sell, chase, show, tell, feed, donate*), we want to zoom in on one particular person in the event. In the second pair (*buy, flee, see, listen, eat, receive*), the focus is on the other person in the event. The choice of the verb depends on which person in the event the speaker wants the child to focus its attention on. Put differently, verbs do more than just refer to the observable event. If the verbs only mirrored the event, we could just as well just grunt and point. However, verbs like *sell/buy* make it possible for the child to focus on whichever participant in the event that the speaker wants the child to zoom in on.

As also noted by Gleitman (1990), a language contains many words referring to items and events that are not observable at all, like *fantasize, feel, hate, detest, dream, expect* etc. Even though these concepts are abstract, young children still manage to construct grammatical utterances containing these verbs. The question is how the semantic roles associated with *dream* come into existence if we presuppose semantic bootstrapping as the only procedure in language acquisition.

Gleitman (1990) suggests that several of the problems encountered by the semantic bootstrapping view can be accounted for by a different acquisition hypothesis, namely syntactic bootstrapping, in which syntactic structure is an essential factor for predicting the meaning of a word. Syntactic structure functions as a kind of "zoom lens", which makes it easier for the child to disambiguate aspects in the observed event (ibid. p. 48). The syntactic bootstrapping procedure does not exclude the possibility of semantic bootstrapping, and Gleitman (1990) suggests that they operate in a complementary fashion (ibid. p. 30). For example, if the child hears an utterance as illustrated in (115a), it will learn by observation that the mother gets the cookies.

115

- a Mamma kjøper kjeks.
"Mummy buys cookies."

To learn what the concept SELL means in contrast to the concept BUY, the child must acquire encyclopaedic knowledge by observing and interacting with its surroundings.

If syntactic bootstrapping is a strategy used in language acquisition, it is likely that we might use this method when we encounter new words as adults as well. It is this ability of

deducing meaning from structure that makes it possible for us to understand sentences of the sort illustrated in (114). By using our knowledge of structural frames together with morphological characteristics, we can recognize the made up-verb in an utterance, and at the same time identify and interpret the various arguments in the made up-verb's surroundings.

Summing up, the neo-constructional approach makes it possible to explain the varying number of arguments found with the same verb without postulating optional θ -roles or stipulating several entries in the lexicon for the same verb, which is the solution in the endo-skeletal approach. It is the construction itself that makes the argument slots available, and since these constructions exist independently of the words in the lexicon, there is nothing preventing a verb from being inserted into a construction it is not normally associated with. In addition, the neo-constructional approach can account for the tendency to prefer certain combinations of words and constructions, which, as far as I can see, is not possible in the endo-skeletal approach. In fact, the endo-skeletal approach has always insisted on the *creativity* of language use, cf. (116)

116

"Thus in normal speech one does not merely repeat what one has heard but produces new linguistic forms – often new in one's experience or even in the history of the language – and there are no limits to such innovations" (Chomsky, 1988:5).

This view cannot explain why certain syntactic constructions are preferred over other possible structures. According to (116), all combination of words and syntactic structures should be equally easy to produce, and thus equally plausible in a given context. If we take the neo-constructional approach as our point of departure, we could account for the fact that (117a) is the preferred construction in relation to the verb *danse* (danse).

117

- a Per dansa.
PER DANCED_{V-INTRANS}
"Per danced."

Thus, (117a) is the preferred structure even though, as Áfarli (2005) shows in his article, the verb *danse* (dance) *can* combine with other argument structure frames as well. In the endo-skeletal approach, the verb *danse* (dance) must be listed with various argument structures in the lexicon in order to account for the syntactic surroundings this verb can occur in, and there is no possibility of ranking the various argument structures against each other. Thus, (111a), here repeated as (118a), should be just as easy to produce as (117a).

- a Per dansa Ola valsen i ryggen.
"Per danced Ola the waltz in the back."

This is clearly not the case. *Danse* (dance) occurs most frequently without any internal arguments. According to the neo-constructional approach, the preference of the verb *danse* (dance) in sentences like (117a) is linked with the congruence between the conceptual content of the verb and the inherent meaning of the frame.

3.3.4 Restrictions on argument structure

Both the endo- and the exo-skeletal approach would face problems in explaining why a near-synonym of *fortelle* (tell), like the verb *si* (say), cannot occur in the intransitive frame, cf.

(119).

119

- a *Hun sier, men ingen hører på henne.
"She tells but nobody listens to her."
 b Hun sier sannheten.
"She tells the truth."

As already discussed, the problem for the endo-skeletal approach would be to justify the fact that the lexical-semantic information in the verbs is not always realized as arguments in the syntactic structure. One would expect the same semantic roles to be involved in both the *fortelle*-event and the *si*-event, and if the semantic roles are similar, one would also expect the argument structure realized as structure around the verb to be similar.

I have already presented the approaches followed by the endo-skeletal framework, which either postulates several arguments structures for the same concept, or postulates optional arguments in the argument structure. The first solution will result in numerous entries in the lexicon for the same word. The second solution will make it difficult to decide which arguments are optional and under which conditions this happens. Optionality in models is not an uncommon trait, but this presupposes that the options in any decision are thoroughly specified so that only one option can be chosen given the current state of affairs (Giere et al., 2006). An example of specified options is: "If A occurs, choose X. If B occurs, choose Y." The problem arises when the model is construed as: "If A occurs, choose Z or Y". The latter model will not tell us anything but "Given A, Z might or might not occur" and "Given A, Y might or might not occur." In the endo-skeletal approach, the optionality in the lexicon is not sufficiently specified, and whether a verb like *fortelle* occurs with one or two arguments is a

result of picking either *fortelle*₁ or *fortelle*₂ in the lexicon. But the reasons for choosing *fortelle*₁ instead of *fortelle*₂ are left unspecified. In other words, the model is construed as: "If a sentence should contain a verb referring to the concept FORTELLE, choose *fortelle*₁ or *fortelle*₂."

The problem for the neo-constructional approach is explaining why different verbs are *prohibited* from being inserted into certain frames. I want to present the suggestion put forth in Goldberg (1995) to illustrate how she tries to explain this puzzle within an exo-skeletal approach. Anticipating later discussion, I find the solution proposed in Goldberg unsatisfactory, and want to suggest another approach to the problem.

Goldberg (1995) makes reference to the inherent semantic participants in the verb's meaning in order to explain why some structures are grammatical while others are not. The Semantic Coherence Principle states that only roles that are semantically compatible can be fused. Goldberg distinguishes between the participant roles associated with the verb, and the argument roles associated with the construction. If they are semantically compatible, the construction is perceived as grammatical or acceptable.⁴⁹ In addition, Goldberg (1995) postulates a Correspondence Principle that fuses lexically profiled participant roles with a profiled argument role in the construction. This explains why near-synonyms like *to rob* and *to steal* behave differently with respect to arguments. The verb *rob* profiles the participant role Thief and Target, while *steal* profiles the participant roles Thief and Goods, cf. (120). Profiled participants are in bold.

120

- a Rob <**thief target** goods>
- b Steal <**thief target goods**>

This difference in lexical profiling can explain the difference in grammaticality in (121).

121

- a Jesse_[thief] robbed the rich_[target] = correspond to: <**thief target** goods>
- b Jesse_[thief] stole money_[goods] = correspond to: <**thief target goods**>
- c *Jesse_[thief] robbed a million dollars_[goods] = not correspond to: rob <**thief target** goods>
- d *Jesse_[thief] stole the rich_[target] = not correspond to: steal <**thief target goods**>

In (121a-b), there is a correspondence between the profiled participant roles and the profiled argument roles. In (121c), the construction profiles **goods**, while the verb *rob* profiles **target**. In (121d), the construction profiles **target**, while the verb profiles **goods**. The mismatch

⁴⁹ Two roles are semantically compatible if either r_1 can be construed as an instance of r_2 , or r_1 [sic] can be construed as an instance of r_1 (Goldberg, 1995:50).

between profiled roles in verb and construction in (121c) and (121d) leads to ungrammaticality.

First, the Correspondence Principle rests upon a circular explanation because Goldberg decides which participant roles in the verb are profiled by reference to grammatical versus ungrammatical sentences. Thus, the grammaticality of syntactic structures is explained by reference to the verbs' profiled participant roles, and the verbs' profiled participant roles are explained by reference to syntactic structure. For the participant role to have theoretical status, it should be possible to define the role independently of the structures in which it is used. However, to define inherent participant roles in the verbs on independent grounds is extremely difficult. I will use the Norwegian verb *bytte* in order to show the problems encountered by using the notion of participant roles. *Bytte* (exchange) implies an exchanger, the exchanged item, the item given in return and somebody taking the exchanged item and handing in the returned item. Based on this semantic information, the participant roles in *bytte* might be as illustrated in (122a).

122

- a *bytte* <exchanger, exchanged item, distributor, returned item>

It is impossible to know which of these participant roles are lexically profiled based on just this list of participant roles. But, we *do* know that if no item is given in return, the concept can no longer be said to be an exchanging-activity, but rather similar to a giving-activity. The natural conclusion would be to lexically profile the entity that separates *bytte* (exchange) from *gi* (give), namely the returned item. Nevertheless, in the Norwegian syntactic constructions where *bytte* (exchange) is found, the returned item is facultative, cf. (123a) and can only be manifested as a preposition phrase, cf. (123b). (*Kjolen* (the dress) denotes the exchanged item, while *buksen* (the pants) denotes the returned item.)

123

- a Jeg vil bytte kjolen.
I WANT EXCHANGE DRESS-THE
"I want to trade in the dress."
b Jeg vil bytte kjolen mot denne buksen.
I WANT EXCHANGE [DRESS-THE_{DO}] [AGAINST THIS PANTS-THE_{PA}].
"I want to trade in the dress with these pants."

In my opinion, Goldberg's solution for why certain verbs can only occur in some constructions is unsatisfactory. It is clear, however, that this needs to be accounted for under an exo-skeletal approach.

Åfarli (2005) suggests that: "[...] *harmoni mellom rammetypens føringar og verbets innhald vil bli oppfatta som det naturlege, og at disharmoni m.o.t. dette i større eller mindre grad vil bli oppfatta som avvikande bruk av verbet*" (ibid. p. 327).⁵⁰ That is, if the concept to which the verb refers is incompatible with the frame meaning, we will judge the sentence as more or less odd. This suggestion is not self-evident. As already noted in Chapter 3.3, example (81), the conglomerate of meaning layers in a concept is not easy to capture, and how could we then formalize the harmony between the frame type and the content of the verb? Åfarli (2005) suggests that whether we judge a frame type and a verb as compatible or not do not stem from syntactic rules alone, since the judgements also result from our encyclopaedic knowledge of the words in the sentence. The consequence of Åfarli's suggestion is that every verb can be inserted into every frame, but some of the combinations are regarded as unlikely based on our encyclopaedic knowledge. We will not utter (124) because we know that *falle* (fall) cannot be combined with a recipient.

124

- a *Ola falt Marit stolen.
 OLA FELL MARIT CHAIR-THE.
 "Ola fell Marit the chair."

However, there is nothing in the grammar itself that prevents *falle* (fall) from being inserted into a ditransitive frame.

If the judgement of incorrect sentences like (124a) is not considered a grammatical issue, but rather a matter of encyclopaedic knowledge, then the notion of ungrammaticality also needs to be revised. One common definition of ungrammaticality is given in (125).

125

"Denoting a syntactic structure which is not permitted by the rules of the grammar of a particular language. [...]" (Trask, 1993:133).

This definition is based upon the assumption that we have direct access to the rules of grammar in a particular language, while it is in fact impossible to empirically decide whether we judge a given string of words as "ungrammatical" due to rules of grammar, or due to our encyclopaedic knowledge of the words' meanings in the string. I illustrated this point in (107a), where the decision of whether a sentence was ungrammatical/grammatical (as understood in the endo-skeletal approach) rested upon the knowledge of the word *buzziwar*.

⁵⁰ "[...] *harmony between the guidelines of the frame type and the content of the verb will be perceived as natural, whereas disharmony with respect to this will more or less be perceived as a deviant use of the verb.*"

A case of true ungrammaticality as defined in the neo-constructional approach can be illustrated by (126a). Here, practically none of the basic patterns for forming a Norwegian sentence are followed. The result is clearly ungrammatical, and uninterpretable.

126

- a *Rampete magisk den den lyste gutten lampa.
NAUGHTY MAGIC THE THE LIGHTENED BOY-THE LAMP-THE
"Naughty magic the the lightened boy lamp."

Whereas sentences of the type (126a) are very difficult to come by, another case of "ungrammaticality" is even awarded its own newspaper column in Norway. In *Språket vårt* (Our language) found in *Aftenposten*, examples of sentences are presented as ungrammatical if they do not follow the standard norms. The sentences are either found in media, billboards, advertisements, etc. According to *Språket vårt*, (127a) is impossible because a wardrobe cannot hang, and (127b) is ungrammatical because the sentence adverbial *ubesværet* (effortless) must be placed before the finite verb in a subordinate clause.

127

- a *Garderoben henger på eget ansvar (Aftenposten, 11.12.05)
WARDROBE-THE HANGS ON OWN RESPONSIBILITY.
The wardrobe hangs on its own responsibility.
- b *[...] at en lærer må ubesværet kunne bruke datateknologien (Aftenposten, 14.01.06)
[...] THAT A TEACHER MUST EFFORTLESS COULD USE COMPUTER-TECHNOLOGY-THE.
"A teacher must be able to use the computer technology effortlessly."

I believe that this type of "ungrammaticality", which perhaps should be labelled "norm-deviant" rather than ungrammatical, arises when the sentence and the frame are not in harmony, to use Åfarli's terminology. Words can be inserted into various frames, but some of these fusions are more frequently encountered than others. These entrenched collocations of frames and words are often what constitute the norm.⁵¹ The irony is that syntacticians are mostly concerned with the "norm-deviant" class, which is a paradox if these occurrences of "ungrammaticality" are not caused by syntax proper. In the neo-constructional approach, (127a) would be regarded as an instantiation of the intransitive frame. The sentence in (127b) would be regarded as an instantiation of the transitive frame augmented by auxiliaries and a sentence adverbial. The fact that the sentence adverbial *ubesværet* (effortlessly) occurs between the two auxiliaries in the subordinate clause does not suffice to classify this sentence as ungrammatical. In fact, Nordgård and Åfarli (1990) point out that: "[...] *nokre*

⁵¹ This term "entrenched" is used in cognitive linguistics to capture the assumption that "[...] language units that are more frequently encountered become more **entrenched** (that is, established as a cognitive pattern or routine) in the language system" (Evans and Green, 2006:114).

setningsadverbial kan ha avvikende distribusjon i visse tilfelle eller at at-setninger kan ha same ordstilling som hovudsetningar dersom spesielle vilkår er oppfylte" (ibid. p. 65).⁵²

Hence, sentence adverbials in Norwegian *at*-sentences are known to sometimes follow the word order found in main clauses. The neo-constructional approach argued for here would not classify the sentence in (127a) as ungrammatical, but rather as an example of disharmony between the frame and the words inserted into the frame. Nor is (127b) ungrammatical, but an example of a perfectly acceptable word order in a Norwegian sentence, although it deviates from the established norm.

The truly ungrammatical sentence in (126a) is accepted by everyone as ungrammatical, indeed an incomprehensible Norwegian sentence. In contrast, the sentence in (128a), consisting of the exact same words, is clearly comprehensible.

128

- a *Den rampete gutten lyste den magiske lampa.
THE NAUGHTY BOY-THE LIGHTENED THE MAGIC LAMP-THE
The naughty boy lightened the magic lamp.

We understand that there is a naughty boy who is doing a lightening-activity. It is the magic lamp that causes the trouble since we're not able to pin down the exact role of this entity. Our encyclopaedic knowledge tells us that *lampe* is not an entity that the verb *lyse* causes to change in any way. Based on the structural position we expect *lampe* to display a sort of patient role. If we follow Åfarli's suggestion, the "disharmony" arises because the thematic role associated with <comp, VP> cannot be fused with our encyclopaedic knowledge about the concept of *lyse* and the entity *lampe*. In (126a), the disharmony is extreme since there is no construction in which we can find meaning at all. Without any structure, we cannot figure out the relationship between the listed words. But this process is not something that happens in the grammar module. In fact, Borer (2005a) expresses the same ideas as Åfarli. She suggests that ungrammaticality judgements are handled in a "making sense"-module, cf. (129).

129

"In a cognitive place which is neither the grammar nor the conceptual system – call it the "making sense" component – these two outputs [from the conceptual system and the grammar] will be compared" (ibid. p. 11).

I want to end this section by discussing the ungrammaticality noted by Goldberg with respect to *rob* and *steal*, presented in (121c-d), repeated as (130).

⁵² "[...] some sentence adverbials can have deviant distribution in some cases or that that-sentences can have the same word order as main clauses if certain conditions are fulfilled."

- a *Jesse robbed a million dollars.
- b *Jesse stole the rich.

According to Goldberg, the sentences in (130) are ungrammatical because the phrase *a million dollars* (denoting **Goods**) is not possible to fuse with the profiled **Target** role found in *to rob*, and the phrase *the rich* (denoting **Target**) is not possible to fuse with the profiled **Goods** role in *to steal*. The conclusion is that verbs need directions (i.e. information in the lexical entries) in order to know which constructions they are "allowed" to be fused with.

In the following, I will use the Norwegian equivalent verbs *rane* (rob) and *stjele* (steal) to argue that the ungrammatical sentences, according to Goldberg, might not be examples of ungrammatical structures at all. Even though *rane* more frequently profiles the **Target**, to use Goldberg's term, *rane* is also encountered with nouns denoting **Goods**, like *penger* in (131c). This indicates that *rane* cannot have the profiled participant roles, as suggested in (120a).⁵³

- a Unge jenter ranet barn.
"Young girls robbed children."
- b Unge jenter stjal penger.
"Young girls stole money."
- c Unge jenter ranet penger til reise (Dagbladet, April 2. 1998)
"Young girls robbed money for journey."
- d Unge jenter stjal barn.
"Young girls stole children."

I have not marked (131d) as ungrammatical on par with Goldberg's (130b) since this sentence is grammatical in Norwegian. The interpretation is that young girls stole, as in kidnapped, children. The structural position of *barn* (children) tells us that it is the direct object of the verb *stjele*. In addition, the conceptual content of the words inserted in the construction influences our interpretation. *Stjele* evokes a concept that focuses on the things that are stolen. This is why (131d) never can be interpreted as "young girls stealing something *from* children". The concept evoked by *rane* seems to be compatible both with an entity denoting the stolen goods, cf. (131c), and with an entity denoting the malpractice of the stealing-activity, cf. (131a).⁵⁴ It is our knowledge of *penger* (money) and *barn* (children) that causes us to choose one interpretation over the other. We know that money cannot be interpreted as an entity

⁵³ A possible solution for Goldberg would be to maintain that verbs referring to the same concepts do not necessarily profile the same participant roles in different languages, but then the circularity in the model becomes even more obvious.

⁵⁴ The thematic role "malpractice" denotes the entity that is harmed by the event expressed by the verb.

denoting a malfactive, so in our "making sense"-module we conclude that money must be the patient of the stealing. In a small scale experiment, I asked 5 native Norwegians to identify the role that the nonsense word *wuzzisup* had in the two sentences in (132). They gave their response as a little narrative, or as a near-synonym of what they thought *wuzzisup* meant.

132

- a De slemme jentene ranet en wuzzisup.
"The bad girls robbed a wuzzisup."
- b De slemme jentene stjal en wuzzisup.
"The bad girls stole a wuzzisup."

All the participants suggested that the *wuzzisup* in (132a) was either a person or a shop. In contrast, the *wuzzisup* in (132b) was suggested to be an item that the bad girls took without permission. This indicates that if we do not know anything about the semantic content of the direct object, we are inclined to interpret the direct object following *ranet* as a malfactive, and the direct object following *stjale* as a patient. Still, there is nothing in the transitive construction (which is used in both (132a) and (132b)) or the verb *ranet* that prevents a different interpretation, if the meaning of the direct object is incompatible with a malfactive interpretation as in (131c).

3.3.5 Improvement in the theoretical design

The neo-constructional approach also offers explanations for the problems concerning the theoretical design in section 3.2.4. Two main questions were posed: (1) Why does the syntax module spend so much effort in duplicating the information already found in the lexicon? (2) Why are there no alternations between SVO and SOV in the same language if a unique argument structure tied to each verb is the source of the syntactic structure?

The answer to question (1) is that within the neo-constructional approach, there will be no duplication of the information found in the lexicon. Quite to the contrary, the lexicon is viewed as a simple linkage between sound and meaning with no additional information. This will be an improvement in the theoretical design, since no assumptions are duplicated beyond necessity but each module in the system has different tasks.

The answer to question (2) falls neatly out as a consequence of the postulation of the syntactic frames. According to the neo-constructional approach, the interpretation of the arguments is caused by a specific structural position. In Norwegian the direct object is posited as the complement of the verb projection. If structural position is the main source for argument interpretation, one should not expect to have different structural positions for the same argument. As already mentioned, this is exactly the pattern that languages display.

Languages with SVO do not allow for SOV because then the direct object would be associated with two different frame position. In the neo-constructional approach, the direct object is interpreted as the direct object due to its position in a particular argument structure frame. Hence, SVO and SOV variation within the same grammar are ruled out on theoretical basis.

3.3.6 Thematic roles in Ramchand's First Phase Syntax

In the beginning of this chapter, I gave a brief overview of constructionalism. There are several distinct theoretical approaches adhering to the constructional view, and I placed my work in the neo-constructional approach, building on the ideas found in Åfarli (2005). However, in view of the fact that the neo-constructional approach consists of different theories, the choice of Åfarli (2005) as a point of departure deserves some discussion. In this section, I will therefore present another suggestion from the neo-constructional framework developed by Ramchand (2006), and compare this suggestion to Åfarli (2005). As will become clear in the following discussion, the foundation for postulating argument structure constructions are rather different in these two proposals. Even though Ramchand (2006) is located in a constructional framework, she still admits that the lexical entries need to contain some information, and as we will see, Ramchand's proposal faces the same problems as the endo-skeletal approach. However, the fact that both proposals show similarities despite different argumentation only strengthens the basic assumption that they both share, namely that syntactic constructions are not a result of semantic-lexical information found in the lexicon, but instead have independent meaning.

Ramchand (2006) primarily investigates three issues in syntax, namely thematic roles, event structure and selection (ibid. p. 5). In order to do this, she introduces a level in syntax that she calls "first phase syntax", cf. (133).

133

"The central feature of "first phase syntax" is that it decomposes the information classically seen to reside within lexical items into a set of distinct categories with specific syntactic and semantic modes of combination" (Ramchand, 2006:8-9).

The lexical items that Ramchand (2006) decomposes are manifested by the verb in Western languages. Decomposition in the first phase syntax yields different results depending on whether the verb denotes a dynamic event or stative event. Dynamic events express action, movement or change, and are found in verbs like *push*, *melt*, *give* and *run*. Stative events express a state of affairs, and are found in verbs like *be*, *fear*, *know* and *like*. Ramchand (2006)

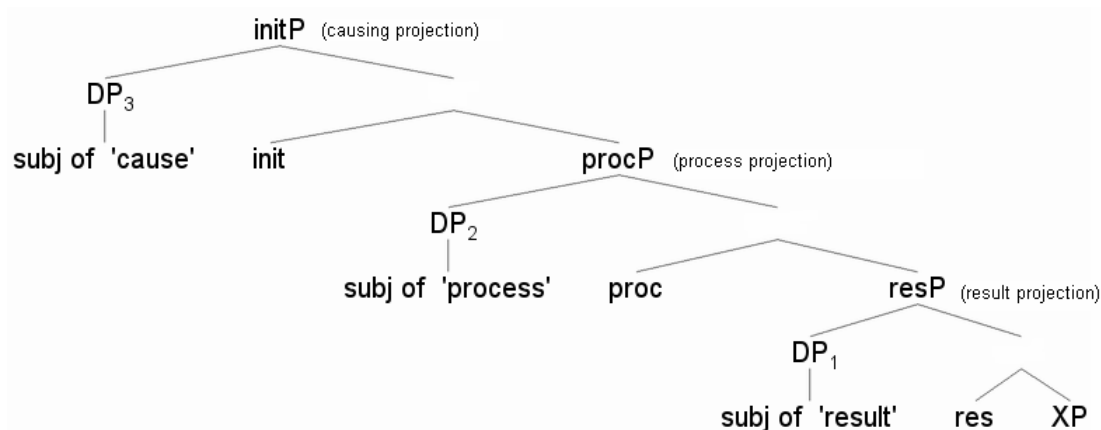
focuses on the dynamic group, and maintains that the decomposition of dynamic events results in three subevents at a maximum. In other words, the verb *push* is not *one* event, but can in fact be divided into three distinct events. The first subevent is a causing event, which is tied to an INITIATOR role. The second subevent is the transition event, which is tied to an UNDERGOER role. The third subevent is a result state, which is tied to a RESULTEE role. These subevents are specified in each verb. The causing event is labelled *init*, the transition event is labelled *proc*, and the result state is labelled *res*. In Ramchand (2006), a verb like *push* is specified as [init, proc] in the lexicon because "*it has lexical encyclopaedic content that identifies a process/transition as well as conditions of initiation*" (ibid. p. 53). (I will return to this proposal later in this chapter.) Ramchand (2006) suggests that the verbs denoting dynamic events contain all or some of the features *init*, *proc* or *res*. First phase syntax uses these features to build the correct syntactic structure, cf. (134).

134

"To make selection work, lexical items must carry a particular bundle of categorial label tags which allow particular first phase configurations to be built" (ibid. p. 51).

Following Ramchand (2006), a verb that contains all three features *init*, *proc* and *res* will be decomposed by first phase syntax into the structure illustrated in (135), (Ramchand's (1)).⁵⁵

135



The roles INITIATOR, UNDERGOER and RESULTEE are structurally placed in the specifier position of their respective functional projection. Ramchand assumes that all the heads present in first phase syntax require a filled specifier (ibid. p. 52).

⁵⁵ Ramchand (2006) does not use a label for the intermediate level in the maximal projection except in her proposal for the stative verbs, where the intermediate *init*-level is in fact labelled (ibid. p. 96). Tungseth (2006:17) labels the intermediate levels *init'*, *proc'* and *res'*. In the following, I will follow Tungseth's labelling for the intermediate level since the difference apparently is only a notational one.

The structure in (135) does not contain any reference to categories like VP or vP to stress the fact that: "*this system is actually a splitting up of what we normally think of as V*" (ibid. p. 32). Ramchand compares the process to Rizzi's "split-C"-hypothesis (Rizzi, 1997). She also notes that the *init* projection in many ways resembles the (little) v projection, presented in for instance by Chomsky (1995), in that it introduces the external argument and has a causative interpretation.

The subevent Process (procP) is found in all dynamic event structures. The argument placed in <spec, procP> will be interpreted as undergoing some kind of identifiable change or transition with respect to location, state or material extent (Ramchand, 2006:21). The causative subevent (initP), which corresponds to the causing projection in (135), manifests the causation of the verbal meaning. The argument placed in <spec, initP> will be interpreted as a causer or initiator of the event. The result subevent (resP) corresponds to the result projection in (135), and arguments placed in <spec, resP> will be understood as attainers of a final state (ibid. p. 25). The result arguments are distinguishable from undergoers of change, but often a single argument can be both an UNDERGOER and RESULTEE because there is no incompatibility between the semantic content found in the specifier positions (ibid. p. 26). Ramchand does not assume a θ -criterion, but maintains that a single argument can be in more than one specifier position since there is no incompatibility between the semantics of the thematic roles associated with the various projections.

On the basis of the behaviour of creation/consumption verbs, Ramchand also introduces an argument that she labels PATH. The UNDERGOER argument travels some abstract path of change, cf. (136a), while the PATH argument defines the path of change, cf. (136b).

136

- a John pushed [a chart_{UNDERGOER}].
- b John ate [a cake_{PATH}].

PATH is defined as a subgroup of RHEMATIC OBJECTS or RHEMES. RHEMES are not involved in any process or change, but rather describe the state of affairs (ibid p 27). The PATH argument is structurally placed in the <comp, procP>, while the UNDERGOER argument is structurally placed in the <spec, procP>. I will discuss the difference between PATH and UNDERGOER later.

Based on the structure presented in (135), Ramchand derives different verb classes. The verb classes are divided into groups based on their "category label tag" (cf. 134), i.e. *init*, *proc* or *res*. I will now present how Ramchand uses her classification of verbs to account for

the thematic roles in a syntactic structure. The co-indexing indicates that the same argument is inserted in several specifier positions in the structure.

137

- a *John pushed the cart.*
 - i) Lexical entry for **push**: [init, proc]
 - ii) Thematic roles: INITIATOR, UNDERGOER

The transitive verb *push* identifies an *initP* and a *procP*, since it is labelled as [init, proc] in the lexical entry. The thematic roles associated with *push* are thus an INITIATOR of the pushing, and an UNDERGOER of the pushing. In (137a), *John* is placed in <spec, *initP*>. This argument is therefore interpreted as the INITIATOR. *The cart* is placed in <spec, *procP*> and therefore interpreted as an UNDERGOER. The two arguments in *push* are not co-indexed, hence different arguments must fill these specifier positions.⁵⁶ With a transitive verb like *eat*, the event decomposition yields a different result, cf. (138a).

138

- a *John ate the apple.*
 - i) Lexical entry for **eat**: [init_i, proc_i]
 - ii) Thematic roles: INITIATOR, PATH

In the transitive verb *eat*, the labels *init* and *proc* are co-indexed, which means that *John* is inserted both as the INITIATOR and the UNDERGOER, while *the apple* is defined as a PATH (subclass of RHEME). RHEMES are structurally placed in <comp, *procP*>, which means that this argument is not in a predicational relationship with the subevent (here: *proc*) since it is only the specifier positions that have this predicational status with the sub-events. The rhematic material (here: the *apple*) only further describes the event already introduced by the head of the sub-event. The next group decomposes into all three subevents, and is exemplified by *to throw* in (139a).

139

- a *John threw the stick.*
 - i) Lexical entry for **throw**: [init, proc_i, res_i]
 - ii) Thematic roles: INITIATOR, UNDERGOER_i, RESULTEE_i

The initiation-process-result verb *to throw* identifies all parts of a dynamic event, and therefore this verb licenses all three (*init*, *proc* and *res*) projections. The item inserted in

⁵⁶ Ramchand (2006) does not discuss examples like *John pushed himself* where intuitively the initiator *John* is co-indexed with the anaphor *himself*. I will not make any proposals as to how this can be included in Ramchand's system. I only note that the lexical entry [init, proc] for the verb *push* perhaps does not capture all the contexts in which this verb can occur.

<spec, initP> will be the initiator of the throwing-event. This position is filled by *John* in (139a). The item undergoing the process and the result of the process is the same. In (139a), this position is filled by *the stick*, and this item is interpreted both as UNDERGOER and RESULTEE. As these examples illustrate, the decomposition of dynamic events into *init*, *proc* and *res* dictates the thematic roles with which the verb can occur. In some cases, the category labels are co-indexed, which indicates that one argument can have more than one role.

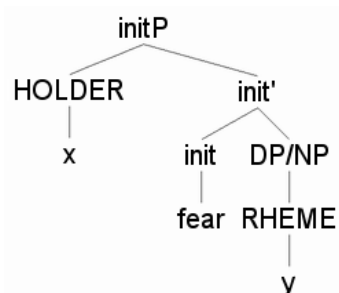
In addition to the dynamic events, Ramchand (2006) maintains that: "*stative verbs arise when an init head selects rhematic material instead of a 'process' complement*" (ibid. p. 95). (140) illustrates the essential characteristics of a stative verb.

140

- a John fears spiders.
 - i) Lexical entry for **fear**: [init]
 - ii) Thematic roles: HOLDER, RHEME

This decomposition will yield a syntactic structure as illustrated in (141) (Ramchand's (32))

141



Stative constructions do not have a *proc* projection, since this criterion only applies to dynamic structures. The thematic role found in <spec, initP> is labelled as a HOLDER, which is at odds with the INITIATOR role associated with the rest of the *init* projections. In order to remedy this difference in thematic roles found with *init* projections, Ramchand (2006) vaguely suggests that it is the properties of the subject that are the cause for the stative eventuality to arise. In other word, it is John's personality in (140a that *causes* him to be afraid of spiders. By using the *init* projection with stative verbs, Ramchand is forced to find some causative features in the sentence because this projection by definition introduces a causative event. I find Ramchand's explanation of a HOLDER role in <spec, initP> rather unsatisfactory, and I believe that a Predication projection as suggested in section 3.3.1 can better account for this phenomenon. The PrP does not force any causative feature on the predicational subject, and by using a predication projection in (140a), the predicate *fear*

spiders is ascribed to the subject *John* without having to postulate that it is John that causes this fear of spiders to occur.

The argument *spiders* in (140a) is placed in <comp, initP>, and defined as a RHEME which "indicate[s] that they are not subjects of any subevent, but part of the description of the predicate" (Ramchand, 2006:27). In other words, *spiders* is said to have the same thematic role as *the apple* in (138a), here repeated as (142a).

142

- a John ate the apple.

Ramchand operates with several categories of RHEMES: PATH (ibid. p. 28) RHEME of process, RHEME of result (ibid. p. 29) and RHEME of possession (ibid. p. 90). None of these categories seems automatically to account for the RHEME *spiders* in (140a), which indicates that yet another sub-category of RHEMES needs to be postulated.

Adhering to the constructionalist view, Ramchand (2006) maintains that the semantics of event participants is read directly off the structure (ibid. p. 35). Since RHEMES are defined as not being event participants, their semantics cannot in this system be directly read off the structure. Their interpretation must come into existence in a different manner. Ramchand suggests that "the complement position of a process head is associated with the semantic relation of structural homomorphism", and that there is some unification between the topological properties of the event and the rhematic material (ibid. p. 40). This implies that we need two different strategies for deciding the semantics for *the apple* and *the chart* in (143).

143

- a John ate the apple.
- b John pushed the chart.

In (142a), we find the semantics of *the apple* based on some sort of unification of the entity apple and the eating-event, and in (143b) we find the semantics of *the chart* by reading it directly off the structure (*the chart* is placed in <spec, procP>). Even though it cannot be dismissed on theoretical grounds, it strikes me as rather counter-intuitive that the semantics of thematic roles as found in (143) are determined by using two completely distinct operations.

I will now compare the thematic roles as defined in Ramchand (2006) with the suggestion made by Áfarli (2005).

In Ramchand's (2006) proposal, there are 7 thematic participants made available by the system: INITIATOR, UNDERGOER, RESULTEE, PATH, RESULT-RHEME, PATHPP (p. 98). In addition, there is a thematic role associated with stative verbs called HOLDER. The PATH is a

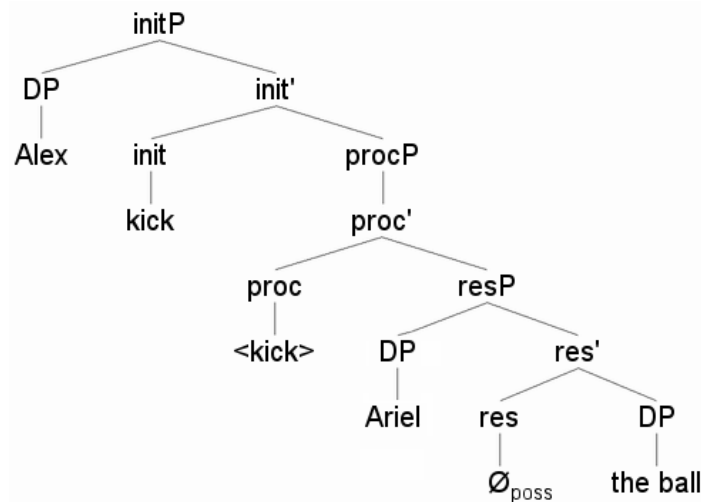
sub-class of RHEME of process, expressing manner or path (p. 86), and RESULT-RHEME is also referred to as RHEME of result, expressing the final state or location. The PATHPP is also referred to as RHEME of possession (p. 90). In other words, PATH, RESULT-RHEME and PATHPP are all different types of RHEME. Hence, Ramchand's system consists of 5 basic thematic participants. But the system also allows for composite thematic relations, hence many more than these 5 basic thematic relations can be found (ibid. p. 97). In Åfarli (2005), the basic thematic roles are: agent, patient and recipient. In addition, he refers to a resultative construction, but without giving the DPs found in this position a particular label. The similarity with Ramchand's RESULTEE is, however, apparent.

Arguments with an UNDERGOER role are in Ramchand positioned in <spec, procP>. The proc-projection is the only obligatory projection in all dynamic structures, and hence the UNDERGOER role is always present in dynamic structures (Ramchand, 2006:32). Åfarli defines the <comp, VP> as the structural position reserved for direct objects, and the position typically has a patient role. Even though the structures reserve different positions for this thematic role, both proposals acknowledge that the constructions reserve a particular place for the patient/UNDERGOER argument, and they both associate this position with the domain of the verb phrase.

In Åfarli, the entity placed in <spec, PrP> will automatically be the subject of the sentence, and the entity will get a compositionally defined role. Ramchand argues that <spec, initP> is only present when the event structure denotes a causation. Some verbs like *to melt* and *to break* do not have an *init* projection. The difference between Åfarli (2005) and Ramchand (2006) originates from the status of the various functional projections. The motivation of the Pr-projection is that it transforms properties into a predicate, and it necessarily needs to be present in all sentences. In contrast, the *initP* is postulated to occur only when a causer or initiator is present in the sentence. Despite these differences, the subject position is in both proposals associated with a particular functional projection.

As already mentioned, the notion of RESULTEE is found in both proposals. In Åfarli, the projection hosting a thematic role associated with a result is only found in constructions where this thematic role is phonetically expressed by a distinct argument as in (110a) and (111a). In Ramchand's proposal, the result projection with the RESULTEE argument is also present with verbs like *to throw*, cf. (139a), but RESULTEE is then always co-indexed with the UNDERGOER.

The thematic role RESULTEE is in Ramchand (2006) also associated with the indirect object, while Áfarli (2005) associates the indirect object with a recipient. Ramchand's (2006) syntactic representation of a double object-construction is given in (144) (Ramchand's (65)).



This will yield a sentence like (145).

145

- a Alex kicked Ariel the ball
- b Alex[INITIATOR] kicked Ariel[RESULTEE] the ball[RHEME OF POSSESSION]

RESULTEEs are by Ramchand (2006) described as not just undergoing change, but: "*also end up in a final state as specified by the verb itself*" (ibid. p. 25). Since the null *Res* head in (144) contains a *poss*-feature, the RESULTEE role of *Ariel* is transformed into a possessor of the ball. According to Ramchand (2006) "*to physically or notionally possess 'the ball' [...] seems to be a genuine 'result'*" (ibid. p 90). The definition of *Ariel* as some sort of RESULTEE is necessary in order to justify the placement of this argument in <spec, resP>. However, it is clear that the RESULTEE in the double object construction deviates from other RESULTEE arguments, such as *the stick* in (146)

146

- a *The stick broke.*
 - i) Lexical entry for **break**: [proc_i, res_i]
 - ii) Thematic roles: UNDERGOER_i, RESULTEE_i

The fact that *the ball* is defined as a RHEME (of possession) in the double object-construction necessarily results in different thematic roles for *the ball* in (145a) and *the ball* in (147a).

147

- a Axel threw the ball.

According to (139), *the ball* in (147a) would be an UNDERGOER/RESULTEE. I find it peculiar that the direct object in the double object construction is classified as a RHEME, and is hence not a part of any subevent, while *the ball* in (147a) clearly is. I think that Ramchand's (2006) account of the double object construction raises some problems. For instance, I cannot agree to the difference in thematic role of *the ball* in (145a) and (147a). It also strikes me as counter-intuitive that the indirect object in (145b) should be associated with a RESULTEE on par with *the stick* in the sentence *John threw the stick*. She also departs from her own principle that all specifier positions need to be filled, and leaves the <spec, procP> open.

To summarize so far, both proposals seem to agree on three of the arguments found in the constructions. These three thematic roles are patient/UNDERGOER, agent/INITIATOR and result state/RESULTEE. While Åfarli (2005) postulates a particular role for the indirect object, Ramchand maintains that it is a RESULTEE. But despite this difference, both Åfarli's (2005) and Ramchand's (2006) proposals place the indirect object higher in the structure than the direct object, and both reserve a particular construction type to account for the IO-DO sentences.

I will now return to the issue of how the verbs are decomposed into the correct subevents, as presented in (134), and how this leads to a relationship between the syntax and the lexicon that resembles the proposal put forth in the endo-skeletal approach. The postulation of information in the lexical entries of the various verbs raises important questions concerning the model as a whole. According to Ramchand (2006), the verbs have lexical specifications that allow them to identify various projections made available by the maximal one in (135). These lexical specifications are given in (138a) and (139a), as examples. The subcategorization found in each verb, for example the notation [init, proc_i, res_i] associated with *to throw*, makes the lexical information ascribed to the verb essential in explaining the fusion between the verb and the construction. Ramchand emphasizes the need for some information in the lexicon because:

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"[...] in the absence of any syntactic information at all, the lexicon reduces to a nomenclature whose cooption by the syntactic combinatoric system is reduced to an accident, or at best a mystery" (Ramchand, 2006:7).

Contrary to this view, Borer (2005a), cf. (129), advocates a view that sees the syntactic system as being independent of the "making sense"-module, and many phenomena that are

usually described as syntactic are perhaps ruled out for different reasons, as already discussed in section 3.3.3.

I think that if one follows the idea proposed in Ramchand with respect to the information in the lexical entries, one would encounter many of the same problems that have already been discussed in relation to the endo-skeletal approach. For instance, the same syntactic information is found twice; first in the lexical entry as *throw*: [init, proc_i, res_i], and then in the construction as shown in (135). A legitimate question to ask would be how the verbs get tagged with the various features. As far as I can see, the difference between the θ -role specification in generative syntax and the lexical information in Ramchand is only a notational one. The same information is stated both in the lexical entry and in the construction.

Additionally, the fusion of an appropriate verb with the correct construction relies on a circular explanation. The verb *throw* can be fused with the Initiation-process-result transitive structure because the verb's decomposition leads to three subevents listed as [init,proc_i, res_i]. But how do we know that *throw* consists of these three subevents? Because it can be fused with the Initiation-process-result transitive structure.

One of the main tenets in the neo-constructional approach is to establish the construction as a meaningful unit in its own right, and the lexicon is therefore no longer viewed as a pool of lexical-semantic information that is the source of grammatical structure. For instance, Ramchand (2006) herself maintains that "*the Lexicon is eliminated as a module*" (ibid. p. 5) in her approach. She also talks about the "*linguistically specific combinatoric system*" (ibid. p. 7) and that she sees "*the lexical item as the locus of cross-modular information*" (ibid. p. 7). Consequently, she argues for a modularity of mind in which separate modules operate according to their own particular properties. For instance, our encyclopaedic knowledge of words exists independently of, and has no influence over, the combinatorial syntactic module. Still, Ramchand's decomposition of the event structure itself, which is said to be the origin of the various syntactic structures, is based on semantics. The first phase syntax triggers three universal semantic rules resulting in a causing projection (initP), a process projection (procP) and a result projection (resP). Briefly, verbs can be decomposed as containing all or some of these projections. Process, result and causation are notions referring to semantics, and it is upon these that Ramchand builds her syntactic constructions. As a result, semantics becomes the origin of syntax. Instead of using words as the origin of syntactic structure, as is done in the endo-skeletal approach, she uses semantic primitives. A verb that is decomposed in first phase syntax as containing a result process leads to one syntactic structure, while a causative process leads to another. Ramchand's semantic basis for

syntactic structure forces her to conclude that the objects in (149), for example, will i) have different thematic roles and ii) have different structural positions. The reason is that *en foxtrot* cannot be said to be an UNDERGOER of some event.

149

- a Foreldrene danset en foxtrot.
"The parents danced a foxtrot."
- b Foreldrene kastet en pizza.
"The parents threw a pizza."

In (149a), *foxtrot* would be positioned in <comp, procP> and defined as a rhematic object/RHEME. In (149b), *pizza* would be positioned in <spec, procP> and defined as an UNDERGOER. *Foreldrene* in both sentences would have the thematic role INITIATOR, and be placed in <spec, initP>. The postulation of different structural places for *foxtrot* and *pizza* is only based on semantic criteria. *Foxtrot* does not fit into Ramchand's definition as UNDERGOER since the *foxtrot* is not exposed to any change in location, state or material extent. However, the objects show no differences with respect to syntactic behaviour. They can both be subjects in a passive construction, cf. (150a-b). Both can undergo clefting, cf. (150c-d). And the objects can be fronted together with the verb along with insertion of the proverb *gjøre* (do), cf. (150e-f).

150

- a En foxtrot ble danset (av foreldrene).
"A foxtrot was danced (by the parents)."
- b En pizza ble spist (av foreldrene).
"A pizza was eaten (by the parents)"
- c Det foreldrene danset var en foxtrot.
IT PARENTS-THE DANCED WAS A FOXTROT
"What the parents danced was a foxtrot."
- d Det foreldrene spiste var en pizza.
IT PARENTS-THE ATE WAS A PIZZA
"What the parents ate was a pizza."
- e Spiste pizza var det foreldrene gjorde.
ATE PIZZA WAS IT PARENTS-THE DID
"Eating pizza was what the parents did."
- f Danset foxtrot var det foreldrene gjorde.
DANCED FOXTROT WAS IT PARENTS-THE DID
"Dancing foxtrot was what the parents did."

Postulating different syntactic structures for arguments should at least be followed by some difference in syntactic behaviour, but this is not the case for RHEME and UNDERGOER. I will therefore assume that there is no structural difference between these two thematic roles, and that the variation in semantics is a result of our encyclopaedic knowledge of the words present

in the structure together with the thematic guidelines inherently found in the construction itself.

In this comparison of Áfarli's (2005) and Ramchand's (2006) neo-constructionalist approaches to grammar, I conclude that the proposal made by Ramchand raises several problems. First, the postulation of information in the lexical entries, i.e. that verbs are marked for *init*, *proc* or *res*, or a combination of these, encounters the same problem as θ -role information associated with the verb. The only way information about the verb can be found is by looking at the structure in which the particular verb occurs. But then the phenomenon (syntactic realization) and the alleged cause (lexical information in the verb) explicate each other. I also questioned the introduction of the first phase syntax as the basis for syntactic structure. Even though the lexicon is delimited in Ramchand's proposal, the first phase syntax introduces a new origin for the syntax, namely semantic primitives. Consequently, syntax is a result of semantics. This solution is of course valid. However, the theoretical consequence is that the syntax no longer can be regarded as an autonomous module, but dictated by semantic processes. These issues relate to how one thinks that the mind is organized architecturally, and how one thinks that the mind should be studied, which is an ongoing debate in cognitive science today.

Appelbaum (1998) reviews the debate on whether the mind is organized into several modules, each responsible for different tasks, or whether more general cognitive processes handle the wide variety of cognitive activities. Appelbaum (1998) maintains that even though some variant of modularity thesis is the prominent view in most areas of cognitive science, there is still some controversy over the exact design of the modules. What are the necessary criteria for something to be called a module? There are also questions of whether, or how, the various modules interact. To discuss these issues at length here is not possible, but since I criticize Ramchand for using semantics as foundation for syntactic processes, I will present the view put forth in Fodor (1983). A module in Fodor's sense has several characteristics that separate them from other cognitive mechanisms, but I will focus on the assertion that a module is informationally encapsulated. Informationally encapsulated means that each module can only use information within the module. Thus, it cannot make use of information from other modules or encyclopaedic knowledge. Fodor (1983) argues that modules are suitable for scientific inquiries because they are informationally encapsulated, while other cognitive processes, which can exploit a vast range of information sources, cannot be formalized in a theory, simply because the theory would be impossible to constrain. As already noted, Ramchand (2006) maintains that a verb like *push* is specified as [init, proc]

because *"it has lexical encyclopaedic content that identifies a process/transition as well as conditions of initiation"* (ibid. p. 53). She also notes that information about co-indexing, which indicates that the same nominal is found in different specifier positions, could stem from real world knowledge. Since world knowledge consists of an array of personal experiences, facts and beliefs, it is hard to imagine that this could be the origin of a strict uniform syntactic structure.

Returning to the neo-constructional approach as presented in Áfarli (2005), I find that he does not discuss how differences with respect to thematic content can be accounted for in his argument structure frames. If the thematic role does not originate from the verb (as suggested by Ramchand), but from the frame itself, one might expect that a particular slot always gives the same thematic content to the inserted argument. This hypothesis is quickly refuted by a look at the data. It is not the case that a direct object always has a patient role, cf. (103), nor does the subject always have an agent role, cf. (97). One possible solution is to maintain that thematic roles are not primitives themselves, but construed from a set of primitives. For instance, Ramchand proposes a possibility of combinatorial features by letting arguments in the first phase syntax be associated with several subevents in the structure. For example, a subject can be both INITIATOR and UNDERGOER. In this way, the argument found in a particular slot in the argument structure frame does not necessarily display the exact same thematic properties. I will now present a proposal made by Dowty (1991) who maintains that syntactic arguments are in fact construed from a collection of various proto-properties. I will also present Kako (2006) who takes Dowty (1991) as his point of departure in a series of experiments. My aim in the following section is to investigate whether the assumption made in Dowty (1991) could be incorporated into Áfarli's argument structure frames.

3.3.7 The Proto-role Hypothesis

The Proto-role hypothesis was originally presented in Dowty (1991). He investigates which verbal entailments are relevant in the argument selection. (Argument selection is the rules that govern the possible syntactic configuration that a verb's argument(s) can occur in.) Dowty (1991) criticizes the view presented in GB-theory, as one example, in which thematic roles are perceived as semantic primitives. The endo-skeletal view presupposes that the same argument should not be associated with two types of roles, and that the thematic roles should not be difficult to distinguish. However, the literature shows that this is actually not the case. There is a notable lack of consensus about the actual number and types of thematic roles that

exist, and the exact location of the boundary between the various thematic roles is often also hard to draw. In addition, the assumptions about thematic roles in GB-theory make it impossible on theoretical grounds to distinguish between the arguments in (151a).

151

- a The dog resembles the owner.

The question is what qualifies *the dog* to be placed in the subject position, and *the owner* in the direct object position. There is no motivation for assigning the two arguments in (151a) distinct thematic roles. Dowty argues for a view of thematic roles that does not see them as discrete categories, but rather a collection of properties gathered into two proto-roles; the proto-agent role and the proto-patient role. According to Dowty, these are the only two cluster concepts that we need in order to account for argument selection. The properties associated with the two cluster concepts are given in (152) (Dowty's (27) and (28)).

152

- a Contributing properties for the agent-proto role:
 - i Volitional involvement in the event or state
 - ii Sentience (and/or perception)
 - iii Causing an event or change of state in another participant
 - iv Movement (relative to other participant)
 - (v. Exists independently of the event named by the verb)
- b Contributing properties for the patient-proto role:
 - i Undergoes change of state
 - ii Incremental theme
 - iii Causally effected by other participant
 - iv Stationary relative to movement of other participant
 - (v. Does not exist independently of the event, or not at all)

I think that the majority of these properties are rather self-explanatory, but some comments are required. The parentheses around (v.) are Dowty's because he is "[...] *not sure to what extent they should be attributed to the discourse associations of subjecthood mentioned earlier, rather than proto-role definition*" (ibid. p. 572). Second, the term incremental theme needs a closer explication. The motivation for an incremental theme is found in the relation between a telic predicate and their NP arguments, where the aspect of the telic predicate can be deduced by observing the NP argument. The example used by Dowty is "*mow the lawn*", where one can conclude something about the aspect of the mowing-event by observing the direct object; *the lawn*. One can conclude if the event has not yet begun, is partly done or is finished by observing whether the all grass on the lawn is long, some of it is short or all of it is short. Accordingly, the state of the incremental theme tells us something about the state of

the event. Even though Dowty argues strongly for incremental theme as a distinct proto-role-property, the notion has been discussed.⁵⁷

Kako (2006) investigates Dowty's claim that the thematic roles agent and patient should be decomposed into the more primitive features in (152). In addition, he examines whether these properties can be inferred directly from the grammatical roles subject and object, i.e. the structural position of the noun phrases. He performed several experiments and the results support the psychological validity of proto-role properties as suggested in Dowty (1991). Kako (2006) also concludes that: "[...] speakers can make inferences about these properties from grammatical role alone, even in the absence of a real verb that would otherwise assign those properties to the noun phrases in the sentence" (ibid. p. 34).

In the first experiment, Kako (2006) randomly chose twelve verbs that were presented in transitive sentences, and the participants in the experiment were asked questions about the nonsense nouns in the sentence. The questions were based on the proto-role properties presented in (152). If the stimulus was *The rom removed the dax*, the question based on the property in (1a.iv) was "*How likely is it that the rom moved?*"

In the second experiment, Kako (2006) chose 6 different verb types according to their semantics: Change of possession, Creation and Transformation, Exertion of Force, Imagine Creation, Motion and Perception.⁵⁸ The experiment was conducted in the same manner as the first one.

In the third experiment, the participants were confronted with nonsense main verbs, for instance *The grack mecked the zarg* (ibid. p. 16). The participants were then asked to answer questions analogous to the ones in the previous experiments. Based on these three experiments, Kako concluded that:

153

"Subjects are seen as more Agent-like than objects, and objects are seen as more Patient-like than subjects. Crucially, these patterns hold even when the verb is nonsense – that is, when assignment of thematic role properties cannot be made by the verb. These results, then, confirm the predication that speakers can make inferences about the semantic properties of subjects and objects from grammatical role information alone" (ibid. p. 16-17).

In addition, Kako conducted an experiment where he used exclusively intransitive verbs (*appear, arrive, cry, drift, erupt, fall, glide* and *laugh*) in both an intransitive sentence and a transitive one. The results from putting an intransitive verb in a transitive sentence supports

⁵⁷ Incrementality can for instance sometimes be true of subjects as well: "*Water gradually filled the boat*" (Kako, 2006:7).

⁵⁸ This classification of verbs according to their semantic content is based upon Levin (1993).

the conclusions from the other experiments, namely that the proto-agent properties and proto-patient properties as suggested by Dowty (1991) have psychological validity, and that native speakers of a language deduce these properties from the structural position of the subject and object. In addition, Kako found that the semantics of the exclusively intransitive verb was altered in the transitive sentence, which suggests that the participants tried to unite the verb's semantics with the inherent semantics of the construction.

If we compare Ramchand's (2006) to the findings in Kako (2006) we find an interesting similarity. In Ramchand (2006), verbs like *run*, *enter*, *jump* and *dance* all have co-indexing between the initiator and the undergoer role which, indicates that the subject is associated with two roles. In Kako (2006), the subjects in the group of motion verbs (*enter*, *follow*) show the least prototypical agent properties. Both suggestions indicate essentially the same finding: the thematic role associated with a grammatical subject found with motion verbs does not have a prototypical agent role, nor uniquely an INITIATOR role.

Kako (2006) also underscores the fact that the inference about the subject and the object in a nonsense verb corresponds closely with the inference about the subject and object in a force verb (*push*, *pull*). Kako characterises the force verbs as prototypical because the two arguments with these verbs differ considerably in their prominence (ibid. p. 38). This means that the subject occurring with force verbs exhibits practically every proto-agent property listed in (152a), while the direct object with a force verb has all the proto-patient properties listed in (152b).

The findings in Kako (2006) support the view put forth in Áfarli (2005) in that the structure (the argument slots in the frame) guides the thematic role we assign to the particular argument. The proto-role hypothesis also captures Ramchand's (2006) suggestion, namely that a grammatical object or subject can be associated with more than one thematic role. In her proposal, an argument can be found both in <spec, initP>, which is associated with an INITIATOR role, and in <spec, procP>, which is associated with an UNDERGOER role. Both Dowty (1991) and Ramchand (2006) indicate that the thematic content of arguments is combinatorial in its nature. I will elaborate on the suggestion made in Dowty (1991) further in 3.3.2 in relation to the argument structure frames proposed by Áfarli (2005). The important point here is that several theories have underscored the understanding of thematic roles not as a fixed entity, but as something that arises both from the structural position along with the knowledge of the words in the sentence.

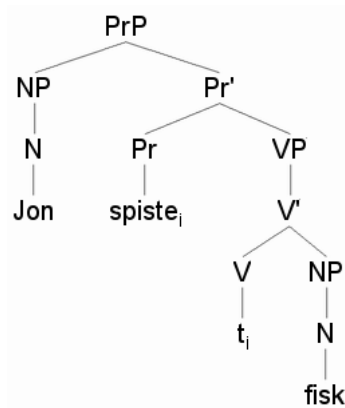
3.4 Functional projections

The frames presented in the previous section constitute the structural basis for argument structure realization in Norwegian. In other words, they offer an explanation for both the various numbers of arguments found in Norwegian sentences, and their structural position. The number of realized arguments in the sentence is accounted for by the slots available in the various frames. An intransitive frame is associated with one argument, the transitive frame with two, etc. The thematic properties are associated with the various structural positions, and the interpretation of arguments arises as a combination of the structural position and the lexical items found in the argument structure frame. The argument structure frames do not pertain to the sentence type in which the particular argument structure realization is found. That is, a transitive frame is not the same as a declarative sentence, or any other sentence type. Rather, the frames have the potential to become various sentences types; declaratives, interrogatives, imperatives. The question is: how can we relate the argument structure frames to the word order found in (154b)?

154

- a Jon spiste fisk
JON ATE FISH
"Jon ate fish."
- b Spiste Jon fisk?
ATE JON FISH
"Did Jon eat fish?"

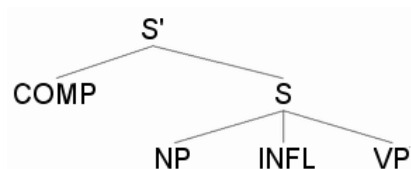
Both sentences contain the words *Jon* (NP), *spiste* (verb), and *fisk* (NP), but their word order differs. Even though the propositional content is questioned in (154b): *"Is it true that [Jon ate fish]?"* the predicational relation between the arguments in the sentence corresponds to the one found in the declarative sentence *Jon spiste fisk* (Jon ate fish). In (154b), Jon is still the entity that is ascribed the property of eating fish, and not vice versa. It is therefore reasonable to analyse (154b) in a transitive frame. *Jon* would be inserted in <spec, PrP>, and this constituent would be the subject of the sentence. The verb is inserted in V and moved to Pr, while *fisk* is positioned in <comp, VP> as the direct object, cf. (155).



The obvious problem is how the construction in (155) can account for (154b), when there is no structural position for the verb outside the PrP. I will follow a well-established procedure in generative grammar, and assume that there is a functional domain outside the sentences' predicate structure. In other words, the argument structure constructions presented in the previous chapter are augmented with a layer of functional projections (FPs). The questions that naturally arise are, how do we motivate these functional projections, and what is their nature? To answer these questions I will give a brief historical overview to present various suggestions concerning the projections found in this domain of the sentence.

3.4.1 Overview of the I and C-domain

By dividing the lexical words from their grammatical features, Chomsky (1957) laid the grounds for postulating projections containing only the latter. This was further developed in Chomsky (1981), following Bresnan (1970), which suggested that clause S' really consists of a complementizer COMP and a propositional component S. The S was in turn analysed as S->NP-INFL-VP.⁵⁹ The assumptions made in Chomsky (1981) yielded a functional structure as illustrated in (156).



The COMP and the INFL projections were not results of lexical insertions, since they could host various constituents, and they existed independently of the lexical items in the sentence.

⁵⁹ This phrase structure rule did not follow the endocentric idea in the X'-scheme. To remedy this exception, the IP was taken to be the head of the sentence, and the category label S was removed from the scheme.

At this point, the X'-scheme was taken to apply only to the lexical categories, and COMP/INFL were therefore not considered maximal projections. COMP could for instance host *wh*-words, *that* or *for*. These lexical words were assumed to be the phonetic realization of features found in the COMP head. For instance, if the feature [+WH] was present in the projection, a *wh*-word would be placed there. Similarly, if a [-WH] feature was present, the complementizer *that* would occupy the C projection (Chomsky, 1981:23). Examples are given in (157).

157

- a Marion knows_{CP}[that John ate the fish.]
- b Marion knows_{CP}[who ate the fish.]

Originally, the motivation for the COMP was the existence of complementizers in subordinated sentences (hence the name Complementizer Phrase). Given that *naboene*_{NP} (the neighbours) in (158) is inserted in <spec, IP>, and *heiste*_V (hoisted) is inserted in I⁰, the complementizer *at* (that) must be placed outside IP.⁶⁰

158

- a Kona sa [at naboene heiste flagget].
THE WOMAN SAID [_{CP}[_CTHAT [_{IP}NEIGHBOURS-THE [_IHOISTED_[PRET] FLAG-THE]]]]
"The woman said that the neighbours hoisted the flag."

The INFL projection (IP) was suggested to contain the inflectional elements [+Tense] yielding finite sentences, or [-Tense] which yields infinitival sentences. Chomsky (1981) also maintained that:

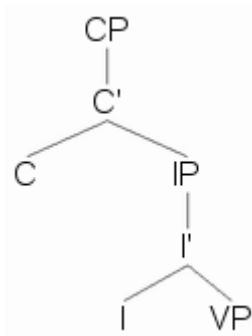
159

"If finite, it will, furthermore have the features person, gender and number; call this complex AGR ("agreement")" (ibid. p. 52).

In Chomsky (1986), the X'-scheme was transferred to the functional categories as well, and the functional structure took the form in (160).

⁶⁰ Chomsky (1986) placed the subject in <spec, IP>, but later the subject was believed to be structurally placed in <spec, VP>. The latter suggestion is known as the "VP-internal subject hypothesis", see for example Radford (1997), Haegeman and Guéron (1999).

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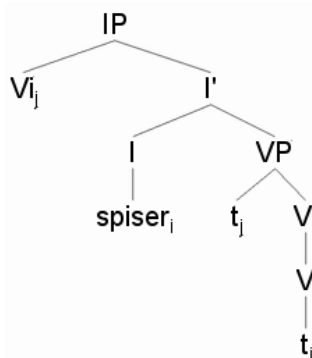
One of the main arguments for postulating an IP containing tense features is that a sentence containing several verbs only one verb in the sequence is tense marked, cf. (161b). If the tense feature was generally found in the V projection, then we would expect every verb to be marked for tense, cf. (161c).⁶¹

161

- a Vi spiser.
WE EAT_[PRES]
- b Vi har spist.
WE HAVE_[PRES] EAT_[PST-PRT]
- c *Vi har spiser.
WE HAVE_[PRES] EAT_[PRES]

The Tense feature in INFL forces the verb to move to I. The INFL head only can host one lexical head, and the sentence in (161c) is automatically ruled out. If the verb must move to I in order to get Tense, the subject *vi* in (161a) must necessarily move to <spec, IP> to get the right word order. A preliminary analysis of (161a) is illustrated in (162).

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⁶¹ Another alternative would be to use the possibility of [+Tense] and [-Tense], and maintain that finite verbs are found in V projections containing [+Tense], while infinite verbs are found in V projections containing [-Tense]. This solution would clearly result in a circular explanation because the only evidence for the [+Tense] would be to observe that the verb in question is finite, and vice versa. The observation and the explanation would then just explicate each other.

This obligatory movement of the subject to <spec, IP> is, in GB theory, triggered by Case features. If IP contains [+Tense], this projection assigns the abstract nominative case, which in turn forces the subject to be phonetically realized, as in (161a). If the IP, on the other hand, contains the feature [-Tense], no nominative Case can be assigned and the subject cannot be phonetically realized with infinitives or imperatives, for example, cf. (163a). This mechanism also can account for the fact that (163b) is ungrammatical since [-Tense] rules out phonetically realized subjects in imperatives.

163

- a Kjøp lodd!
"Buy lottery ticket!"
- b *Jon kjøp lodd!⁶²
"Jon buy lottery ticket!"

The next observation that supports the postulation of an INFL projection is that the inflected verb is always the first one in a sequence of several verbs. The fact that only the first verb in a sequence of verbs can move to I is accounted for by the Head Movement Constraint (HMC). This constraint was originally formulated in Travis (1984): *An X⁰ may only move into the Y⁰ which properly governs it* (Travis, 1984:131). In practice, the HMC limits the distance that a head can be moved by disallowing intervening governing heads. HMC prohibits a verb moving past another verb to I, cf. (164a-b).

164

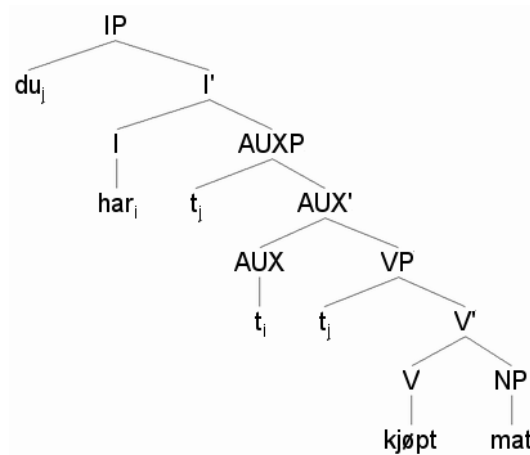
- a Har du kjøpt mat?
HAVE_[PRES] YOU BOUGHT_[PAST-PARTICLE] FOOD?
"Did you buy food?"
- b *Kjøper du ha mat?
BUY_[PRES] YOU HAD_[PAST-PARTICLE] FOOD?
"Buy you had food?"

(164b) is ungrammatical because *kjøper* has moved past *ha* on its way to I, while (164a) is grammatical since *ha* is the first verb in the verb sequence, and it does not cross an intervening head on its way to I.

The sentence in (164a) can also be used to support the existence of projection outside the IP as well. If the finite verb obligatorily moves to I and the subject *du* obligatorily moves to <spec, IP>, there is no position for the finite verb *har* to the left of the subject in (164a). If IP is the left outermost projection, the derivation ends up as shown in (165).

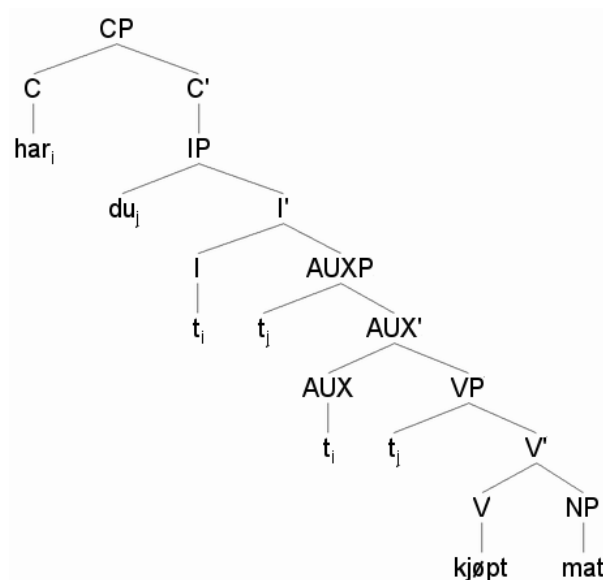
⁶² If the NP *Jon* is interpreted as a vocative, where NP *Jon* is used for attracting the attention of the person called *Jon*, this sentence will be grammatical. However, in **Jon kjøp lodd!* the NP *Jon* is the subject of the sentence, and this structure is ungrammatical.

165



The CP provides a structural position for the finite verb to the left of the subject, and we can easily account for the structure in (164a), cf. (166).

166



Additionally, sentence structures as illustrated in (167a) will support the existence of a structural position outside the I projection.

167

- a Kona sa [at naboene heiste flagget].
 THE WOMAN SAID [_{CP} [_C THAT [_{IP} NEIGHBOURS-THE [_I HOISTED_[PRET] FLAG-THE]]]]
The woman said that the neighbours hoisted the flag.

If the verb is in I^0 , and the subject is in $\langle \text{spec}, \text{IP} \rangle$, the complementizer *at* (that) must be placed outside the I domain.

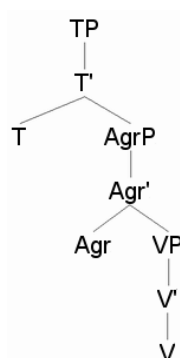
Even though the idea of a functional domain outside the sentence has held its ground for many years, there has been some discussion with respect to the actual numbers of FPs. Basically, the questions have revolved around whether the CP-IP layer actually consists of several distinct FPs. For instance, Pollock (1989) suggested that the I domain should be split into two distinct projections, cf. (168).

168

"[...]Infl(ection) should not be considered as one constituent with two different sets of features ([+/-Tense, +/-Agr]) and that instead each of these sets of features is the syntactic head of a maximal projection, AgrP and IP (the latter to be called, more perspicuously, T(ense)P)" (ibid. p. 365).

This proposal is called the "Split INFL"-hypothesis because Pollock (1989) divides the INFL into two separate projections as illustrated in (169). Whether the T projection or the Agr projection should be the higher one, has been debated. For instance, Belletti (1990) suggests that the Agr projection should be the higher one, and this latter solution is most acknowledged today.

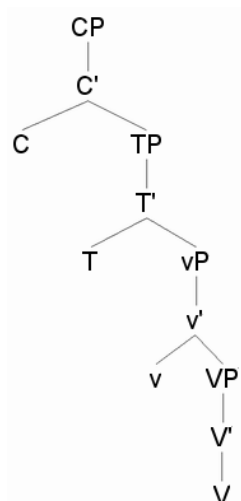
169



In Pollock's suggestion, the agreement between the subject and the verb was captured by the Agr-projection, and the verb's tense feature was found in the T-projection. In separating these two features, Pollock (1989) could account for negation phrases in relation to auxiliaries, infinite verbs and finite verbs in both English and French.

Chomsky (1995) rejects the ARG projections all together and introduces another functional projection in the clause structure: the v (little verb) together with strong and weak features. The V rises overtly to the little v, and the v-VP configuration is believed to express the causative role of the external argument.⁶³ The functional structure outside the clausal domain is thus as illustrated in (170).

⁶³ The little v bears some resemblance to the Pr-projection in Bowers (1993) and the initP in Ramchand (2006).



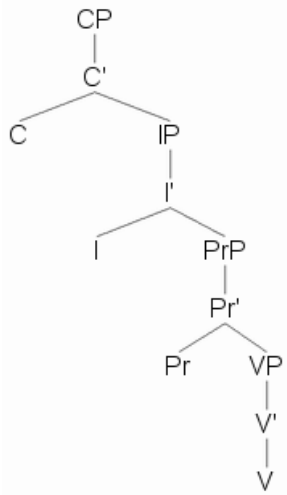
Even though there has been some discussion with respect to the actual make-up of the functional domain in relation to a sentence, the functional domain is assumed to be present in (nearly) every sentence.⁶⁴ Consequently, these functional projections exist independently of any lexical item in the lexicon. They also exhibit a predefined structure; CP-IP (never IP-CP). In addition, they are equipped with inherent meaning. Rivero and Terzi (1995) claims that the C-projection is the locus for various speech act operators, and Chomsky (2002) express a similar idea in: [...] *C (complementizer) is a kind of force indicator distinguishing declarative, interrogative, etc.* (ibid. p. 123). In many respects, the postulation of a CP-IP structure shows many similar characteristics with the constructional ideas found in the argument structure frames presented in the previous chapter. It is therefore tempting to claim that the fixed, predefined CP-IP structure indicates that constructional ideas have a place in the generative framework as well, manifested by the CP-IP structure. What this brief summary of I and C shows is that the existence of a functional domain outside the sentence has steadily held its ground, even though the actual number and appearance of various FPs have varied. To assume a functional domain outside the argument structure frames is therefore non-controversial, and it is the approach I will adopt in this thesis. The approach I take will also be consistent with the suggestion made in Chomsky (1995), who reduces the functional domain into three projections; CP, TP and vP. I will use CP, IP, PrP, however. The motivation for these functional projections will differ only with respect to the vP and PrP, in that I assume

⁶⁴ Small clauses are not assumed to have a C projection, which causes the particular characteristics typical for these constructions. However, the assumption depends on whether one thinks that positions overtly present in some structures are actually present in every structure, or not. If one adheres to the former view, small clauses are believed to have the same set of functional projections as other clauses.

PrP to be present in every sentence, while Chomsky (1995) assumes the vP to be present only with causative agents.

To conclude, I assume a functional domain outside the argument structure constructions as illustrated in (171). The working hypothesis is that these projections are present in all sentences in Norwegian. In that respect, I argue that they should be considered a functional frame.

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3.5 Syntax adapted to computers

In section 2.3.3.4, I presented various factors that most likely have contributed to the characteristics of the syntactic structures found in the data material. I presented Rubin's taxonomy in order to point out the fact that the dichotomy spoken-written is far from the only dimension that influences language. In addition, I maintained that the data material consists of semi-planned language, which has contributed to the characteristics of the data material as well. I have also considered the notion of recipient design, and its influence on language. Additionally, I have discussed syntactic theories such as the endo-skeletal and exo-skeletal approaches, and I decided to adopt the neo-constructional approach in this thesis. The question that arises is how these two areas (the syntactic theory and the features found in Trondheim WOZ) can be seen in relation to each other. An adequate syntactic analysis of the data material should then also take into account the understanding of context as an important factor for the observed structures. However, theoretical linguistics has had its focus on competence, and the innate language faculty. The prevalent view has been the unique universal grammar with a fixed set of parameters that in turn yield the different syntax in the various languages. Extra-linguistic factors such as recipient design have no place in a theory like this.

Roeper (1999) has recently put forward a proposal that challenges the common view of the organization of the innate grammar. Here, the overarching assumption is that humans are not equipped with just one grammar accounting for all the structures in the mother tongue, but that we have at our disposal several grammars. This hypothesis is known by the name of Theoretical Bilingualism, cf. (172).

172

"[...] a speaker has a set of mini-grammars for different domains so that, in effect, every speaker is bilingual" (Roeper, 1999:2).

The main reason for postulating multiple grammars is the observation that languages regularly contain syntactic rules that are in fact contradictory and cannot be stated within the same grammar. If the hypothesis is that speakers have several grammars available, they can thus choose from these grammars, and use the one that they find appropriate in the given context. Even though Roeper (1999) mainly uses theoretical bilingualism to account for contradictory grammatical rules in the same language, I believe that this hypothesis makes it possible to assume that the characteristics found in the TWOZ material is traceable to a particular subset of grammatical rules as well. As stated in (172), the mini-grammars are related to different

domains, and I believe that talking to a computer could be regarded as a particular domain due to the exceptional interlocutor. I have used the term recipient design for this phenomenon, but the same is also captured in the term speech register. A register can be defined as "*a set of features of speech and writing characteristic of a particular type of linguistic activity or a particular group when engaging in it*" (Matthews, 1997:314). However, Fisher (2006) points out that the results regarding computer talk (CT) yield partially contradictory results, and maintains that "*the studies available do not allow a conclusive picture*" (ibid. p. 5).⁶⁵ Fisher (2006) concludes that computer talk is not a register or a linguistic variety, but that utterances to a computer rather should be regarded as strategies for solving communication problems and assuring communication flow. I agree with Fisher (2006) that the characteristics of a particular human-computer dialogue cannot be detached from the goal of the interaction, or the design of the dialogue system. As presented in Chapter 2.2, there are several dimensions that influence language, and these dimensions will also be important to recognize when studying human-computer interaction. But if there is no uniform mechanism involved, it is quite extraordinary that 64 different people display such uniformity in their syntactic structures as has been documented in the TWOZ material. Contrary to Fisher, I do think that there are profound causes that yield these particular syntactic structures in the data material, and I believe that Theoretical Bilingualism offers an interesting suggestion for the underlying causes of the findings. I think that one of the reasons Fisher hesitates to label Computer Talk as a speech register is that the term is theoretically unclear. This is noted in Roeper (1999), who maintains that "*[...] dialects, interlanguage, foreign language and speech register all remain important social terms, but unclear theoretical terms*" (ibid. p. 3). Roeper (1999) uses Theoretical Bilingualism in order to separate the grammatical phenomena from other dimensions that also add to the particularities in a speech register (for instance pitch).

Roeper (1999) defines four points that are the formal source of bilingualism, and I will briefly present each of them. The first point is given in (173a)

173

- a "*Universal Grammar defines a set of Default representations which all speakers possess. We call this: Minimal Default Grammar (MDG)*" (ibid. p. 14).

The claim in (173a) is based on the assumption that UG constitutes a default grammar from the beginning. This is contrary to the usual assumption in GB theory and its descendants that Universal Grammar defines the grammatical options available in natural language. The UG is

⁶⁵ In Fisher (2006), "computer talk" refers to all speech and typed natural language utterances directed towards an automatic speech processing system. I will use the term "computer-oriented talk" in a more narrow sense, only referring to speech-based interaction.

compared to a switchboard, where the various switches will be fixed in their correct position based on the language input. This idea implies that the UG starts out in something like a "zero position". Roeper (1999), on the other hand, claims that humans are born with a default grammar.

(174a) states that this default grammar, i.e. Minimal Default Grammar (MDG), obeys principles of economy. The MDG projects fewer structures than the particular mini-grammars.

174

- a *"The set of MDG structures reflects principles of economy. That is, they project fewer than elaborated particular grammars"* (Roeper, 1999:14-15).

Principles of economy can be related to different notions, but Roeper (1999) adopts the suggestion made in Chomsky (1995). Economy of representation is presented in (175a), while the economy of interface is presented in (175b).

175

- a Project minimal amounts of structure.
- b Meaning explicitness is valued more highly than non-explicitness.

(175b) implies that if a speaker has the choice between two different ways of expressing the same meaning, he will choose the one that leaves less to extra-grammatical inference (Roeper, 1999:9). The two principles in (175) will pull in opposite directions; (175a) favours less structure, while (175b) favours more. The principle in (175b) will also partly be determined in a judgement of how much shared inferential information the interlocutors have. This judgement is not performed by the grammatical system, but depends just as much on our encyclopaedic knowledge and previous discourse. However, explicitness can also be related to grammatical factors. For instance, a structure that contains an AGR node will be more explicit than a structure that has no AGR node. According to (175b), the structure *with* an AGR node will be preferred because it is more explicit.⁶⁶

The statement in (176) says that the economical structures found in the MDG can be contrasted to structures found in the particular grammar.

176

- a *"The Particular Grammar and the MDG grammar may or may not be incompatible"* (Roeper, 1999:15).

⁶⁶ An additional assumption that is made in Roeper (1999) is that principles of economy exist independently in different modules (ibid. p. 44). Therefore, a structure that is viewed as "uneconomical" in syntax, might obey economical principles in other modules (for instance morphology). This can account for the non-economical forms in syntax.

This statement implies that the structures found in the particular language are not necessarily a direct result of the default structures in the MDG. (If all structures in a particular grammar were just a mirror image of the MDG, we would find the same structures in all languages.) The assumption in (176a) can also account for the contradictory syntax found for instance in "poetic grammar", which will be exemplified and discussed later in this section.

In (177), Roeper (1999) asserts that a speaker does not have just one grammar, an approach that is clearly a different view of the relationship between a speaker's internalized grammar and UG, as opposed to the view offered by most theories postulating an innate language faculty.

177

- a *"Different grammars can be localized:*
 - i) *In lexical classes*
 - ii) *By speech register"* (Roeper, 1999:15)

The nature of a grammar implies that contradictory rules cannot be stated within just one grammar, and the common solution has been a division between optional and obligatory rules. As has been discussed in previous sections, optionality is difficult to state in a theory. Roeper (1999) also notes that optional rules are also problematic from a language acquisition perspective. An optional rule cannot easily be eliminated because there is nothing in the language that indicates that an optional rule is incorrect. If a child treats inversion in *wh*-questions as an optional rule, the child could in principle continue to do this, even though adult language has no example of non-inverted *wh*-questions. An optional rule is basically the choice between two or more options. Then inverted *wh*-questions in adult language (option A) would not teach the child that a non-inverted *wh*-question (option B) is wrong, if the child assumes that the rule's options allow equally for option A and B.

I will now illustrate Roeper's (1999) point in (176a) and (177a) with an example from Norwegian. Norwegian is considered an SVO language, which means that the direct object is structurally positioned after the main verb. This allows for the sentence structure in (178a), while (178b) is ungrammatical.

178

- a Kari kjøpte osten
- b *Kari osten kjøpte.

By virtue, Norwegian speakers should not have a grammar that allows for (178b), since this will contradict the pattern in Norwegian in (178a). However, in particular contexts, Norwegian speakers can, and indeed do, deviate from the pattern in (178a), and follow the

structure in (178b). Within Theoretical Bilingualism, the notion of optionality can be eliminated. Instead, following the idea in Theoretical Bilingualism, we can assume that Norwegian speakers have grammars allowing for both options. A rule contradicting (178a) can be found in poetry and rhymes. The example in (179) is from a children's rhyme.

179

Når berg og dal oss skiller
WHEN MOUNTAIN AND VALLEY US DIVIDE
Og du meg ikke ser
AND YOU ME_{ACC} NOT SEE_{PRES}
Så husk at det var mamma
THEN REMEMBER THAT IT WAS MOMMY
Som disse linjer skrev.
WHO THESE VERSES WROTE.

In (179), the second verse has the finite main verb *ser* (see) after the direct object *meg* (me), and before the sentence adverbial *ikke* (not). Thus, this verse follows the word order pattern illustrated in (178b). In other words, the underlined sentence in (179) is in fact a SOV pattern. The example shows that Norwegian speakers are not obliged to put the direct objects after the main verb (disregarding topicalization). In fact, Norwegian speakers can and *do* produce sentences that are not in accordance with the alleged obligatory SVO pattern. If the assumption is that we have only one internal grammar, it would be impossible to account for the sentence in (179) since this must imply that the grammar consisted of contradictory rules. A possible solution for the single grammar hypothesis would be to dismiss the example in (179) as belonging to the periphery or as a result of scrambling. I consider this an unsatisfactory explanation since the position of the direct object in "poetic grammar" is not completely arbitrary, there must be rules accounting for the sentence structure in (179) as well. Dismissing problematic structures as peripheral phenomena is in my opinion not a very constructive approach either.

But how do the assumptions made in Theoretical Bilingualism relate to the sentence structures found in the TWOZ material? The investigation of the data material did not reveal any contradictory rules compared to what is usually reported and discussed regarding Norwegian syntax. The conclusion was that the structures in fact were complete and simple. In addition, the participants preferred to use the same structures, which led to a restricted and homogeneous set of sentences. This supports the assumption that the participants employed a particular mini-grammar that they found appropriate in the given context. It was not a grammar that contradicted the properties of mainstream Norwegian syntax, as is the case for "poetic grammar", but rather, the sentences in the TWOZ were produced from a subset of the

Norwegian syntax. This mini-grammar generates constructions that are perceived as easy to interpret.

To support this hypothesis, I will now take a closer look at structures that at first glance might look complicated, but are in fact not. I will focus on three types of syntactic constructions that in the endo-skeletal approach in some way or another have been considered to be deviations from the general pattern, and these phenomena have needed additional theoretical machinery to be explained.

Finally, there is one assumption presented in Roeper (1999) that cannot automatically be transferred into the neo-constructional approach adopted in this thesis. The notion of lexically restricted phenomena as mentioned in (177ai)), here repeated as (180), must be presented differently in the neo-constructional approach.

180

- a Different grammars can be localized:
 - i) In lexical classes
 - ii) By speech register

The neo-constructional approach assumes that lexical items do not contain any grammatical information, and (180ai) presupposes that such information is in fact present. Instead of maintaining that lexical items create subsets with particular features, we can claim that argument structure frames are the localization of different grammars. Instead of (180), the revised principle will be as stated in (181).

181

- a Different grammars can be localized:
 - i) In argument structure frames
 - ii) By speech register

This means that Åfarli's assumption that we only have five different argument structure frames for Norwegian only applies to colloquial Norwegian syntax. The assumptions put forth by Roeper (1999) makes it likely that particular mini-grammars, for instance "poetic grammar", can have different argument structure frames available. Even though I barely have scratched the surface of Theoretical Bilingualism, it suffices to illustrate an interesting approach to the observation that people use different syntactic structures in various contexts. I also believe that it makes it possible to see the analyses in this thesis as a mapping of a subset grammar, which in turn can be related to the particular context, i.e. human-computer interaction.

3.6 Summing up

In this chapter I have presented and compared the endo-skeletal approach with an exo-skeletal approach, i.e. the neo-constructional approach. This comparison was motivated by the homogeneous sentence structures documented in chapter 2.3, and Miller and Weinert's (1998) assertion that formulaic language is more wide-spread than commonly acknowledged in linguistic theories. The core question was how the idea of ready-made language sequences could be incorporated into the endo-skeletal and the exo-skeletal approach, respectively. I argued that the latter offers an appealing approach because this theory is based upon the assumption that the human language makes use of "ready-made" chunks (argument structure frames), also at the abstract level. Thus, the language faculty is not only merging and/or moving one element at the time, but larger units can be stored and manipulated. If one adopts the neo-constructional approach, it appears to be a better accordance between the observation (preferred use of language chunks) and how the theory is constructed (larger meaningful units). On the other hand, the endo-skeletal approach, which presumes that every sentence is created a new each time, will be less in accordance with how speakers tend to behave linguistically.

At a more detailed level, the neo-constructional approach accounts for the facultative thematic roles by assuming that verbs are inserted into various frames, consequently avoiding duplication of lexical entries, or optionality in the model, as is the result in the endo-skeletal approach. Since there seems to be no actual consensus regarding the number of roles in the endo-skeletal approach, I also pointed out that this vagueness is problematic if θ -roles are regarded as semantic primitives. Furthermore, the endo-skeletal approach offers no way of deciding when to postulate a new thematic role, or when to maintain that a role is a variant of an already existing role. The neo-constructional approach, on the other hand, does not postulate any thematic roles in the lexical entries, but claims that the actual thematic interpretation arises as a combination of the inherent meaning of the frame, the conceptual content both of the lexical items in question, and the rest of the words inserted into the argument structure frame. The existence of made-up verbs and the fact that verbs often occur in sentences that do not directly correspond to their conceptual content can also be explained by the use of argument structure frames. It can also account for the invariability of SOV and SVO structures in the world's languages. Since the object position in each language is defined by the argument structure frame, the same language is not expected to mix the SOV and the

SVO word order. Both the made-up verbs and the fact that no languages have verbs with both SOV and SVO constitute a challenge for the endo-skeletal approach.

I have also compared the neo-constructional approach in Åfarli (2005) with Ramchand's (2006) constructional framework. I maintained that the analyses in Ramchand (2006) encounter many of the same problems found in the endo-skeletal approach. In light of this discussion, I will adopt the argument structure frames as suggested by Åfarli (2005), and the discussion of the three syntactic phenomena (unaccusative constructions, modals with directional locative and ellipsis) will use these argument structure frames as a point of departure for the proposed analyses.

I also presented a promising suggestion for thematic properties made by Dowty (1991), further developed by Kako (2006). The main hypothesis was that thematic properties are associated with different structural positions, and that some of the argument's thematic properties can be read directly off the structure. This hypothesis fits nicely with the assumptions made in relation to the argument structure frames, and will be discussed further in the next chapter.

In addition, I have presented the idea of a functional domain outside the actual argument structure frames. I maintained that the functional domain has held its ground for many years, even though there has been some variance with respect to the number and properties of the projections in this domain. I therefore adopt the idea of a functional domain in the sentence structure. As already pointed out, the idea of fixed functional projections fits nicely with the assumptions of predefined structures made in the neo-constructional approach. Finally, I proposed that the functional projections should be considered a functional frame.

I also presented an alternative view of the innate grammar put forth by Roeper (1999) who maintains that each speaker has a set of mini-grammars, and that they are domain-specific. This view makes it possible to endorse the view of innate grammar, but at the same time, acknowledges that extra-linguistic factors influence the choice between various sub-grammars (which in turn yields observable syntactic structures). I maintained that the computer as an interlocutor most likely has influenced the participants to choose a sub-grammar consisting of uncomplicated grammatical rules.

4 Analysis

I have now presented the data material in Chapter 2 and concluded that the data mainly consist of complete and homogeneous sentences. In Chapter 3, I discussed and compared the endo-skeletal approach with the exo-skeletal approach, and concluded that the neo-constructional approach has several attractive features. In this chapter, three phenomena found in the data material will be discussed in light of the neo-constructional framework I am adopting. These phenomena are the unaccusative construction, modals with directional locatives, and various elliptical structures.⁶⁷ I have selected these topics because they are considered as deviations by the endo-skeletal approach. Thus, the endo-skeletal approach postulates special analyses or extra theoretical assumptions in order to account for them. These particular syntactic assumptions needed to account for these phenomena contrast the characteristics of computer-oriented talk as explicit and concise. In some sense, one would expect that complex and deviant syntactic structures would be less frequent or avoided in the TWOZ. Finally, it is always useful to test a theory and its predictions against new data in order to see whether it can account for the phenomena under scrutiny. If the new data can be accounted for in the neo-constructional approach, the assumptions in this framework are supported.

In section 4.1, I will first give an introduction to some relevant features concerning ellipsis before I move on to ellipsis in the endo-skeletal approach, with a specific focus on an analysis of missing subjects proposed by Haegeman and Guéron (1999), see 4.1.2. I conclude that this proposal cannot account for missing subjects in Norwegian. In 4.1.3, I present an analysis of ellipsis in the neo-constructional approach, and focus on those that are found in the TWOZ.

In section 4.2 I will present the unaccusative construction and the assumptions about unaccusatives versus unergative verbs in the endo-skeletal approach. I will show that the division between these verbs is not easily drawn. Then I will analyse the unaccusative construction from a neo-constructional approach. In relation to the unaccusative construction, two questions arise. The first one relates to the thematic content of the arguments found in an argument structure frame, see 4.2.2. The second relates to the question of expletives, see 4.2.3. Finally, I will propose an analysis of an unaccusative construction found in the TWOZ.

⁶⁷ Unaccusative constructions can also be referred to as ergative or presentational constructions. I will however use the term unaccusative.

In section 4.3, I will present some sentences with modals found in the TWOZ. Then I will give an introduction to auxiliaries in general and modals in particular. In section 4.3.2, I will present Eide's (2005) analysis of modal verbs, and in 4.3.3, I will examine her analysis of directional locatives. Finally, I will propose an analysis of modals with directional locatives in the neo-constructional approach.

4.1 Ellipsis

One motivation for selecting ellipsis as an investigation topic is that this phenomenon seems to contradict the overall characteristics of the data material, namely that it primarily consists of complete sentences. Thus, one might expect that the speakers would avoid ellipses in order to be explicit and concise. Secondly, ellipses have been considered a theoretical challenge in the endo-skeletal approach for decades. For example, Chomsky (1965) suggests that ellipses must be deletions that occur as a result of "erasure transformations" (ibid. p. 177). Lobeck (1995), on the other hand, argues that ellipses should be treated as a particular class of non-overt elements similar to elements like PRO and pro. As will be discussed in section 4.1.2, the debate of what an ellipsis really is, and how it should be treated in the endo-skeletal approach, stem from this approach's view of the relation between lexicon and syntax. In this respect, the phenomenon of ellipsis relates closely to the theoretical discussion presented in the previous chapter, and I will primarily use this study of elliptic structures to illuminate my argumentation further. As a consequence, this chapter has no intention of presenting a full-fledged analysis of elliptical structures in Norwegian. It is acknowledged that the phenomenon of ellipsis is a heterogeneous and complex area of investigation, cf. (182).

182

"Ellipsis has earned its reputation as a complex phenomenon whose complexity derives from its reliance on many aspects of the language system. And cloaked under the obvious cross-modular issues are many component issues that, in and of themselves, are among the most difficult in all of linguistics" (McShane, 2005:231).

A study of Norwegian ellipsis could therefore be the topic of a thesis of its own. The main aim is to illustrate how this phenomenon can be approached in a neo-constructional framework. I also believe that this proposal offers an interesting shift in the perspective on what an ellipsis is.

Furthermore, elliptic structures have been identified as a challenge in the area of HCI. As early as 1987, Reilly maintained that treatment of ellipsis must be in *"the areas of high priority in the development of a robust natural language dialogue system"* (Reilly, 1987:73). Nevertheless, in 2005 the ESSLI (European Summer School on Logic, Language and

Information) organized a workshop on ellipsis that maintained that *"The area of ellipsis resolution and generation has long been neglected in work on natural language processing, and there are few examples of systems or computational algorithms"*.⁶⁸ Thus, my investigation of elliptic structures in Norwegian computer-oriented talk will hopefully generate useful knowledge which later can be used in developing a dialogue system that can handle this phenomenon. In theoretical linguistics, the phenomenon of ellipsis has received a fair amount of interest, but according to McShane (2005), ellipsis theories are not well developed because the investigations are either too dictated by the framework in which the linguist works, or only a particular type of ellipsis is being addressed by the linguist. In addition, the investigations have focused on syntactic ellipses that primarily are found in written language (ibid. p. 3). This means that ellipses found in spoken language often have been considered a result of performance error, which means that they are not of interest to a theory seeking to map the competence of the language user. For example, McShane (2005) also criticizes linguistic theories for only considering elliptic phenomena found in English or other main European languages, and largely ignoring data from Slavic languages (ibid. p. 7). The investigation of ellipsis in this thesis could therefore be a counterweight to the shortages pointed out by McShane (2005). The approach to ellipsis taken in this thesis differs substantially from the assumptions made in the endo-skeletal approach, and as already mentioned, it offers an alternative way of studying elliptic structures. In addition, the data is taken from Norwegian speech, which sets this investigation apart from the usual focus on written language and English data.

In the presentation of the data material, I gave several examples of elliptic structures which I divided into 6 different groups, here repeated in Table A.

Table A. Occurrences of possible ellipses in the Trondheim WOZ.

Elided phrase	Occurr.	% of total elided phrases
Subject (pronoun)	17	35.4
Subject (pronoun after coordination)	12	25.0
Elided auxiliary after coordination	8	16.7
Elided complementizers <i>at</i> and <i>som</i>	7	14.6
Elided main verb	1	2.1

⁶⁸ The quote is taken from the workshop's webpage, http://odur.let.rug.nl/~spenader/Ellipsis_Workshop.html. [Accessed 2 Feb. 2007]. The workshop was called "Cross-modular approaches to Ellipsis".

Elided noun	1	2.1
Other	2	4.2
TOTAL	48	100.0

The main goal in this section is to use the occurrences of ellipses to illuminate the theoretical discussion in the previous chapter. I will start with an introduction to ellipsis. Then, I will discuss how ellipsis is treated in the P&P-theory, and I will present an analysis of elided subject in English sentences given by Haegeman and Guéron (1999). I will point out that this proposal encounters problems when confronted with Norwegian data. I will then discuss how the neo-constructional approach adopted in this thesis handles elliptic structures. Finally, I will investigate the elliptic structures found in the TWOZ material in light of these theoretical assumptions and, at the same time, judge whether the occurrences in Table A should be classified as elliptical structures.

4.1.1 Introduction to ellipsis

In "Oxford Concise Dictionary of Linguistics" (Matthews, 1997), an ellipsis is defined as:

183

"The omission of one or more elements from a construction, especially when they are supplied by context."

Even though this definition can serve as an umbrella term denoting missing constituents in a sentence, the literature (see for instance Lobeck (1995) and her review of previous investigations on the topic) maintains that not every missing constituent is necessarily an ellipsis. According to Lobeck (1995), VP ellipsis, cf. (184a), ellipsis in NPs, cf. (184b) and sluicing, cf. (184c) are examples of ellipsis.

184

- a Jon spurte Marit om å være med på festen fordi Nina kunne ikke [e].
JON ASKED MARIT ABOUT TO BE WITH ON PARTY-THE BECAUSE NINA COULD NOT [BE WITH ON PARTY-THE]
"Jon asked Marit to come to the party because Nina couldn't."
- b Jon spiser de grønne eplene mens jeg spiser de røde [e].
JON EATS THE GREEN APPLES WHILE I EAT THE RED [APPLES].
"Jon eats the green apples while I eat the red ones."
- c Jon er forelsket, men vi vet ikke i hvem [e].
JON IS IN-LOVE, BUT WE KNOW NOT IN WHO [HE IS IN LOVE]
"Jon has fallen in love, but we do not know with whom."

Lobeck (1995) separates the ellipses in (184) from examples of gapping, cf. (185a) and stripping, cf. (185b).

185

- a Marit kjøpte en kalender og Jon [e] en bok.
MARIT BOUGHT A CALENDAR AND JON [BOUGHT] A BOOK
"Marit bought a calendar and Jon a book."
- b Marit kjøpte en ny skjorte til Jon, men [e] ikke til Fred.
MARIT BOUGHT A NEW SHIRT FOR JON BUT [SHE BOUGHT A NEW SHIRT] NOT FOR FRED
"Marit bought a new short for Jon but not for Fred."

Lobeck (1995) maintains that the ellipsis in (184) obeys different restrictions than the phenomena in (185). Even though I will not use Lobeck's classification, her division of ellipses into various subgroups with different characteristics indicates that there are various types of ellipses that probably should be analysed in different ways. Thus, ellipses are not a homogeneous group that can be treated as one uniform phenomenon. In addition, different linguists do not agree upon whether a particular ellipsis type should be included in the overall theoretical discussion. McShane (2005) defines English as a language that does not have subject ellipsis, since this phenomenon only occurs in colloquial speech. Haegeman and Guéron (1999), on the other hand, offer an analysis of subjectless English sentences. This diversity of circumstances in which ellipsis types occur, and whether or not the different types belong in a larger theoretical discussion only adds to the confusion about what an ellipsis actually is. In this thesis, I have included the occurrences of subjectless Norwegian sentences. They are frequent in the material, and since native Norwegian speakers can generate subjectless sentences, they obviously have this possibility included in their grammar.

There is, however, one feature that linguists seem to agree upon: the missing constituents in the ellipsis must somehow be recoverable from the context. This recoverability makes it possible to fill in the elided constituents as I have done in the gloss in (184) and (185). If a constituent is not recoverable by either linguistic or non-linguistic context, we cannot interpret the sentence, cf. (186a).

186

- a #leser i en bok.
[ELLI-SUBJ] READ-PRES IN A BOOK
"Read a book."
"Reads a book."

Omission of subjects is possible both in speech and more informal writing in Norwegian. The sentence in (186a) does not make any sense because we have no context with which we can recover the missing subject. In (187) however, the omitted subject in person B's utterance is recoverable through person A's utterance, hence the ellipsis is interpretable.

187

- PERSON A: Hva gjør Marit på rommet sitt?

WHAT DOES MARIT DO IN ROOM-THE HERS

"What is Marit doing in her room?"

PERSON B: Leser i en bok.

READ_{PRES} IN A BOOK

"Reads a book."

Recoverability is thus related to the possibility to ascribe a reference to the omitted element. For instance in (187), the omitted subject refers to a person called *Marit*.

In addition to the ability to be recoverable in order to be interpretable, it is commonly assumed that a syntactic ellipsis must be licensed, cf. (188).

188

"[...] : the language must license (permit) ellipsis in the given configuration, and the content of the elided category must be recoverable (understandable)" (McShane, 2005:16).

The fact that recoverability is not sufficient in order for a constituent to be omitted is clearly illustrated in (189). Here, both the auxiliary *skal* (shall) and the main verb *sykle* (cycle) are equally recoverable in the preceding sentence, but only the main verb is a possible candidate for omission.

189

- a Hvis du skal sykle, så skal jeg Ø også!
IF YOU SHALL CYCLE, THEN SHALL I [VB-ELLI] TOO
"If you're riding a bike, so will I!"
- b *Hvis du skal sykle, så Ø jeg sykle også!
IF YOU SHALL CYCLE, THEN [AUX-ELLI] I CYCLE TOO
"If you're riding a bike, so will I!"
- c *Hvis du skal sykle, så Ø jeg Ø også!
IF YOU SHALL CYCLE, THEN [AUX-ELLI] I [VB-ELLI] TOO
"If you're riding a bike, so will I!"

In the grammatical sentence in (189a), the main verb *sykle* (cycle) is omitted, while the auxiliary is expressed. In (189b), the auxiliary is omitted while the main verb is expressed, but this ellipsis results in an ungrammatical sentence. In (189c), the auxiliary and main verbs are both omitted, which also results in an ungrammatical sentence. McShane (2005) maintains that auxiliary verbs in English are a lexical category that can license a VP ellipsis (ibid. p. 16). If we assume that this is also the case for Norwegian, this can account for the grammaticality of (189a), while (189b-c) are ungrammatical even though both *skal* (shall) and *sykle* (cycle) are equally recoverable. It is evident that a full-fledged theory of ellipsis needs to investigate licensing conditions, but since my focus is how ellipsis as a phenomenon can be accounted for in the neo-constructional approach, I will not discuss the licensing of the particular types of ellipses, but leave these questions to future research.

It is also common to distinguish between a syntactic ellipsis and a semantic ellipsis. A syntactic ellipsis is "*the non-expression of a word or phrase that is, nevertheless, expected to occupy a place in the syntactic structure of a sentence*" (McShane, 2005:3). The missing element must be a syntactically obligatory category. A semantic ellipsis, on the other hand, is not assumed to leave any "gap" in the syntactic structure, but the missing constituent(s) is still important for the interpretation. An example of a semantic ellipsis is given in (190a).

- 190
a Elgen ble skutt.
MOOSE-THE WAS SHOT
"The moose was shot"

Even though it is not expressed, the sentence in (190a) implies that somebody actually shot the moose. This distinction between a syntactic and semantic ellipsis is also relevant for the TWOZ material. In Chapter 2.3.2.2, I presented an overview of clause-external phrases that were provided in response to the dialogue system's questions. An example of a clause-external phrase is given in (191).

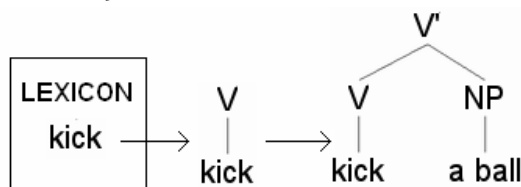
- 191
Dialog system: vennligst vent. Du vil dra til Dokkparken fra Klokkerplassen. Når vil du dra?
"Please hold. You want to go to Dokkparken from Klokkerplassen. When do you want to go?"
User, 2. turn: i morgen tidlig
"Tomorrow morning"

The phrase *i morgen tidlig* (tomorrow morning) can be regarded as an ellipsis of a sentence: *Jeg vil dra i morgen tidlig* (I want to go tomorrow morning). The argument for treating *i morgen tidlig* as an ellipsis, is that without the context, it is impossible to know how *i morgen tidlig* should be interpreted. The phrase could, for instance, be an answer to the question: *When are you having your surgery?* I believe that the ellipsis in (191) is best treated as a semantic ellipsis. As already mentioned, a semantic ellipsis is not assumed to leave a gap in the structure, and it is reasonable to assume that the user utterance in (191) consists of just the preposition phrase *i morgen tidlig* (tomorrow morning). To assume that the preposition phrase *i morgen tidlig* (tomorrow morning) is the only visible part of a much larger (phonetically empty) sentence structure seems unnecessary and redundant. In the following, I will restrict my discussion to syntactic ellipsis, and I will not propose any analysis of the phrases similar to the user turn illustrated in (191).

4.1.2 Ellipsis in the endo-skeletal approach

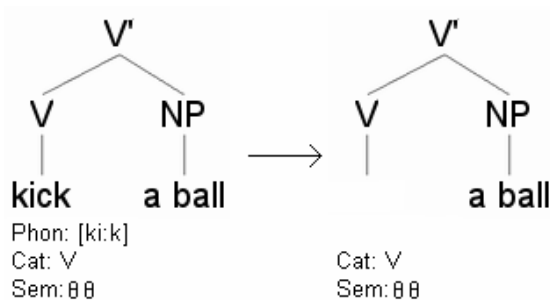
As already discussed in Chapter 3.1, the endo-skeletal approach assumes that the syntactic structure "grows" from the information attached to the different items found in the lexicon. A lexical item is separated into different features relating to form and meaning. The form of a lexical item will account for the pronunciation (in spoken language), and the meaning of the word is represented as semantic features. The lexical item is also assumed to have information about the category (V, N, P and so forth) and features concerning subcategorization. A sentence is construed by selecting a certain verb from the lexicon, and this verb is then inserted into the syntax. Here, the verb will project a V projection and then it will select various arguments based on its syntactically relevant information, cf. (192).

192

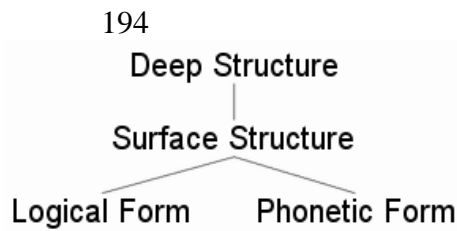


Since the structure originates from the words and their syntactically relevant information, the words must necessarily be present for a syntactic structure to be constructed. In relation to the elliptic structures, the endo-skeletal view must assume that the lexical items first are inserted, and subsequently removed from the structure again. The mechanism that removes the originally inserted constituents can be, and certainly has been, modelled in different ways, which I will briefly present in the following. It is obvious that what minimally must be missing are the features concerning phonetic features, cf. (193).

193



The illustration in (193) indicates that the missing constituent is present in the structure, but it is not phonetically realized. In this view, ellipsis is not a phenomenon that should be explained at the syntactic level because it is a process that is carried out *after* the syntactic derivation. Ellipses should be considered a phonetic or spell-out rule at Phonetic Form (PF), cf. (194).

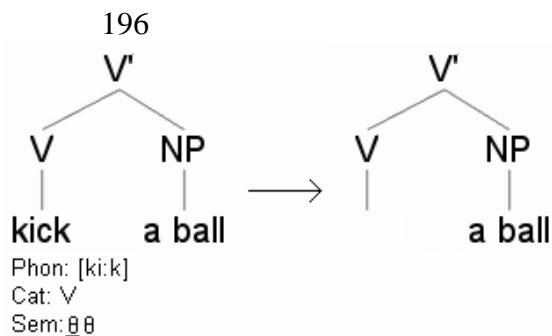


However, the endo-skeletal approach assumes a licensing condition for empty categories, namely the Empty Category Principle (ECP), cf. (195).

195
"Non-overt elements must be identified."
 (Haegeman and Guéron, 1999:622)

The identification of a non-overt element is done by co-indexing and c-command.⁶⁹ In addition, the endo-skeletal approach adheres to the view that semantic and phonetic information are irrelevant for grammar rules. The problem with (193) is that it assumes that rules and principles of syntax, including the ECP, should not take specifications about phonetic features into consideration. This means that all the information that the syntax module needs is still present in the structure. The question is how the syntax module can know that it is dealing with an empty category that should obey the ECP when no information (except the phonetic features) is missing.

It is possible to solve this problem by erasing the lexical item completely, a possibility which is presented in Chomsky (1965). He maintains that ellipses are deletions that occur as a result of "erasure transformations" which "can use a term *X* of its proper analysis to erase term *Y* of the proper analysis only if *X* and *Y* are identical" (ibid. p. 177). In other words, the missing elements are understood as erased or deleted from the syntax in Surface Structure (SS), cf. (196).



⁶⁹ C-command: "Node *X* c-commands node *Y* iff the first branching node dominating *X* also dominates *Y*" (Haegeman and Guéron, 1999:214).

This proposal no longer considers ellipses as a process in PF. The problem with (196) is that one might rightfully ask what motivates the projection, when its source (the lexical item) has gone. In the endo-skeletal approach, the projection is dependent upon a lexical item to legitimate its existence. This leads us to the next possibility, namely that neither lexical item nor projection are present in an ellipsis. This suggestion is adopted by Haegeman and Guéron (1999) in their explanation of omission of the subject in English sentences, which I will return to in more detail later. Briefly, this apprehension of ellipsis implies that the syntactic structure can lack whole projections. If Haegeman and Guéron's (1999) analysis of ellipsis is adopted, person B's utterance in (187), here repeated as (197), would not have a C projection in the last sentence at all.

197

PERSON A: Hva gjør Marit på rommet sitt?
WHAT DOES MARIT ON ROOM-THE HERS
"What is Marit doing in her room?"

PERSON B: Leser i en bok.
READ_{PRES} IN A BOOK
"Reads a book."

As already mentioned in the introduction to this chapter, the phenomenon of ellipsis has also been explained as instances of empty categories. This view is taken in Lobeck (1995), as one example. She argues that ellipses are some type of *pro* element, which is base-generated in the syntactic structure (ibid. p. 4 and 30). Additionally, Haegeman and Guéron (1999) maintain that ellipses, at least subject ellipses in English sentences, should be treated as an empty category. They propose that this type of ellipsis should be analysed as a trace (ibid. p. 623-624).

As this brief overview shows, there is great diversity in the endo-skeletal approach regarding how the phenomenon of ellipsis should be incorporated into this theory. The purpose of this overview has been to point out that the phenomenon of ellipsis does not seem to be easily accounted for in the endo-skeletal approach. In the remainder of this chapter, I will focus on a particular proposal in Haegeman and Guéron (1999) about non-overt subjects in English clauses. Their analysis seems particularly relevant for my investigation, due to the numerous occurrences of missing subjects in the TWOZ material.

As Haegeman and Guéron (1999) point out, the ECP as stated in (195) encounters a problem with elided subjects in the main clauses, cf. (198). (Examples taken from Haegeman and Guéron (1999))

198

a Took the bus to Southwark Bridge.

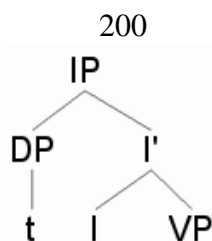
b Could have stayed all day.

In these sentences, there is no antecedent that can identify the non-overt element since there are no lexical elements higher up in the structure that in fact can c-command and be co-indexed with the missing element. After ruling out the possibility of PRO and pro acting as the non-overt elements in these sentences, Haegeman and Guéron (1999) suggest a modified version of the ECP, cf. (199).

199

"Non-overt elements must be identified if they can be."
(Haegeman and Guéron, 1999:622)

Their hypothesis is that the sentences in (198) do not have an activated CP layer (ibid. p. 624). In other words, the sentences with omitted subjects are not assumed to have a C projection above the I projection. According to Haegeman and Guéron (1999), the lack of C projection is associated with colloquial English.⁷⁰ Since there is no position above the I which can identify the empty category in <spec,IP>, this empty category need not be identified, according to (199). The colloquial English that allows for a so-called truncated CP layer, and consequently, an elided subject, has a structure as illustrated in (200). (Haegeman and Guéron's example (92a) p. 623).⁷¹



The reason why some registers allow for the omission of a whole projection is explained by the requirements of economy. I presented two principles of economy in (175), and according to Haegeman and Guéron (1999), the missing C projection in (200) is a result of (175a):

"Project minimal amount of structure", cf. (201).

201

"While in the standard registers the requirement that the root CP be projected is inviolable, and ranks higher than the economy requirement, in abbreviated registers economy prevails and the requirement that structure be minimal ranks higher than the requirement that the root CP be projected" (Haegeman and Guéron, 1999:624).

⁷⁰ It is interesting to note that the proposal put forth by Haegeman and Guéron (1999) resembles the assumption made in Roeper (1999), namely that different registers can have different grammars.

⁷¹ Haegeman and Guéron (1999) maintain that the omitted subject in <spec, IP> is an A'-trace; it is a non-overt category which is assigned case. That is why <spec, IP> in (200) contains the notation *t*.

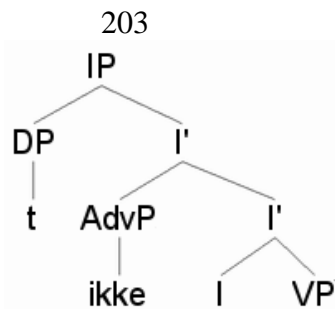
However, the proposal of a truncated CP layer encounters severe problems when confronted with Norwegian data. Before I go into the details, I want to comment on the functional projection I in Haegeman and Guéron's (1999) proposal versus Åfarli and Eide's (2003) functional projection T. As discussed in Chapter 3.4.1, the projections assumed to be present in the functional domain have been a matter of debate. For instance, Pollock (1989) proposes that the I(NFL) should be split into T and AGR. Åfarli and Eide (2003) state that their T projection is equivalent to the I projection, but they prefer the notation T (*ibid.* p. 60). Haegeman and Guéron (1999) use the notation I. Thus, the difference among them is the label for the projection.

The first thing to be considered regarding the issue of whether the structure in (200) can account for omitted subjects in Norwegian is Åfarli and Eide's (2003) analysis of sentence adverbials in Norwegian. Sentence adverbials are analysed as left adjoined to the T projection in order to explain the position of the sentence adverbial in both the main and subordinate clauses, cf. (202). In Norwegian main clauses, the sentence adverbial *ikke* (not) is situated after the finite verb, cf. (202a-b). But in subordinate clauses, it is situated in front of the finite verb, cf. (202c-d).

202

- a Du spiser ikke snegler.
YOU [EAT_{F-VB}] [NOT_{SA}] SNAILS
"You do not eat snails."
- b Du har ikke spist snegler.
YOU [HAVE_{F-VB}] [NOT_{SA}] [EAT_{I-VB}] SNAILS
"You have not eaten snails."
- c Jon sa at du ikke spiser snegler.
JON SAID THAT YOU [NOT_{SA}] [EAT_{F-VB}] SNAILS
"Jon said that you don't eat snails."
- d Jon sa at du ikke har spist snegler.
JON SAID THAT YOU [NOT_{SA}] [HAVE_{F-VB}] [EAT_{I-VB}] SNAILS
"Jon said that you don't eat snails."

If we assume that the sentence adverbial is adjoined to T', all the data in (202) can be explained by the absence or presence of verb movement. In subordinate clauses, the finite verb cannot move past T due to the complementizer in C°, and the sentence adverbial occurs before the finite verb. However, in main clauses, the finite verb passes T (and consequently, the sentence adverbial) on its obligatory way to C°. The left adjunction of sentence adverbials to T (or I) is an established analysis of Norwegian. However, if we adopt the idea of a truncated CP layer, the syntactic structure for a Norwegian sentence with a subject ellipsis along with a sentence adverbial would be as illustrated in (203).



The non-overt element is situated in <spec, IP>, the sentence adverbial is adjoined to I', which dominates the VP. The finite verb in Norwegian can then only move from V to I. The consequence will be that the structure suggested by Haegeman and Guéron (1999) will only generate sentences with the word order illustrated in (204a). This is clearly an ungrammatical structure for Norwegian. Furthermore, the structure in (203) cannot account for the correct Norwegian word order in subjectless sentences, cf. (204b).

- 204
- a *Ikke liker snegler.
 [SUBJ-ELLI] NOT LIKE SNAILS
 "do not like snails."
- b Liker ikke snegler.
 [SUBJ-ELLI] LIKE NOT SNAILS
 "do not like snails."

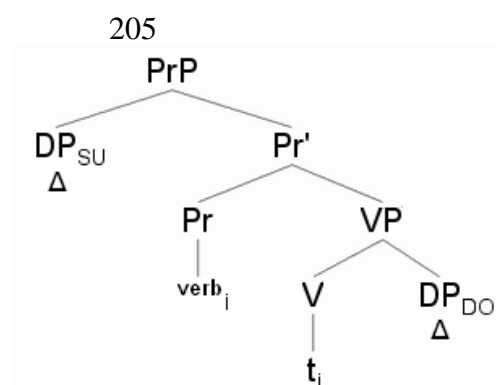
One possible solution would be to assume that sentence adverbials in Norwegian vary with respect to their position in the structure. In other words, these adverbials can be adjoined to V in some clauses, and to I in other clauses. But then the theory would just be a repetition of the data, and we would offer no explanation as to why the patterns illustrated in (202) and (204) exist.

After looking at ellipsis from the endo-skeletal approach, two important issues emerge. The first relates to the discussion of what exactly is elided in the structure. Is it just the phonetic specifications of the lexical item, just the lexical item or the item along with the projection? Second, if we disregard the actual nature of the deletion, the deletion process offers an uneconomical solution to the phenomenon. It is rather counter-intuitive that the grammar initially inserts a lexical element with all its features into the structure and then simply deletes the same item (and perhaps its projection) later in the derivation. Other proposals have been put forth in order to remedy these problems. They treat ellipsis not as a deletion process, but as an instance of a phonetically empty element, for example, as some sort of *pro* (Lobeck, 1995) or as a trace (Haegeman and Guéron, 1999). In the latter proposal, a missing C projection is what makes the occurrence of the phonetically unrealised subject *t*

possible. The C projection is not deleted; it was never projected in the first place. According to Haegeman and Guéron (1999), the missing C projection is a result of a principle of economy. Obviously, the economy principle causing the truncated CP layer does not seem to hold for subject ellipses in other languages. I have argued that Haegeman and Guéron's (1999) proposal for subject ellipsis cannot account for Norwegian data.

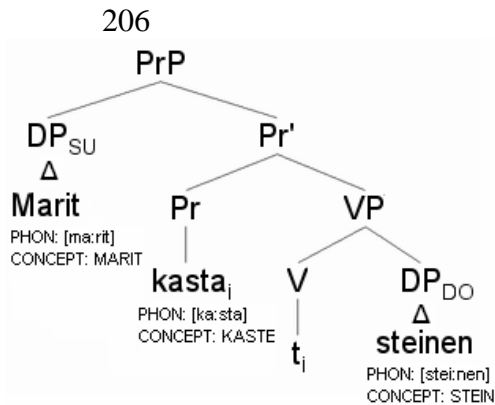
4.1.3 Ellipsis in a neo-constructional approach

In the neo-constructional approach adopted here, the issues with ellipsis will take a quite different form than those just presented from the endo-skeletal approach just. The fundamental view in constructionalism is that the argument structure frames exist independently of the elements that instantiate them. The frames are not just empty shells either, but are assumed to contain other components as well, such as operators in the head positions and abstract thematic content in the various arguments structure slots. For example, the frame illustrated in (205) is assumed to have a predication operator in Pr projection. The syntactic consequence of the predication operator is the realization of the particular projection *Pr* where the specifier position <spec, PrP> is assumed to be the subject's canonical position. This operator also has semantic consequences because it is responsible for assigning a property to an entity.



I have already argued that the argument structure slots in the frames were associated with abstract semantic content, and in (205) I have symbolized this with Δ. Even though the proposal put forth was clearly quite tentative, the main idea was that the subject position was assumed to be associated with a notion of the most prominent participant in the event as perceived by the speaker, while the direct object was taken to have a less prominent role. These abstract semantic features are assumed to be present, even though the position is not instantiated by any lexical item. In Chapter 3.3.2.3 in relation to example (114), I also maintained that the properties of the projections themselves influenced the instantiated items. For instance, an item instantiated in the V projection will be assigned verbal properties.

The argument structure frame in (205) must then be instantiated with lexical items to convey the proposition that the speaker has in mind. The lexical items are assumed to have conceptual content and information about phonetic features. The instantiated version of the frame in (205) is thus illustrated in (206).

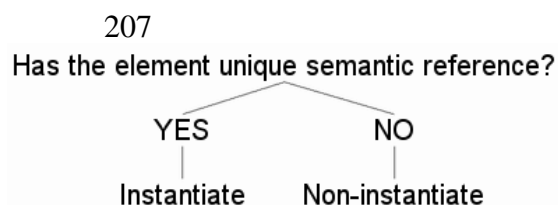


Consequently, the syntactic structure is *not* dependent upon the presence of a lexical or functional item taken from the lexicon, which, in the case of ellipsis, later must be deleted (or not phonetically realized). In the neo-constructional approach, the question is no longer what can be elided, but which structures need or need not be instantiated. It is obvious that some projections in the structures must be instantiated. Otherwise we would end up with sentences containing no words or sounds. Thus, the phenomenon of ellipsis is reinterpreted as a mechanism that makes the instantiation of some positions in a frame unnecessary. In relation to the VP ellipsis, the question will be: Why isn't the V in the second clause necessarily instantiated? Or, why isn't the <spec, PrP> necessarily instantiated in the sentences missing the subject phrase? In this approach, the term "elided" will be misleading, and I will in the following use the term "non-instantiated". I will, however, keep the term ellipsis since the definition in (183) only states that an element is missing, and does not relate to how this process actually took place.

As already discussed in the beginning of this section, the issue of recoverability is important in an analysis of ellipsis. McShane (2005) maintains that a syntactically elided category must necessarily be recovered from the linguistic context, the extralinguistic context or world knowledge (ibid. p. 16). The same notions, albeit in different terminology, are found in Nygård's (2004) treatment of elliptical structures in Norwegian colloquial speech. Nygård (2004) works with a neo-constructional approach, and proposes three different principles that control the instantiations of lexical items in the argument structure frames. Two of them relate to recoverability, which is of most interest here. The first is the principle of semantic visibility,

which means that items with unique semantic content must be phonetically realized (Nygård, 2004:84). The second is the principle of pragmatic visibility, which states that items not activated in a context (linguistic or non-linguistic) must be realized. The third principle relates to licensing. It states that either the specifier or the head of every projection in a structure must be instantiated (Nygård, 2004:85). However, this latter principle seems to be too strong a restriction. As Nygård herself points out, this principle cannot be upheld when complementizers are omitted, since this type of ellipsis leaves the C projection non-instantiated (ibid. p. 99-100). Rather, it might be that the principle of structural visibility is activated when the two principles of recoverability are not met (Áfarli, p.c.). This means that the specifier or the head of an item that is not semantically or pragmatically recoverable is necessarily instantiated. On the other hand, if the item is recoverable, the pragmatic or semantic visibility makes the instantiation of particular projections unnecessary.

Since the principles of semantic and pragmatic visibility are considered crucial in the instantiation of the argument structure frames, I will present them more thoroughly in the following. The figure in (207) illustrates the principle of semantic visibility.⁷²



This principle can account for the possibility of the non-instantiation of the V projection in the second clause in a co-ordinated structure exemplified in (189a), here repeated as (208a).

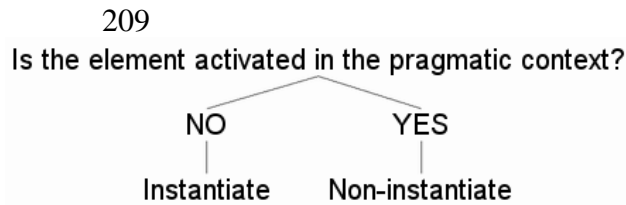
- 208
- a Hvis du skal sykle, så skal jeg Ø også!
 IF YOU SHALL CYCLE, THEN SHALL I [VB-ELLI] TOO
"If you're riding a bike, so will I!"

The verb *sykle* (cycle) does not have unique reference in (208a), because the exact same verb is found in the preceding sentence. The principle in (207) states that elements that do not have a unique semantic reference need not be instantiated. Obviously, the auxiliary *skal* (shall) is also a candidate for non-instantiation according to the principle in (207), but as I have already noted in relation to the examples in (189), it is commonly assumed that the ellipsis, in

⁷² The term "unique" refers to whether the element is the only one in the clause that denotes e.g. an entity or event. "Unique" does not necessarily imply that the element refers to a particular entity or event. The indefinite NP *gutter* (boys) can therefore have a unique semantic reference in a sentence if these boys have not been mentioned previously in the clause.

addition to being recoverable, must also be licensed. The AUXP in (209) cannot be non-instantiated because conditions of licensing are not met.

Nygård (2004) also introduces a principle of pragmatic visibility, which she maintains is especially important for explaining ellipses in spoken language (ibid. p. 149). This principle is illustrated in (209).



As we will soon see, the principle of pragmatic visibility will be relevant in the discussion of the non-instantiated subjects in the Trondheim WOZ dialogues. As opposed to the principle of semantic visibility, the principle in (209) can account for the possibility of recovering the antecedent of the ellipsis outside the current sentence. In (210), the subject in person B's utterance is missing, and it is not possible to recover the antecedent of the missing subject within person B's utterance. However, the antecedent of this ellipsis is recoverable from person A's utterance.

210

Person A: Den hunden bet faktisk sønnen min i går.
 THAT DOG-THE BIT ACTUALLY SON-THE MINE YESTERDAY
"That dog actually bit my son yesterday."

Person B: Skulle vært avlivet.
 [SUBJ-ELLI] SHOULD BEEN PUT-TO-SLEEP
"Should have been put to sleep."

Summing up the proposals made in relation to ellipsis in the neo-constructional approach, the process that distinguishes this proposal from the one suggested in the endo-skeletal approach is that nothing is assumed to be deleted from the structure. On the contrary, the question becomes which projections in the argument structure frames need not be instantiated. I have presented two principles of recoverability that regulate the instantiations of projections, cf. (207) or (209). I have also pointed out that licensing conditions also need to be involved because it is not the case that every recoverable element can be omitted from the structure, cf. (189b-c). Since my main aim in this chapter is to present how the ideas in the neo-constructional approach can be used to offer a shift in the perspective on a much-discussed phenomenon, I will not go into details about the possible licensing strategies in Norwegian sentences. I believe that these are issues that can be solved within the proposed framework,

but I will leave this question to future research. I will now turn to the ellipses in the TWOZ and investigate the kinds of non-instantiated projections that are found there.

4.1.3.1 Non-instantiated Pr projections

As already mentioned in relation to Haegeman and Guéron's (1999) proposal of omitted subjects in English sentences, non-instantiated Pr projections are the most frequent ellipses in the TWOZ material. This group can be divided into two subgroups depending upon whether the missing subject is in a main clause (17 occurrences), or whether the missing subject is in a co-ordinated structure, (12 occurrences). These two types are illustrated in (211a-c) and (211d-e), respectively.

211

- a Ø skulle ha vært på Havstad.
[SUBJ-ELLI] SHOULD HAVE BEEN TO HAVSTAD
"Should have been to Havstad."
- b ja jeg lurte på hvordan jeg kan komme meg til Skistua på lørdag Ø skulle gjerne vært der før klokka tolv
YES I WONDERED ON HOW I CAN GET MYSELF TO SKISTUA ON SATURDAY [SUBJ-ELLI] SHOULD LIKE-TO_{ADV} BE THERE BEFORE O'CLOCK TWELVE
"Yes, I was wondering how I could get to Skistua on Saturday. Would like to be there before noon."
- c ja Ø avslutter.
YES [SUBJ-ELLI] TERMINATE_{PRES}
"Yes terminate."
- d jeg vil gjerne ta bussen fra Torget til Prestejordet og Ø være der senest klokka fem.
I WILL LIKE-TO_{ADV} TAKE BUS-THE FROM TORGET TO PRESTEJORDET AND [SUBJ-ELLI] BE THERE LATEST O'CLOCK FIVE
"I would like to take the bus from Torget to Prestejordet and be there no later than five o'clock."
- e Ø skulle gjerne ta bussen fra Lade til Saupstad og Ø være framme senest klokka atten.
[SUBJ-ELLI] SHOULD LIKE-TO_{ADV} TAKE BUS-THE FROM LADE TO SAUPSTAD AND [SUBJ-ELLI] BE THERE LATEST O'CLOCK EIGHTEEN
"Would like to take the bus from Lade to Saupstad and be there no later than six p.m."

I will begin my investigation with the sentences in (211a-c). Six of the non-instantiated subject positions in main clauses occur in the user's first utterance in their first turn, cf. (211a). An additional two non-instantiated subject positions occur in the first turn, but in the second clause, cf. (211b). The remaining nine of the non-instantiated subject positions appear in subsequent user turns, cf. (211c).

The missing subjects in (211a-c) can be accounted for by the principle of pragmatic visibility. The reference for the non-instantiated subjects in (211b) and (211c) is recoverable from the preceding linguistic context. The preceding clause in (211b) contains three references to the person making the inquiry: *jeg lurte*, *jeg kan* and *meg* (I wondered, I can,

and me). Thus, the missing subject in the final clause is recoverable. The sentence in (211c) is the user's second turn in the dialog. In the first turn, the user said: *Jeg ønsker å vite [...]* (I want to know). Here, the subject position was instantiated, and the missing subject in the subsequent turn has been made pragmatically visible. In both (211b) and (211c), the elements are recovered in the preceding linguistic context, and according to the principle of pragmatic visibility stated in (209), these items need not be inserted into the syntax. However, the utterance in (211a) is the user's first turn in the dialogue, and how can this element meet the condition of semantic or pragmatic recoverability? The answer lies in the acknowledgement that it is not only the action of a person who non-instantiates a projection that can make an element pragmatically visible. The context also involves utterances from the communication partner and also the shared non-linguistic context. As we saw in relation to the example in (210), the entity *hunden* (the dog) is made pragmatically salient by person A, while person B takes advantage of the opportunity to non-instantiate pragmatically salient entities. Likewise, in the TWOZ material, the computer starts the dialogue by referring to the user by *du* (you), which indicates that the system has some comprehension of the participants involved in the dialog, cf. (212).

212

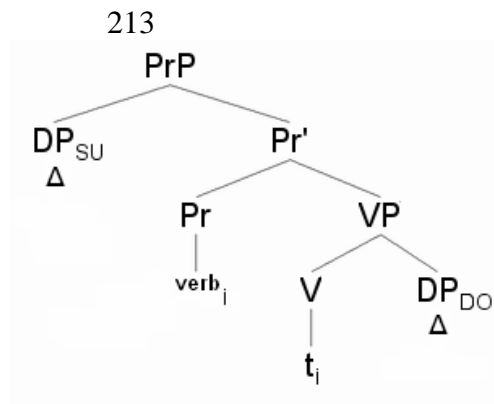
- a First TWOZ experiment: *Hva ønsker du å vite?* (What do you want to know?)
- b Second and third TWOZ experiments: *Du kan spørre fritt om bussruter og reisetider for vilkårlige strekninger. Du kan spørre fra nå av.* (You can ask freely about bus schedules and travelling times for any distance. You can start asking now.)

Since the dialogue is performed via telephone, *du* and *jeg* (you and me) have limited choice in possible referents.⁷³ I maintain that the subject in (211a) is recoverable from the pragmatic context as well, i.e. the computer's previous utterances, and accordingly, the principle of pragmatic visibility is met.

There is, however, one assumption that needs to be discussed in light of the non-instantiated subject position. I have previously maintained that the Pr operator necessarily must have an entity in <spec, PrP> in order for the predication operator to be saturated. At first glance, the sentences with non-instantiated subject positions seem to violate this requirement. However, the predication operator operates on the semantic of the sentence. Thus, the saturation of the Pr projection can be maintained through the *abstract* semantic features associated with the subject position, regardless of whether these semantic features are

⁷³ For example, it would be interesting to see how users would have responded to a different opening prompt that gave no indication of the dialog system's understanding of "you" and "me". A plausible hypothesis is that a non-instantiated subject position would occur even more rarely. This is, however, a task for future research.

associated with a realized lexical item. In relation to the argument structure presented in (205), here repeated as (213), I maintained that the subject position could be associated with an abstract notion of "the most prominent participant in the event" (as perceived by the speaker).



The saturation of the predication operator could therefore be fulfilled by this abstract notion of prominence. The main point is that the predication operator and the entity that saturates it can be separated from the lexical instantiation of this syntactic position.

I will now turn to the non-instantiated subject position in co-ordinated structures, and investigate how these can be approached. There are ten co-ordinated structures in which the subject position in the second sentence is non-instantiated, cf. (211d), here repeated as (214a). (One might assume that the AUX projection is also non-instantiated, but I will return to this topic in Chapter 4.1.3.2). In addition, two co-ordinated structures do not have subjects in either sentence, cf. (211e), here repeated as (214b).

214

- a jeg vil gjerne ta bussen fra Torget til Prestejordet og Ø være der senest klokka fem.
 I WILL LIKE-TO_{ADV} TAKE BUS-THE FROM TORGET TO PRESTEJORDET AND [SUBJ-ELLI] BE THERE LATEST O'CLOCK FIVE
"I would like to take the bus from Torget to Prestejordet and be there no later than five o'clock."
- b Ø skulle gjerne ta bussen fra Lade til Saupstad og Ø være framme senest klokka atten.
 [SUBJ-ELLI] SHOULD LIKE-TO_{ADV} TAKE BUS-THE FROM LADE TO SAUPSTAD AND [SUBJ-ELLI] BE THERE LATEST O'CLOCK EIGHTEEN
"Would like to take the bus from Lade to Saupstad and be there no later than six p.m."

I believe that the co-ordinated sentences are a possible domain for the principle of semantic visibility, thus I maintain that the subject in (214a) is recoverable through the principle of semantic visibility. In (214b), the subject is missing from both the first and second conjunct. In line with my previous proposal, this first missing subject is recoverable through the principle of pragmatic visibility. I also believe that the missing subject in the last conjunct must be recovered from the pragmatic context, since the subject position in the first conjunct is not instantiated either. It is difficult to envisage how an ellipsis could be semantically

recoverable from another ellipsis. Rather, the ellipsis in the last conjunct inherits its properties from the first one. This notion of inheritance is supported by the observation that the ellipsis in the second conjunct can never refer to a different antecedent than the first one. Since all the missing elements are recoverable, either through the principle of semantic or pragmatic visibility, they are all candidates for non-instantiation.⁷⁴ The frequency of subject ellipsis indicates that <spec, PrP> is a good candidate for non-instantiation.

4.1.3.2 Non-instantiated AUX projections

In my investigation of the data material, I presented a group of elided auxiliaries after co-ordination (8 occurrences). However, there are several arguments that indicate that this group should not be regarded as ellipsis at all. First I will present the observations that initially led me to assume non-instantiated AUX projections in (215). Then I will present arguments that point in a different direction, namely that these structures should not be counted as ellipses at all.

The argument for treating the structures (215) as auxiliary ellipses is the observation that *være* (be) is an infinite verb form.

215

- a jeg vil gjerne ta bussen fra Torget til Prestejordet og Ø Ø være der senest klokka fem.
 I WILL LIKE-TO_{ADV} TAKE BUS-THE FROM TORGET TO PRESTEJORDET AND [SUBJ-AUX-ELLI] BE THERE
 LATEST O'CLOCK FIVE
"I would like to take the bus from Torget to Prestejordet and be there no later than five o'clock."
- b Ø skulle gjerne ta bussen fra Lade til Saupstad og Ø Ø være framme senest klokka atten.
 [SUBJ-ELLI] SHOULD LIKE-TO_{ADV} TAKE BUS-THE FROM LADE TO SAUPSTAD AND [SUBJ-AUX-ELLI] BE
 THERE LATEST O'CLOCK EIGHTEEN.
"Would like to take the bus from Lade to Saupstad and be there no later than six p.m."

An infinite verb form cannot occur in a sentence unless it is preceded by an auxiliary or an infinitival marker *å* (to). If we insert a subject and an AUX, we will get a grammatical sentence, cf. (216a). We can at the same time rule out the possibility of a missing infinitival marker *å* (to) on the basis of the ungrammaticality of (216b).

⁷⁴ An interesting observation in the data material is that there are no occurrences of co-ordinated structures where the subject position is non-instantiated in the first sentence, while phonetically realized in the second conjunct, cf. (A).

- A. vil ta bussen fra Lade til Dragvoll og jeg vil være der klokka fem.
 [SUBJ-ELLI] WILL TAKE BUS-THE FROM LADE TO DRAGVOLL AND I WILL BE THERE O'CLOCK FIVE
"Want to take the bus from Lade to Dragvoll and I want to be there at five o'clock."

I am reluctant to judge the sentence in (A) as ungrammatical, but the observed pattern strongly suggests that the non-instantiation of the subject in the second conjunct is practically obligatory when the subject in the first conjunct is also non-instantiated.

216

- a Jeg vil ta bussen til Lade og jeg vil være der klokka fem.
I WILL TAKE BUS-THE TO LADE AND I WILL BE THERE O'CLOCK FIVE.
"I want to take the buss to Lade and I want to be there at five o'clock."
- b *Jeg vil ta bussen til Lade og å være der klokka fem.
I WILL TAKE BUS-THE TO LADE AND [TO_{INF-MARK}] BE THERE O'CLOCK FIVE.
"I want to take the buss to Lade and to be there at five o'clock."

However, it is not possible to omit the subject and/or auxiliary if the structural relationship between the two sentences is altered, cf. (217a-b). Likewise, it is not possible to leave out the auxiliary in a non-co-ordinated declarative sentence, cf. (217c).

217

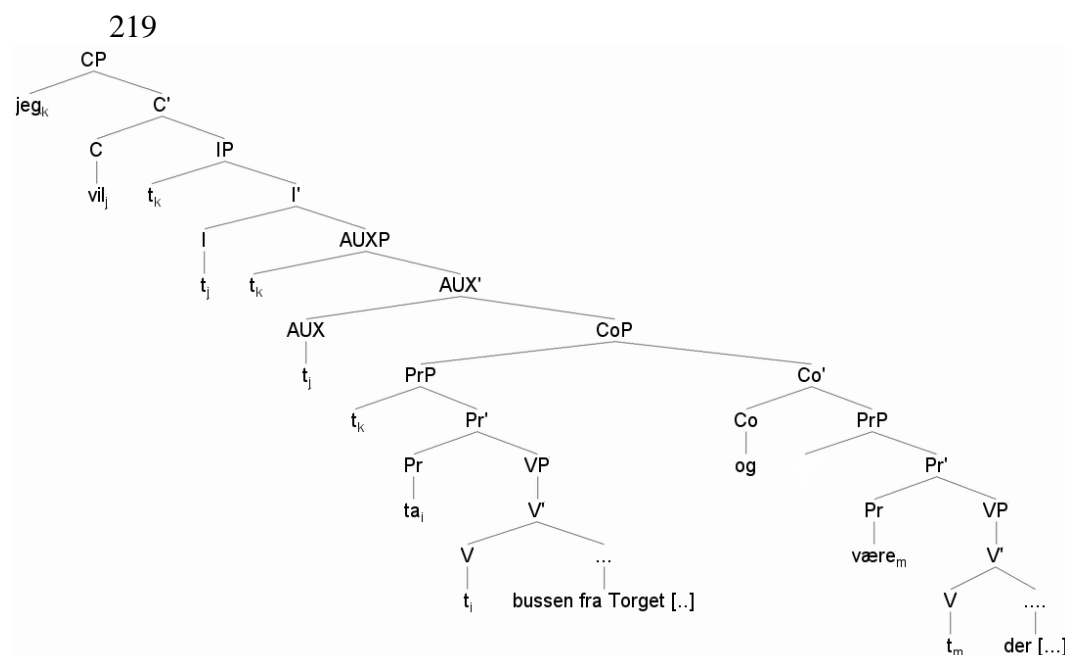
- a jeg vil gjerne ta bussen fra Torget til Prestejordet klokka to fordi jeg vil være der senest klokka halv tre.
I WILL LIKE-TO_{ADV} TAKE BUS-THE FROM TORGET TO PRESTEJORDET BECAUSE I WILL BE THERE LATEST O'CLOCK HALF THREE
"I would like to take the bus from Torget to Prestejordet because I want to be there no later than half past two."
- b *jeg vil gjerne ta bussen fra Torget til Prestejordet klokka to fordi Ø Ø være der senest klokka halv tre.
I WILL LIKE-TO_{ADV} TAKE BUS-THE FROM TORGET TO PRESTEJORDET BECAUSE [SUBJ-AUX-ELLI] BE THERE LATEST O'CLOCK HALF THREE
"I would like to take the bus from Torget to Prestejordet because [I want to] be there no later than half past two."
- c *Jeg Ø avslutte.
I [AUX-ELLI] TERMINATE_{INF}
"I terminate."

These observations strongly indicate that the phenomenon found in (215) is related to co-ordination. Co-ordination need not occur at the sentence level, but at other phrase levels as well. Faarlund et al. (1997) maintain that co-ordination can occur at every level in an utterance (ibid. p. 1107). In (218), we have co-ordinated APs, NPs and PPs.

218

- a Kakene var søte og gode.
CAKE-THE WERE [SWEET AND GOOD_{AP}]
"The cakes were sweet and good."
- b Eplene og pærene ligger på bordet.
[APPLES-THE AND PEARS-THE_{NP}] LIE ON TABLE-THE
"The pears and the apples lie on the table."
- c Jon reiste fra Oslo og til Paris.
JON TRAVELLED [FROM OSLO AND TO PARIS_{PP}]
"Jon travelled from Oslo and to Paris."

It is therefore likely that the sentences in (215) are not co-ordinated on the sentence level (CP), but rather the co-ordination is found lower in the sentence structure. The proposed structure for (215a) is illustrated in (219).⁷⁵



The proposed analysis is that the co-ordination takes place at the PrP level. The structure in (219) shows that the auxiliary phrase is assumed to be situated outside the co-ordinated structure. Both *ta* (take) and *være* (be) share the same auxiliary. This analysis makes the assumption about a non-instantiated AUX projection in the second conjunct superfluous. The utterances that initially were classified as ellipses should rather be treated as instances of co-ordinated structures.

One question that arises with the proposed analysis is why the <spec, PrP> in the second conjunct cannot be instantiated, cf. (220a).

220

- a *Jeg vil ta bussen fra Lade til Dragvoll og jeg Ø være der klokka fem.
 I WILL TAKE BUS-THE FROM LADE TO DRAGVOLL AND I [AUX-ELLI] WILL BE THERE O'CLOCK FIVE
 "Want to take the bus from Lade to Dragvoll and I [want to] be there at five o'clock."

A possible explanation is that subjects must have abstract Case assigned by a Tense feature to be phonetically realized. Tense is assumed to be situated in the I projection in (219), and it can only license the subject which moves to <spec, IP>. The occurrence of a phonetically realized subject in the second conjunct is therefore ruled out. Even though there are no occurrences of non-instantiated AUXP in the TWOZ material, this is not ruled out in

⁷⁵ I have adopted Johannessen's (1998) proposal for the conjunction as a head in its own projection, the Coordination Phrase (CoP). The conjuncts are positioned in <spec, CoP> and <comp, CoP> respectively.

Norwegian sentences per se. Nygård (2004:123) presents an example of a missing auxiliary, cf. (221a).

221

- a Du kamerat. Låst meg ute eller?
YOU BUDDY. LOCKED_{PST-PRT} ME OUT OR
"Hey buddy! Did you lock me out, or?"

4.1.3.3 Non-instantiated C-projections

There are only four occurrences of complement clauses in the material, and the complementizer *at* (that) is omitted in all of them, cf. (222).

222

- a ja jeg tror Ø jeg heller vil reise fra Lohove.
YES I THINK [COMPL-ELLI] I RATHER WILL TRAVEL FROM LOHOVE
"Yes, I think I rather want to travel from Lohove."
- b jeg tror Ø jeg vil dra fra Teknostallen.
I THINK [COMPL-ELLI] I WILL GO FROM TEKNOSTALLEN
"I think I want to go from Teknostallen."
- c jeg tenkte Ø jeg skulle være der rundt tolv på formiddagen
I THOUGHT [COMPL-ELLI] I SHOULD BE THERE AROUND TWELVE ON BEFORE-NOON
"I thought I should be there around twelve before noon."
- d den vet eg Ø også går til Stavset
THAT_{PRONOUN} KNOW I [COMPL-ELLI] ALSO GOES TO STAVSET
"I know that one also goes to Stavset."

The data, even though quite sparse, indicate that the non-instantiation of the complementizer *at* (that) is a common feature. I will start by looking at complementizers in relation to the principle of semantic or pragmatic visibility. McShane (2005) maintains that complementizers indicate the semantic relationship between the sentences involved (ibid. p. 178). Even though the sentences in (223) are identical, the understanding of how they relate to each other will vary due to the different complementizers. These complementizers cannot be deleted without losing the semantic relation between the sentences.

223

- a Marit fikk is fordi hun ble syk.
MARIT GOT ICE BECAUSE SHE BECAME ILL
"Marit got ice cream because she got ill."
- b Marit fikk is hvis hun ble syk.
MARIT GOT ICE IF SHE BECAME ILL
"Marit got ice cream if she got ill."

Based on this observation, it seems that complementizers have unique semantic content, and should not be candidates for non-instantiation. But *at* (that) differs from the complementizers in (223). Even though *at* is missing, the semantic relationship between the two sentences is clear. McShane (2005) points out that: "[...] even within a given language, not all

conjunctions are created [sic!] equal with respect to their overt/covert status" (ibid. p. 178).

This fact might be related to the semantic properties the complementizers bring to the interpretations. The complementizers that yield a particular interpretation of the semantic relation between the two sentences, as in (223), cannot be omitted without loss of meaning. Nordgård and Åfarli (1990) propose that *at* and *som* (that and that) are semantically empty elements, and do not bring any unique semantic content to the interpretation. It is also interesting to note that Wiggen (1986) maintains that the expletive *det* (there/it) is frequently omitted in spoken language, and Nygård (2004) presents several examples that show how both expletive and copula verb *være* (be) are omitted, cf. (224a) (Nygård's example (12)).

224

a Kanskje litt dumt å kaste det i søpla.

[SUBJ-ELLI] [VB-ELLI] PERHAPS LITTLE STUPID TO THROW IT IN GARBAGE-THE

"[It was] perhaps a bit stupid to throw it into the garbage."

What unites these elements (complementizers, expletives and copula verbs) is their lack of semantic content. One might expect that elements that are not subject to the principles of semantic or pragmatic visibility should be easier to omit. I will propose that a lexical item that has little or no semantic content does not have to obey the principle of semantic or pragmatic visibility simply because its semantic content is non-existent.

Nygård (2004) proposes that the syntactic structures in (222) are so unambiguous that the decoding of the structures is unproblematic even though the complementizer is missing (ibid. p. 100), cf. (225).

225

"At og som kan som nevnt falle bort fordi setningens oppbygging ellers så tydelig markerer hvilken type struktur dette er snakk om" (Nygård, 2004:100).

"As previously mentioned, at (that) and som (that) can be omitted because the sentence's structure so clearly indicates which type of structure we are dealing with."

The omission of complementizers challenges the suggestion that the specifier or head of an element that is *not* semantically or pragmatically visible must be instantiated. As presented earlier, this principle of structural visibility is proposed in Nygård (2004). However, the complementizers *at* and *som* constitute exceptions to this principle because the C projection will not have any instantiated elements. Nor is their antecedent semantically or pragmatically recoverable. Even though the actual licensing conditions associated with various types of ellipsis have not been given much attention in this thesis, it is interesting to note that there is a structural difference between the complementizer *at* (that) which can be omitted, and the

complementizers *hvis* and *fordi* (if and because) which cannot be omitted. Complementizers like *hvis* and *fordi* (if and because) can occur practically with all kinds of verbs, while the occurrence of *at* (that) is more closely related to particular types of verbs, such as verbs denoting communication and cognition. The complementizer *at* (that) is always governed by the main verb in the main clause, but sentences introduced by *hvis* and *fordi* (if and because) are assumed to be adjoined to the main verb in the main clause. Thus, the latter group is never governed by the matrix verb. This close structural relationship between the verb and the complementizer could be a possible licensing condition for the non-instantiation of the C. The licensing conditions that apply to the complementizer *som* (that) cannot be explained as a close structural relationship between a main verb and *som* (that), and I believe that other licensing conditions are involved here.

4.1.3.4 Various ellipsis types

In addition to the previously discussed elliptic structures, I have found four occurrences of possible ellipsis that must be treated separately since they cannot be grouped together with the previously non-instantiated projections (i.e. <spec, PrP> and C^o). In relation to these examples it is necessary to address one essential issue with ellipsis in spoken language that concerns how a researcher can decide whether a given sentence is an instance of an elliptic structure, or whether the missing constituent is a result of an error. The previously discussed structures occurred several times in the data material, which makes these ellipses a regular phenomenon in the Norwegian language. The structures in this section occur only one time each, and to decide whether the particular sentence should be analysed as an ellipsis, we must take two things into consideration. First, the ellipsis must be seen in relation to the participant's behaviour. If the sentence contains corrections, hesitations or any sign that might signal a performance error, the sentence should not be analysed as an ellipsis. Second, if one can find similar structures in other corpora, it will support the assumption that the sentence in question contains an ellipsis. It is also possible to ask other native speakers about their intuitions about certain ellipses. I will now go through each of the utterances in light of these assumptions.

The utterance in (226a) has a word order of a polar question, but there is nothing in the intonation pattern that suggests that the participant meant this to be interpreted as a polar question.

226

- a mm skulle eg ha kommet meg fra persaunet til sentrum klokken tjueto
 MM [ELLI] SHOULD I HAVE COME ME FROM PERSAUNET TO CENTRE O'CLOCK-THE TWENTY-TWO

"Mm I should travel from Persaunet to the Centre at ten o'clock."

When I annotated this sentence, it struck me that the [s] in *skulle* (should) was anomalously long. Indeed, an acoustic analysis showed that the [s] is 134 ms long, while another occurrence of *skulle* made by the same user, the [s] (also clause initial) was only 52 ms long. This indicates that the participant is signalling something phonetically even though the signal cannot be distinguished as a word. (Prolonging of initial sounds can also be a sign of hesitation, but the word order and the intonation pattern in (43b) suggest that this is not the case here.) I believe that the sentence in (43b) is not an example of a syntactic ellipsis, but that we are in fact dealing with an elision. Elision is a phenomenon in spoken language which means that phonemes in a word are not pronounced. My suggestion is that the participant is eliding the last vowel in the connective *så* (so), and the result is an anomalously long [s]. Since elision is a phonetic phenomenon, I will eliminate the sentence in (226a) as an example of a syntactic ellipsis.

In (227a), there is no finite verb in the subordinate clause. The participant shows no sign of hesitation or uncertainty, and there is no reason to believe that the participant felt that he had made an error that made the utterance hard or impossible for the system to understand.

227

- a jeg vil gjerne vite når siste buss hjem fra byen til Singsaker på lørdag
I WOULD LIKE_{ADV} KNOW WHEN LAST BUS HOME FROM CITY-THE TO SINGSAKER [VB-ELLI] ON SATURDAY
"I would like to know when the last bus home from the City Centre to Singsaker on Saturday."

Based on the lexical items that are uttered, the most likely missing verb is *går* (goes_{PRES}). This assumption is based on the numerous occurrences of similar sentences found in the material.

Since the sentence in (227a) is the participant's fifth utterance in the dialogue, my first hypothesis was that the verb *går* (goes) was used earlier in the dialogue, and thus recoverable through pragmatic principles. However, the verb *gå* (to go) is not mentioned by the participant or dialogue system in the preceding turns. It is of course possible that the missing item could be recovered through the non-linguistic context. The participant might assume that he and the dialogue system share a common understanding of bus travels. This common knowledge includes the fact that bus travels must involve movement in order for transportation to take place. Hence, the verb of movement *å gå* (to go) would then be pragmatically activated in the non-linguistic context.

However, I have not been able to find any examples of missing finite main verbs comparable to the structure in (227a). The seven informants who have been presented with the sentence judged it as strange or completely strange, which coincides with my own intuition. Even though the sentence in (227a) could be a possible ellipsis, the lack of additional examples and the grammaticality judgement made by other native Norwegian speakers indicate that it is in fact a performance error. I will adopt this assumption, and dismiss the sentence in (227a) as a syntactic ellipsis.

In (228), the direct object consists of a determiner *en* (a) and an adjective phrase *annen* (different).

228

- a mm så vil eg ta en annen fra tyholtårnet til city syd
 MM NEXT WOULD I TAKE DIFFERENT [N-ELLI] FROM TYHOLTTÅRNET TO CITY SYD
 "mm next I would like to take a different one from Tyholtårnet to City Syd"

Determiners can either be analysed as a determiner phrase (DP), which governs a noun phrase (NP), or as a constituent positioned in the <spec> of a NP. In either case, determiners are assumed to be a category associated with NPs, not adjective phrases (APs). Therefore, the head noun is assumed to be omitted in (228a). The omission of a head noun is also a very common strategy in written Norwegian, cf. (229).

229

- a Det stod et fat med epler på bordet. Han valgte et rødt.
 "There was a bowl with apples on the table. He chose a red."

The context provided by the first sentence in (229a) along with our knowledge of the world, the phrase *et rødt* is likely to be equivalent to a red apple, rather than a red bowl or a red table, even though the last sentence does not explicitly describe which red item *han* (he) chooses. In the ellipsis in (228), the pragmatic context suggests that the omitted phrase must be *buss* (bus). The sentence in (228) is the participant's sixth turn in the dialog. In the preceding turns, the participant has mentioned the word *bus* three times, and the dialog system has mentioned it four times. The constituent *buss* (bus) obeys the principle of pragmatic visibility, and is therefore a candidate for non-instantiation. What separates (228) from the previously discussed ellipses is that the non-instantiation takes place at the phrase level. Since my main focus in this thesis is the sentence level, I will not go into a discussion of ellipsis in noun phrases, but will leave this to future research.

The fourth and last utterance that contains a possible ellipsis is presented in (230a).⁷⁶

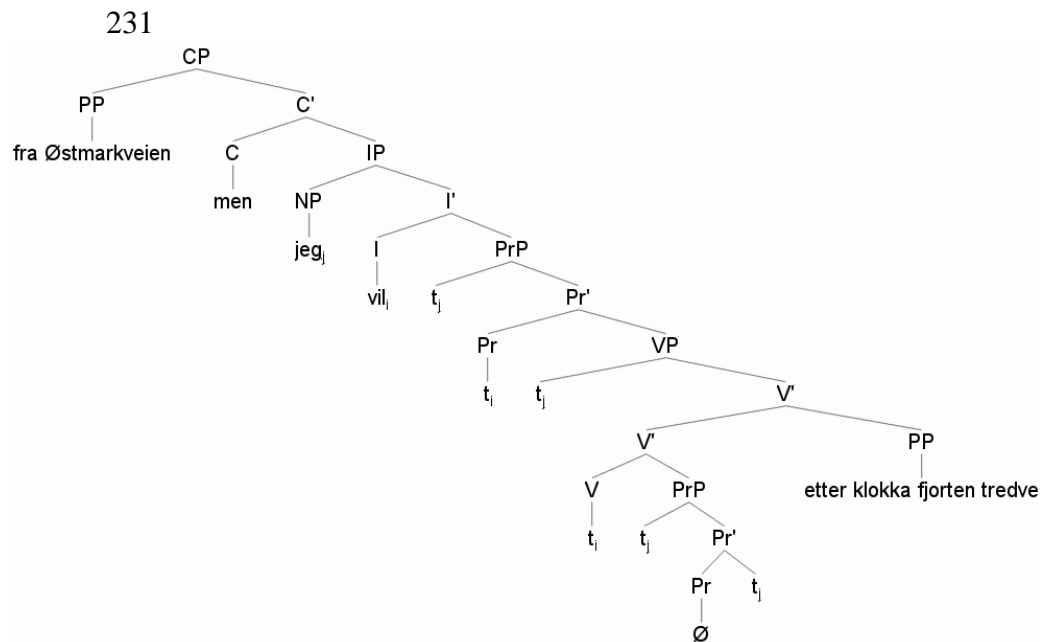
230

- a fra østmarkveien men jeg vil før klokka fjorten tredve nei etter klokken fjorten tredve.
FROM ØSTMARKVEIEN BUT I WILL [ELLI] BEFORE O'CLOCK-THE FOURTEEN THIRTY NO AFTER O'CLOCK-THE FOURTEEN THIRTY.
"From Østmarkveien but I would before half past two no after half past two."

This question of whether this utterance in fact should be treated as an ellipsis or not relates to the observation made in Eide (2005). She argues that modals like *vil* (want to) in (230a) are followed by phonetically empty GO. In Chapter 4.3, I will argue that there is no need to assume the occurrence of an empty verb in (230a) in the neo-constructional framework. But Eide (2005) also maintains that the adverbial complement in these constructions is either realized as an adverb phrase or a preposition phrase always denoting directional locatives or resultatives (ibid. p. 60). However, the puzzling observation in (230a) is that in contrast to the assertion made in Eide (2005), the modal *ville* (want-to) is followed by a **temporal** adverbial complement; *etter klokken fjorten tredve* (before fourteen thirty). One possibility is of course that this structure is a counter-example to the assertion made in Eide (2005), and that temporal adverbials are equally possible in this position. In the following, I will discuss several possible analyses of this sentence. I believe it is important to show that I have considered other possibilities before I propose my final analysis. I will conclude that (230a) should be analysed as a small clause with a non-instantiated complement. The assertion that ellipsis can occur in small clause complements has not to my knowledge been discussed before.

The first possible analysis is to place the preposition phrase *fra Østmarkveien* as the small clause complement, and assume that this phrase moves to <spec, CP> in the main clause later in the derivation. This proposal will incorporate the assumption that the preposition phrase following a modal denotes a directional locative (Eide, 2005). The adverbial *etter klokken fjorten tredve* denoting time will be adjoined to the V projection, cf. (231).

⁷⁶ Note that there is a correction in the sentence indicated by *nei* (no) and correction of the time of travel (from *before 14:30* to *after 14:30*). I will only focus on the structure of the corrected sentence, since a proposal of how corrections should be accounted for is beyond the scope of this thesis.



In the derivation, the adverbial phrase *fra Østmarkveien* moves to <spec, CP>, the subject *jeg* (I) moves to the <spec, IP> and the modal *vil* (want to) moves to I. The word *men* (but) would be positioned in C. This proposal would yield the correct word order, but it is probably not the correct analysis. First of all, it is doubtful whether the preposition phrase *fra Østmarkveien* belongs to the sentence *jeg vil etter klokka fjorten tredve* at all. As already discussed in (202), sentence adverbials in Norwegian are assumed to be adjoined to the I projection. If we assume that the word *men* (but) is positioned in the C°, while the PP *fra Østmarkveien* is fronted in <spec, CP>, the subject cannot move further than <spec, IP>. These assumptions would result in a word order illustrated in (232a).

232

- a **Fra Østmarkveien men jeg ikke vil etter klokka fjorten tredve.*
 FROM ØSTMARKVEIEN BUT I NOT WANT-TO AFTER O'CLOCK FOURTEEN THIRTY
 "From Østmarkveien, but I don't want to go after half past two."

(232a) is an ungrammatical sentence in Norwegian. For the sentence to be grammatical, the sentence adverbial must be positioned to the right of the finite verb, cf. (233a). This suggests that the verb *vil* (want to) must be able to move to C°.

233

- a *Fra Østmarkveien men jeg vil ikke etter klokka fjorten tredve.*
 FROM ØSTMARKVEIEN BUT I WANT-TO NOT AFTER O'CLOCK FOURTEEN THIRTY
 "From Østmarkveien, but I don't want to go after half past two."

Since the subject *jeg* (I) is positioned to the left of the finite verb, this constituent must be placed in <spec, CP>. This implies that *men* (but) must be situated in a projection to the left of C. As already discussed in 3.4, it is possible to assume different functional projections with

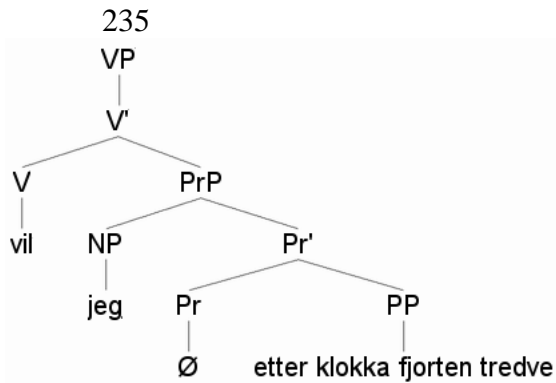
particular properties in the C domain. If we look at the word *men* (but) in (233a), it is not used as a conjunction implying a kind of contrast or modification of the phrase *fra Østmarkveien*. The word *men* (but) seems to have a different function in this context. In spoken language, words like *så*, *og*, *men* and *eller* (then, and, but and or) are often used as connectives, and their function is to signal how the following sentence relates to the previous utterances. These connectives are typically situated in the leftmost position of the sentence. A plausible hypothesis is that there is a functional projection to the left of C that hosts these connectives and gives them their particular reading. In order to see how the utterance in (233a) relates to the previous context, I have provided the complete dialogue in (234).

234

DS: Velkommen til bussinformasjonen i Trondheim. Du kan spørre fritt om bussruter og reisetider for vilkårlige strekninger. Du kan spørre fra nå av. <i>"Welcome to the bus information service in Trondheim. You can ask freely about bus schedules and travelling times for any distance. You can start asking now."</i>	1
U: når går bussen til Bromstad i morgen i halv tre-tida <i>"When does the bus to Bromstad leave tomorrow around half past two?"</i>	2
DS: Vennligst vent. Du vil dra til Bromstad før klokken fjorten tretti på tirsdag. Hvor vil du reise fra? <i>"Please wait. You want to go to Bromstad before half past two on Tuesday. Where do you want to travel from?"</i>	3
U: [fil-e] fra Østmarkveien men jeg vil [elli] <før> <klokka> <fjorten> <tredve> [sil 0.92] <nei> !etter klokken [fil-e] fjorten tredve <i>"From Østmarkveien but I want to go before half past two no after half past two."</i>	4

The phrase *fra Østmarkveien* is a direct response to the dialogue system's question *"Where do you want to travel from?"* in the preceding turn. Then, the user wants to correct the dialogue system's statement *"You want to go to Bromstad before half past two on Tuesday"*. The user wants to go *after* half past two. But first she actually confirms the travelling time offered by the dialogue system. The user then discovers her mistake and corrects the travelling time by uttering *no* (*nei*) and then emphasizing the preposition *etter* (after). The function of the connective *men* (but) is to link and contrast the user utterance to the dialog system's statement *"You want to go to Bromstad before half past two on Tuesday"*. *Men* (but) does not signal any relation between the phrase *til Østmarkveien* and the following sentence. I will therefore propose that even though the phrase *til Østmarkveien* is part of the user's second turn, it is not a part of the sentence *jeg vil etter klokken fjorten tredve* (I want to go after half past two). Thus, the structure proposed in (231) is refuted. This means that the PP *fra Østmarkveien* is

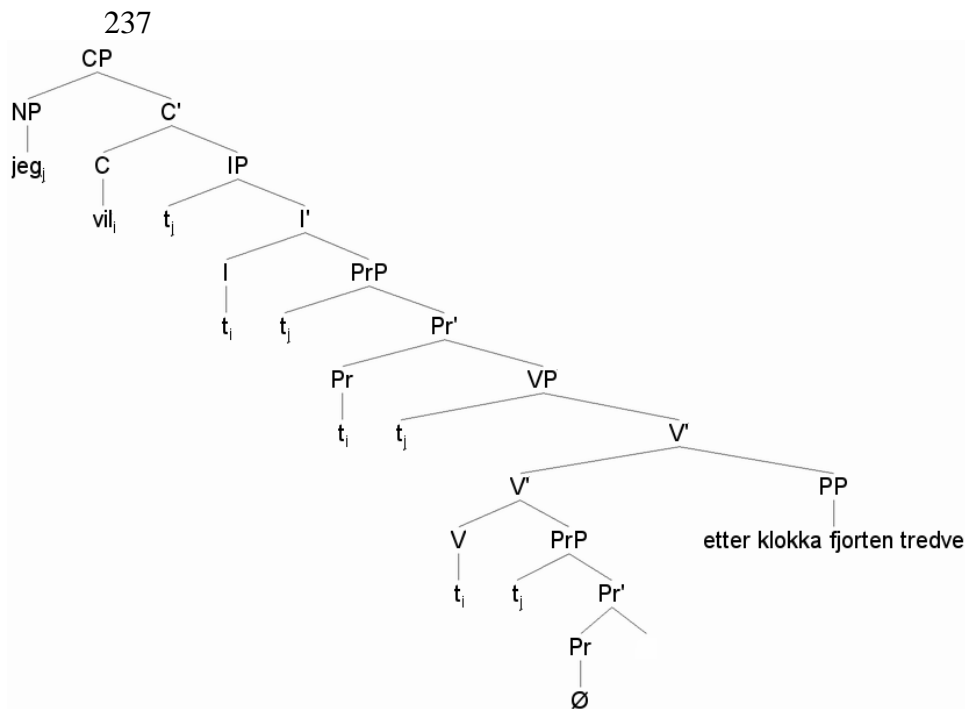
not moved from <comp, PrP>. However, this leaves us with the problem that started this discussion, namely why the modal *ville* (want-to) is followed by a temporal adverbial instead of the predicted directional locative. A possible analysis of the temporal adverbial as the complement in the resultative frame is illustrated in (235).



There are, however, some problems with assuming the structure in (235). A resultative frame with a directional locative constitutes a sentence that is fully interpretable, cf. (236a). On the other hand, a sentence based on the structure in (235) will be perceived as an elliptic sentence which lacks a constituent in order to be fully interpretable cf. (236b).

- 236
- a Jeg vil til Lade.
I WANT-TO TO LADE
"I want to go to Lade."
- b #Jeg vil etter klokka to.
I WANT-TO AFTER O'CLOCK TWO
"I want to after two o'clock."

If (236b) is to be perceived as a meaningful sentence, the missing element must be recoverable from the context; *what* the speaker wants after two o'clock. The fourth turn in (234) does in fact present an answer to the *what*-question represented by the preposition phrase *til Østmarkveien*. The information found in this phrase is crucial to decode the sentence *men jeg vil etter klokka fjorten tredve* (but I want to go after 14:30). As shown in (236b), the omission of this information from the context will prohibit a full interpretation of this sentence. The analysis proposed here is that the complement position in the Pr projection is non-instantiated, cf. (237).



The directional locative is certainly pragmatically visible in the context. Even though it is not found in the same sentence as the ellipsis, it is recoverable from the immediate preceding phrase. Even though the linear word order suggests that the modal is followed by a temporal adverbial phrase, the analysis proposed in (237) indicates that the directional locative is just non-instantiated in the resultative frame.

The assertion that ellipsis can be found in small clauses has to my knowledge not been discussed in the literature. The reason for this might be the fact that this type of ellipsis is more likely found in spoken language. As discussed in relation to (234), the utterance and the sentence structure containing the ellipsis must be explained in light of the preceding turns in the dialogue. As previously mentioned, Linell (1982) maintains that theoretical linguistics has mainly focused on written language, which is characterized by its monologic properties. Spoken language, on the other hand, is characterized as dialogic. The ellipsis in (237) seems to be a phenomenon related to dialogues, and thus it is perhaps not surprising that it has not been discussed previously in the literature.

The ability to omit the complement of a small clause brings back the question of saturation of the operator assumed to be present in the Pr. In relation to the non-instantiation of subjects (situated in <spec, PrP>), I maintained that it is possible to separate the lexical instantiation from the saturation of the projection due to the abstract semantic content assumed to be associated with the various slots. The possibility to saturate the Pr projection with abstract semantic content should not be restricted to the specifier position, but should be

equally liable for the complement position, which is the case in (237). This non-instantiation is of course dependent on the recoverability of the item in question.

4.1.4 Summing up

In this section, I have shown that the various analyses of ellipsis in the endo-skeletal approach are closely related to this approach's view of the relation between lexicon and syntax. As presented in Chapter 3, the lexical item is considered the source of the syntactic structure. To account for an ellipsis, the endo-skeletal approach must assume that the item is removed again, which is a very uneconomical process. One might rightfully ask why the syntax module would create elliptic structures if this would double the amount of syntactic operations. At the same time, elided elements would increase the processing load since cognitive capacity must be used to retrieve the missing item from other places, such as the linguistic and/or the non-linguistic context. To remedy these problems, some endo-skeletal analyses have suggested that ellipses be treated as base-generated empty categories. There is currently no consensus on what kind of empty category an ellipsis is. In one proposal, ellipses are treated as some sort of *pro* (Lobeck, 1995), while in another proposal, they are considered a trace (Haegeman and Guéron, 1999). Since ellipses constitute a heterogeneous group, it might turn out that various empty categories are the best solution in analysing this phenomenon from the endo-skeletal approach. However, the postulation of these various empty categories rests solely on the endo-skeletal's axiom that every syntactic projection must have a source from which it grows.

In the neo-constructional approach, the opposite approach is taken. Instead of seeking mechanisms that delete constituents in the derivation process, the neo-constructional approach seeks the mechanisms that make non-instantiation of the construction possible. In this view, ellipses are in fact an economical process, because items need not be inserted into the structure if they fulfil certain criteria. These criteria were taken to be recoverability and licensing. Even though licensing is crucial in an analysis of ellipses, the focus in this thesis has been on the two principles of recoverability; the principle of semantic visibility and the principle of pragmatic visibility. The principle of pragmatic visibility was found to be especially important to account for the recoverability of the missing items in the dialogues.

One of the motives for choosing ellipses as a topic of investigation was also the seeming contradiction that these structures presented with respect to the previous statements about the TWOZ material, namely that the dialogues consisted of mainly complete sentences. If the hypothesis is that speakers would avoid these structures in order to be explicit and concise, we would not expect ellipses to be found in the material. Even though some elliptical

structures were discovered in the material, a closer analysis revealed that one of the ellipses ought to be dismissed as an error, and another as a phonetic elision. In addition, the alleged missing auxiliaries were dismissed as ellipses altogether. They were instead classified as coordinated structures on the PrP level. The remaining ellipses were limited to a few types; non-instantiated <spec, PrP>, C° and <comp, PrP>. In Chapter 2.3.3.2, I maintained that 10.7% of the user turns in the Trondheim WOZ material contained ellipses. Since 10 of them now have been discharged as syntactic ellipses, Table A must be revised. The revised overview of elliptic structures in the TWOZ material is given in Table B.

Table B. Occurrences of ellipses in the TWOZ material(revised)

Omitted phrase	Occurr.	% of total omitted phrases
Subject (pronoun)	17	44.7
Subject (pronoun after coordination)	12	31.6
Elided auxiliary after coordination	0	0
Elided complementizers <i>at</i> and <i>som</i>	7	18.4
Elided main verb	0	0
Elided head noun	1	2.6
Other (elided complement in a resultative frame)	1	2.6
TOTAL	38	100.0

The overall percentage is revised to 8.4%. It is quite safe to say that ellipses are not frequent in the TWOZ material, and thus their existence does not contradict the general assertion that the TWOZ material primarily consists of complete sentence structures. Obviously, this investigation of ellipsis in the TWOZ material has only scratched the surface of this topic. Even though the theory must be tested against additional data, I believe that the neo-constructural approach offers an interesting method with a different perspective than endo-skeletal approaches, and which perhaps can yield new insights to this phenomenon. In addition, I hope that this investigation can inspire others to study ellipsis found in Norwegian, both in spoken and written language. The work carried out on VP ellipsis and other written language phenomena, primarily in English, is massive. There are, however, several intriguing facts that separate the English VP ellipsis from equivalent constructions in Norwegian. For example, it is impossible to have a VP ellipsis as (238a) in Norwegian. The Norwegian equivalent must have a pronoun *det* (it) inserted into the structure, where *det* (it) must be interpreted as referring to *snakket med Bill* (talked to Bill). The elements missing from the

English sentence are thus necessarily represented by a pronoun in Norwegian. The English examples in (238) and (239) are adopted from Lobeck (1995).

238

- a John talked to Bill but Mary didn't [e]
- b *Jon snakket med Bill, men Marit gjorde ikke.
JON TALKED TO BILL BUT MARIT DID NOT
"Jon talked to Bill but Marit didn't."
- c Jon snakket med Bill, men Marit gjorde ikke det.
JON TALKED TO BILL BUT MARIT DID NOT IT.
"Jon talked to Bill but Marit didn't do that."
- d Jon snakket med Bill, men det gjorde ikke Marit.
JON TALKED TO BILL BUT IT DID NOT MARIT
"Jon talked to Bill but that didn't Marit do."

In other words, Norwegian does not allow for ellipsis of the type presented in (238).

Moreover, the Norwegian sentence equivalent to the stripping construction in (239a) will yield a completely different interpretation than the English sentence, cf. (239b).

239

- a John studied rocks but not Jane [e].
- b Jon studerte steiner, men ikke Jane.
JON STUDIED ROCKS BUT NOT JANE
"Jon studied rocks but he didn't study Jane."
- c Jon studerte steiner, men det gjorde ikke Jane.
JON STUDIED ROCKS BUT IT DID NOT JANE
"Jon studied rocks but Jane did not (study rocks)"

The observed differences imply that the mechanisms used for explaining elliptic structures in English do not hold for Norwegian. This is, however, a topic for a thesis of its own, and I will not pursue it any further here.

4.2 Unaccusative constructions

In the Trondheim WOZ experiments, I found that participants who used the verb *gå* (go) alternated between sentences where they used the expletive subject *det* (it/there), cf. (240a) and the equivalent sentences without this expletive, cf. (240b).

240

- a Når går det buss til Lade?
WHEN GOES IT_{EXPL} BUS TO LADE?
"When does the bus go to Lade?"
- b Når går bussen til Lade?
WHEN GOES BUS-THE TO LADE?
"When does the bus go to Lade?"

In the endo-skeletal approach, the verb *gå* (go) will be classified as an intransitive verb based on the assumption that it is specified for only one argument.⁷⁷ Furthermore, a verb specified for only one argument is assumed to belong to one of two possible verb classes, unergative or unaccusative. If the verb is unaccusative, the single argument is inserted as the complement of the V projection, and the expletive *det* (it/there) can be inserted into the subject position as illustrated in (241a). Alternatively, the internal argument of an unaccusative verb can move to the subject position, yielding the sentence in (241b). (I will come back to the endo-skeletal analysis in more detail later in this section.)

241

- a Det går en buss.
IT_{EXPL} GOES A BUS.
"There is a bus going."
- b En buss går.
A BUS_J GOES T_J.
"A bus goes."

The majority of verbs are assumed to assign an *external* thematic role, but unaccusative verbs do not (Perlmutter 1978, Lødrup 1987, Dyvik 1989). The difference between (241a) and (241b) is superficial since the argument in both cases stem from the same VP *internal* position. Thus, the unaccusative verbs, as viewed from the endo-skeletal approach, exhibit syntactic features that deviate from the usual argument structure pattern.

⁷⁷ The classification of *gå* (walk) as an intransitive verb is not as straightforward as it might seem. This verb can occur in sentences like "Mary walked three miles" where the status of *three miles* is the salient point, i.e. is *three miles* an argument of the verb? This solution is suggested by Ramchand (2006), and consequently, the verb *walk* cannot be classified as intransitive. The other possibility is to classify *three miles* as an adjunct, which allows for the verb *walk* to be classified as intransitive. The fact that this debate exists indicates that the classification of verbs into different sets based on their subcategorization is not without problems.

As briefly illustrated, the analysis in the endo-skeletal approach is based upon the assumption that unaccusative verbs lack the external thematic role in their argument structure. Instead, the thematic role found in the argument structure of an unaccusative verb like *falle* (fall) must be assigned to a complement of the V projection. The argument structure specification in the lexicon will be as illustrated in (242a). In contrast, an unergative verb like *tenke* (think), which also has just one thematic role, must assign its only thematic role externally, cf. (242b). (Underscore symbolizes externally assigned θ -role.)

242

- a Falle: θ
- b Tenke: θ

According to the presentation of unaccusative verbs in Norwegian given in Nordgård and Åfarli (1990), the argument structure shown in (242a) will account for the grammaticality of the sentences in (243a) and (243b). In (243a), the single argument *et tre* (a tree) remains in the complement position of V, while in (243b), the argument *et tre* (a tree) moves to the subject position in the sentence. The argument structure in (242b) accounts for the ungrammaticality in (243c), and at the same time offers an explanation for the grammaticality of (243d).

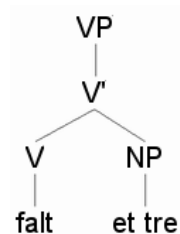
243

- a Det falt et tre.
IT_{EXPL} FELL A TREE
- b Et tre falt.
A TREE FELL
- c *Det tenker en mann.
IT_{EXPL} THINKS A MAN
- d En mann tenker.
A MAN THINKS

The source of the difference in argument structure between (243b) and (243d) is initially based on the intuition that the thematic role for the grammatical subject in (243b) differs from the thematic role found in (243d). *Et tre* (a tree) cannot be interpreted to have an agentive or volitional role in the falling-event. Rather, the tree has more thematic similarities with the role usually associated with a direct object, namely that it undergoes a motion and/or a change. In contrast, *en mann* (a man) is the entity performing the thinking-event, and can be interpreted as an agent. Most endo-skeletal approaches argue for universal principles that ensure that arguments with the same thematic content are realized in the same syntactic position. This assumption is captured in the Uniform Theta-Assignment Hypothesis, abbreviated as UTAH (Baker, 1988). According to the UTAH, the subject of (243b) and the subject of (243d) cannot be realized in the same underlying structural position because they do not have the same

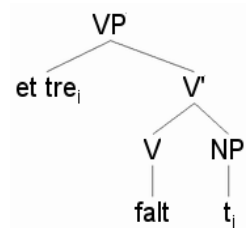
thematic properties. An argument with thematic properties like the one in (243b) must be realized as a complement to the V projection, while an argument with agentive properties like in (243d) must be realized in the specifier position of the V projection or externally to it. The underlying structure of unaccusative verbs is thus as illustrated in (244).

244



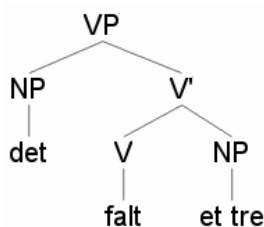
The derivation in the unaccusative construction can then proceed in two possible ways. The internal argument can either move to the subject position, yielding (245). This movement is possible because the unaccusative verbs do not assign an external role, hence the internal argument can move to <spec, VP> without breaking the Theta Criterion.⁷⁸

245



The other possibility is to insert an expletive in the subject position. Expletives can only occur in θ -free positions, which is the case for the subject position of unaccusative verbs. The internal argument then rests in situ (unless it is topicalized). The insertion of an expletive together with the unaccusative verb yields the structure in (246).

246

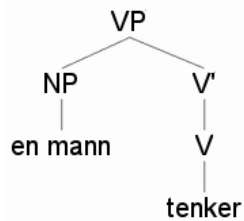


Following the same line of argument, an unergative verb like *tenke* (think) cannot occur with an expletive in the subject position because this verb *does* assign a θ -role to the external

⁷⁸ θ -criterion: "Each argument bears one and only one θ -role, and each θ -role is assigned to one and only one argument" (Chomsky, 1993:36).

argument position. The underlying structure of the unergative verb *tenke* (think), stemming from the argument structure in (242b), is illustrated in (247).

247



Since the thematic role of unergative verbs is assigned to the subject position, an expletive cannot occur there. At the same time, the argument *en mann* (a man) cannot be placed in the object position since unergative verbs do not assign any internal θ -role. These assumptions will then account for the ungrammaticality of (243c). The ability to insert *det* (it/there) is therefore considered a syntactic test to distinguish unaccusatives from unergatives. If *det* (it/there) is acceptable in the subject position, the verb is classified as unaccusative.

The second syntactic test to distinguish these two verb groups is to passivise the sentence. In contrast to unergative verbs, the unaccusative verbs cannot be passivised. In (248a), a typical unaccusative verb like *falle* (fall) is passivised, and the sentence is ungrammatical. In contrast, an unergative verb like *løpe* (run) is completely grammatical in a passive construction, cf. (248b). However, the unergative *tenke* (think), which supposedly should be able to occur in a passive construction, does not sound particularly good, cf. (248c).

248

- a *Det ble falt.
"It was fallen."
- b Det ble løpt.
"It was run."
- c ?Det ble tenkt.
"It was thought."

The oddity of (248c) is rather surprising since the P&P-theory assumes that an external θ -role is a precondition for transforming a sentence into passive. The external θ -role must be present in the argument structure of *tenke* in order to explain (243c). But based on the examples in (248), it seems that the existence of an external role is not a sufficient criterion for using an intransitive verb in a passive sentence. It is also possible to find examples of unaccusative verbs that can be passivised, although in theory they should *not*, due to their lack of external roles. Åfarli (2006) notes that: "the availability of an agentive interpretation makes it possible to passivise even typical unaccusative verbs like *falle* "fall" and *forsvinne* "disappear". The examples in (249b) are adopted from Åfarli (2006).

249

- a Skuespillerne faller altfor tungt.
ACTORS-THE FALL TOO-MUCH HEAVY
"The actors fall too heavily."
- b Det må falles langt mer forsiktig.
IT_{EXPL} MUST FALL_{PASS} MUCH MORE GENTLY
"It must be fallen much more gently."

In addition, it seems that non-agentive unaccusative verbs can occur in constructions with agentive interpretation. The examples in (250) are adopted from Eide (2005:252), example (82).

250

- a Fjernkontrollen har forsvunnet.
REMOTE-CONTROL_{DEF} HAS DISAPPEARED
"The remote control has disappeared."
- b ?Jaså, hvem har forsvunnet den, da?
REALLY, WHO HAS DISAPPEARED IT THEN
"Really, who disappeared it?"

The examples in (248) and (249) show that transforming a verb into passive in order to decide if it belongs to the unergative or the unaccusative class yields inconclusive results. The examples in (250) indicate that it is possible for a typical unaccusative verb to occur with a subject despite its alleged lack of external role. Thus, it seems like the syntactic behaviour of the unaccusative and unergative verbs, which was explained by their different argument structure in the lexicon, is not as clear-cut as the dichotomy between internal and external argument suggests. The reasons for this might be that the alleged division between unergative and unaccusative verbs is really not due to syntactic properties attached to the various verbs, and/or that the tests are insufficient for distinguishing unaccusative vs. unergative because other factors influence the result.

As already mentioned, the difference in the argument structures in (242), here repeated as (251), are partially postulated based on an intuitive sense of the difference in thematic content associated with the argument.

251

- a Falle: \emptyset
- b Tenke: \emptyset

Note, however, that the verbs' alleged distinct argument structures can *only* be observed when the verb in (251) occurs in a sentence. In (252a), the unaccusative verb *falle* (fall) occurs with an expletive subject, yielding a grammatical sentence. In (252b), the unergative verb *tenke* (think) occurs with an expletive, and the sentence is ungrammatical.

252

- a Det falt et tre.
IT_{EXPL} FELL A TREE
- b *Det tenker en mann.
IT_{EXPL} THINKS A MAN

Another complicating factor with taking the argument structures in (251) as an explanation for (252) is that *some* unaccusative verbs do in fact allow for insertion of subjects. The verb *å smelte* (to melt) can be classified as an unaccusative because it occurs in an existential construction, as illustrated in (253a). In addition, the internal argument, *mye snø* (lot of snow), can rise to the subject position, cf. (253b). But *å smelte* (to melt) can also occur in a sentence with both subject and object. In (253c), the NP *solen* (the sun) is the grammatical subject in the sentence, while the argument *mye snø* (lot of snow) is found in the direct object position.

253

- a Det smeltet mye snø.
IT_{EXPL} MELTED A-LOT-OF SNOW
- b Mye snø smeltet.
A-LOT-OF SNOW MELTED
- c Solen smeltet mye snø.
SUN-THE MELTED A-LOT-OF SNOW

The proposed solution in the P&P-theory is that some unaccusative verbs like *smelte* (melt) have transitive versions (Nordgård and Åfarli, 1990:147). This means that the verb *smelte* must have several argument structure realizations in the lexicon.

254

- a Smelte_{V1}: \emptyset
- b Smelte_{V2}: $\underline{\emptyset}$, \emptyset

The postulation of several lexical entries for the same verb is also used as an explanation as to why the verb *løpe* (to run) as illustrated in (248b), here repeated as (255c), can occur both in the existential construction and in the passive construction. The verb *run* is assumed to have two lexical entries, one unergative, cf. (255a) and one unaccusative, cf. (255b). The existence of the former makes it possible to have a passive sentence, cf. (255c), while the existence of the latter makes it possible to have an existential construction, cf. (255c).

255

- a Løpe_{V2}: $\underline{\emptyset}$
- b Løpe_{V1}: \emptyset
- c Det ble løpt.
IT WAS RUN
"There was running."
- d Det løper en mann i skogen.
IT_{EXPL} RUN_{PRES} A MAN IN FOREST-THE

"There is a man running in the forest."

One must therefore assume that some intransitive verbs have transitive versions, while others have both unaccusative and unergative versions. Whether the particular intransitive verb has an argument structure as illustrated in (254), or alternately, the one illustrated in (255), can only be postulated based on the sentences in which the particular verb occurs.

I have already discussed several problems that arise when a theory first uses the syntactic environment the verb occurs in to postulate an argument structure in the lexicon, and *then* uses the argument structure in the lexicon to account for the syntactic behaviour of the verb. Exactly the same objection can be raised against the postulation of different argument structures in unergative vs. unaccusative verbs to explain their different, although often contradictory, syntactic behaviour. A repetition of my arguments is therefore not necessary here.

4.2.1 The unaccusative constructions in the neo-constructional approach

By using the neo-constructional approach as a point of departure, there is an alternative way of accounting for the data presented above. If we follow the arguments made in this theoretical approach, the argument structure frames are independent of the particular verb, and verbs can be inserted into the various frames as long as their conceptual content is not radically at odds with the semantic meaning associated with the frame. The neo-constructional approach means that we no longer see the sentences discussed in this section as a result of the inherent properties of the verb. Instead, we can account for the syntactic structures with the argument structure frames postulated in section 3.3.2. The verbs themselves do not contain any syntactically relevant information, but the crucial assumption is that the same verb can occur in different argument structure frames.

If we take the argument structure frames as our point of departure, there are two available proposals for the sentences in (256). The first option is to analyse the sentence in (256a) as an instantiation of a transitive frame with expletive *det* (it) in subject position, and *et tre* (a tree) in direct object position. The sentence in (256b) could be analysed as an instantiation of an intransitive frame with the argument *et tre* (a tree) directly inserted into the subject position.

256

a Det falt et tre.

IT_{EXPL} FELL A TREE

b Et tre falt.

A TREE FELL

This analysis would conform to the previously established hypothesis that verbs can occur in different argument structure frames. The second option is to analyse both sentences in (256) as an instantiation of a transitive frame. This analysis would imply that the argument *et tre* (a tree) would be inserted into the direct object position in both (256a) and (256b) but that the argument *et tre* (a tree) is raised to the subject position in the latter. Since the choice of analyses for (256) must be seen in relation to the proposed analysis for the existential construction in (257a), I will leave the possible analyses for (256) for now, but will return to this question later in this section.

257

- a Det falt et tre i grøfta.
IT_{EXPL} FELL A TREE IN DITCH-THE.
"There was a tree falling in the ditch."

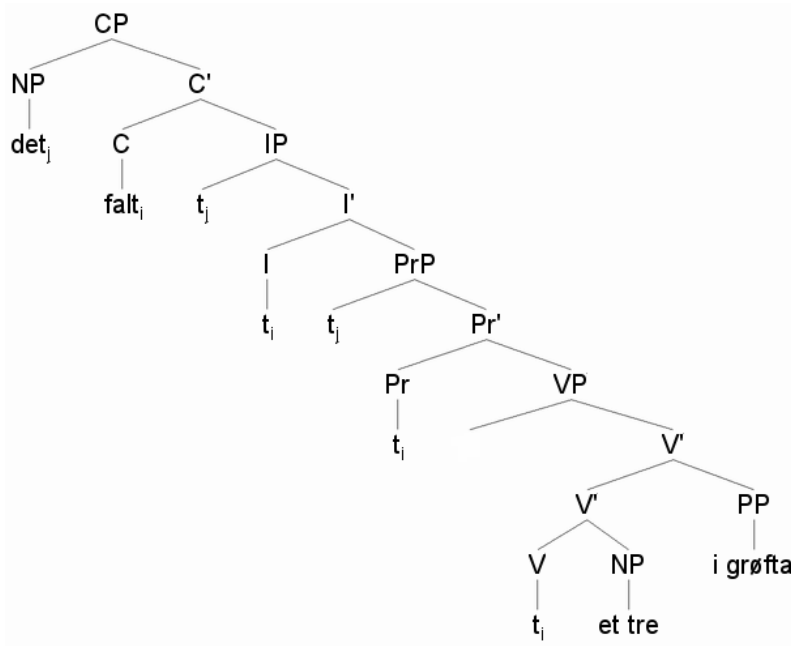
Nordgård (2002) investigated existential constructions in Norwegian and argues for a small clause analysis of the VP internal constituents in the construction type presented in (257). As noted in Tungseth (2006), sentences of this type have in fact two interpretations: one locative and one resultative, cf. (258).

258

- a Det falt et tre i grøfta.
i) Locative reading: *"There was a tree in the ditch which fell."*
ii) Resultative reading: *"A falling-event caused a tree to end up in the ditch."*

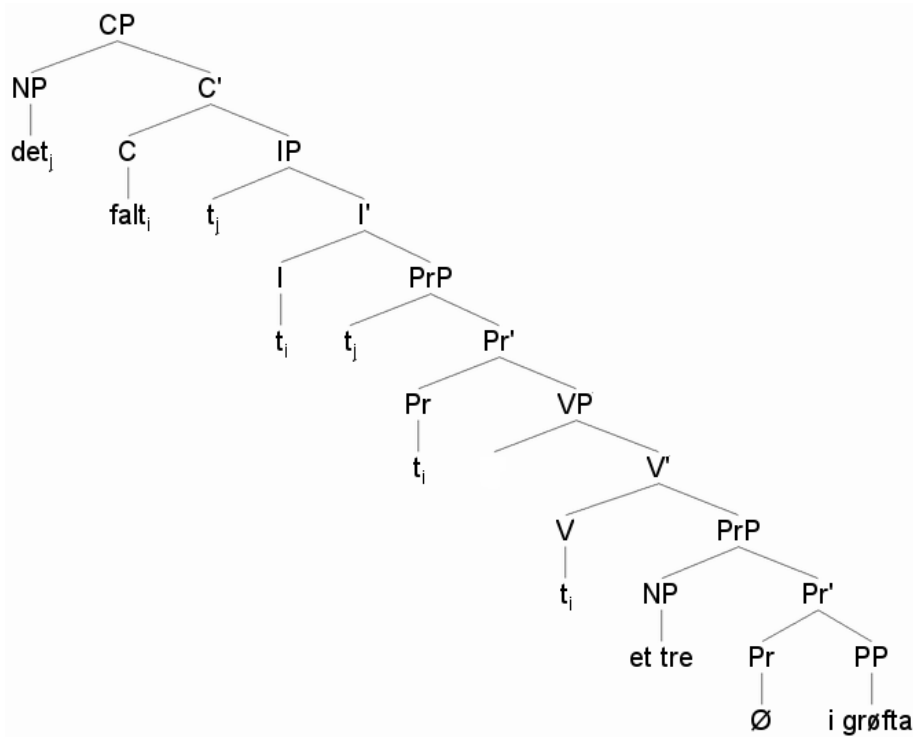
The analysis proposed in this thesis is that the sentence in (258ai) with a locative reading is an instantiation of a transitive frame, where the argument *et tre* (a tree) is in the direct object position. The PP *i grøfta* (in the ditch) is then analysed as an adjunct. This analysis will yield the structure in (259).

259



On the other hand, the sentence with the resultative reading in (258aii) can be analysed as an instantiation of a resultative frame where the argument *et tre* (a tree) is the small clause subject, and the PP *i grøfta* (in the ditch) is analysed as a small clause complement. This analysis will yield the structure in (260).

260



As a result, each interpretation of the sentence in (258) would correspond to a different argument structure frame.

As we saw in (256), the argument in an unaccusative construction can also appear in the subject position, yielding the sentence in (261a). As illustrated in (261ai) and (261aii), this sentence can have both readings as well.

261

a Et tre falt i grøfta.

A TREE FELL IN DITCH-THE

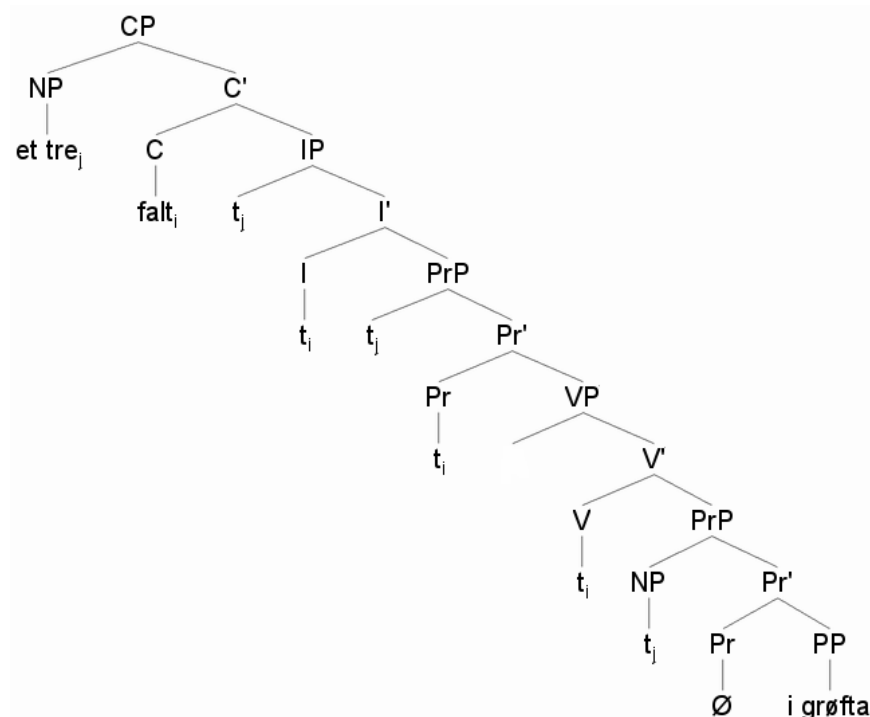
"A tree fell in the ditch."

i) Locative reading: "A tree in the ditch fell."

ii) Resultative reading: "As a result of the falling, a tree ended up in the ditch."

If we assume that the resultative reading of the sentence in (258a) stems from a small clause construction, the natural assumption would be that the single argument *et tre* (a tree) in (261a) also originates in the subject position of a small clause, and then moves to the subject position of the clause. This analysis is illustrated in (262).

262



The two resultative interpretations in (258a) and (261a) are thus assumed to stem from the same resultative frame. In sentence (258a), the expletive *det* (it) is inserted into the subject position <spec, PrP> in the main clause as illustrated in (260), and moves subsequently to <spec, CP>. In sentence (261a), the small clause subject *et tre* (a tree) moves to <spec, PrP>

in the main clause, and subsequently to <spec, CP> as illustrated in (262). This brings us back to the question about the possible analyses for the sentences in (256), here repeated as (263).

263

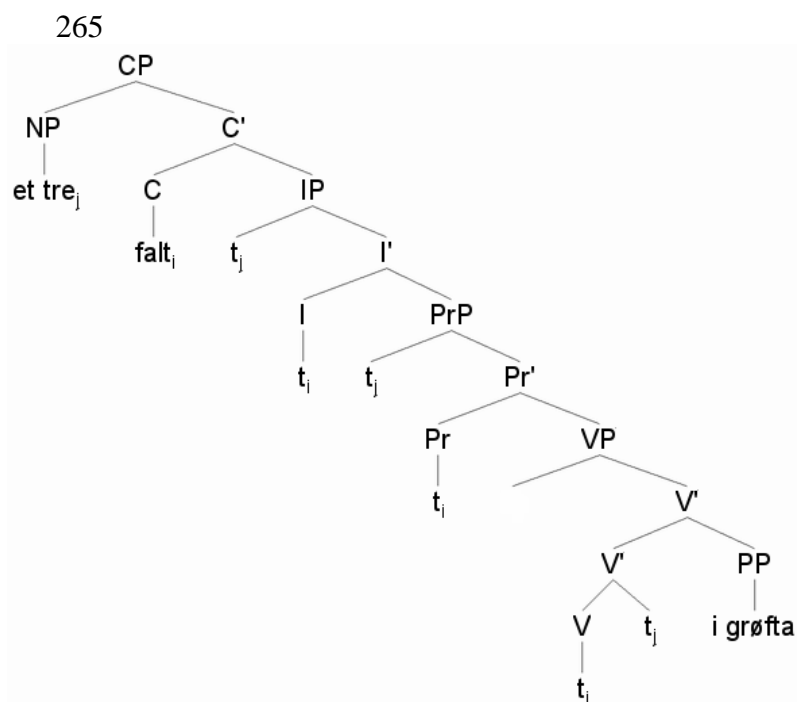
- a Det falt et tre.
IT_{EXPL} FELL A TREE
- b Et tre falt.
A TREE FELL

As already mentioned, it is possible to analyse the sentence in (263a) as an instantiation of a transitive frame, and the sentence in (263b) as an instantiation of an intransitive frame. But the sentences in (263) must be seen in relation to the sentence with a locative reading in (261a), here repeated as (264a), and the existential construction with a locative reading in (258a), here repeated as (264b).

264

- a Et tre falt i grøfta.
A TREE FELL IN DITCH-THE
"A tree fell in the ditch."
 - i) Locative reading: *"A tree in the ditch fell."*
- b Det falt et tre i grøfta.
IT_{EXPL} FELL A TREE IN DITCH-THE
"There was a tree falling in the ditch."
 - i) Locative reading: *"There was a tree in the ditch which fell."*

As previously argued, the locative reading in the existential construction in (264b) occurs as a result of the argument *et tre* (a tree) being inserted into the direct object position of the transitive argument structure frame, while the expletive is inserted into the subject position, cf. (259). If we can have a locative reading in (264a) as well, this supports an analysis in which the argument *et tre* (a tree) in this construction also originates from the direct object position. In this way, the two constructions in (264) can be analysed as originating from the same transitive argument structure frame, which yields the same locative reading. The structure proposed for (264a) is given in (265).



If we assume that the sentences in (264) are instantiations of a transitive frame with a predicate adverbial, the natural next step is to assume that the sentences in (263) are also instantiation of a transitive frame. The only difference is that there is no predicate adverbial involved here. The structure for the sentences in (263) are thus as illustrated in (259) and (265), but without the adjunct *i grøfta* (in the ditch). Consequently, the only frames needed to account for the sentences in (256), (258) and (261) are a transitive and a resultative frame.⁷⁹

There are two main issues to be discussed in this neo-constructional approach of the data. The first revolves around the different thematic content found in the different slots in the frames. It is obvious that the thematic role associated with the subject in (253b) is different from that in (253c), here repeated as (266).

- 266
- a Mye snø smeltet.
A-LOT-OF SNOW MELTED
 - b Solen smeltet mye snø.
SUN-THE MELTED A-LOT-OF SNOW

If the various slots in the frame were associated with particular predefined roles, these examples would be difficult to account for.

⁷⁹ There is nothing in the analysis per se that excludes the possibility of analysing these sentences as instantiations of three different frames (intransitive, transitive and resultative). The advantage of adopting this analysis is that the realization of the arguments in the actual sentence corresponds more closely with their assumed position in the argument structure frame, since no movement needs to be postulated. The advantage of adopting just two different frames (transitive and resultative) is a more consistent theory since the data can be explained with fewer assumptions than the analysis with three frames. However, if we adopt the analysis with just two argument structure frames, we need to postulate additional movement of constituents.

The second issue relates to the use of expletives. How can an expletive occur in the subject position in the frames? If <spec, PrP> is associated with several Proto-Agent Properties, these properties are certainly not found with the expletive *det* (it/there). Likewise one must ask what factors restrict the use of the expletive *det* in <spec, PrP>.

I will now try to approach these questions in light of the neo-constructional framework adopted in this thesis.

4.2.2 Thematic roles in the frames

As presented in Chapter 3.3.7, Dowty (1991) proposes an approach to thematic roles that does not treat them as primitives, but as a collection of various properties. Dowty (1991) assembles these properties into two proto roles: proto-patient and proto-agent. Furthermore, Dowty (1991) maintains that these properties offer an account for the argument selection in predicates with a grammatical subject and grammatical object, cf. (267). (Dowty's (31))

267

"ARGUMENT SELECTION PRINCIPLE: In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate: the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object" (Dowty, 1991:576).

For convenience, the properties contributing to the Proto-Agent and Proto-Patient role are repeated in (268).⁸⁰

268

- a Contributing properties for the Agent-Proto Role:
 - i) Volitional involvement in the event or state
 - ii) Sentience (and/or perception)
 - iii) Causing an event or change of state in another participant
 - iv) Movement (relative to other participant)
- b Contributing properties for the Patient-Proto Role:
 - i) Undergoes change of state
 - ii) Incremental theme
 - iii) Causally effected by other participant
 - iv) Stationary relative to movement of other participant

The argument selection principle in (267) lays the entire explanatory burden on the predicate in the sentence. The notion "predicate" in Dowty's article refers to the verb. It is the predicate

⁸⁰ I have omitted the fifth property in both Proto Roles compared to 152 since Dowty himself is uncertain whether this property should be included.

alone that entails the properties of the various arguments, and these entailments in turn decide whether the arguments turn up as subject or object.⁸¹

Dowty (1991) also maintains that the Proto-role types offer an explanation of the different thematic content in the subject position of so-called unergative and unaccusative verbs, cf. (269).

269

"Hence the fact that languages make a bifurcation along this line among intransitives according to their SINGLE argument, parallel to the use of contrast to distinguish AMONG the arguments of individual transitives and ditransitives, should not be surprising but almost predicted" (ibid. p. 606-7).

In other words, since the distinction between Proto-Patient and Proto-Agent already exists in a language to separate two arguments in a sentence, it would be economical to use these two proto-roles to separate two categories of single arguments as well. One group of single argument verbs would display proto-patient properties in their only argument (unaccusatives), and the other group would display proto-agent properties in their only argument (unergatives).

Dowty maintains that volition is the most prominent property for belonging to the unergative group. I will now investigate how a few Norwegian verbs relate to this assumption. I will conclude that using volition as a property to characterize unergative verbs is difficult to maintain. In fact, it seems to be impossible to deduce the interpretation of volition from the verb alone.

From the intransitive verb *buldre* (rumble) *alone*, it is not possible to decide whether this verb entails volition or not. It is our knowledge of the referent denoted by the argument NP which decides whether we assume volition or not. For instance, in (270a) we would assume that the rumbling is volitional since the subject NP is a human being, while (270b) would not entail any such volition since thunder clouds are not perceived as having this ability.

270

- a Den sinte mannen buldret i gangen.
THE ANGRY MAN-DEF RUMBLED IN HALLWAY-THE
"The angry man rumbled in the hallway."
- b Tordenskyen buldret i det fjerne.
THUNDER CLOUD-THE RUMBLED IN THE DISTANCE
"The thunder cloud rumbled in the distance."

In other words, this entailment of volition does not come from the verb *buldre* (rumble) itself, but from our knowledge about the subject NP in the given sentence. The same argument can

⁸¹ The definition of entailment in Dowty (1991) is given as *"the implication [that] follows from the meaning of the predicate in question alone"* (ibid. p. 552).

be made for *falle* (fall). (271a) is perfectly fine, while (271b) is more puzzling, since we know that trees usually cannot do anything wilfully, but in an appropriate context (for instance a fantasy novel where trees are animate beings), (271b) could also be perceived as perfectly fine.

271

- a Barna falt med vilje.
CHILDREN-THE FELL WITH PURPOSE
"The children fell on purpose."
- b #Trærne falt med vilje.
TREES-THE FELL WITH PURPOSE
"The trees fell on purpose."

Even the verb *komme* (come) does not necessarily involve volition. The sentence in (272a) is usually interpreted as meaning that the subject NP *julenissen* (Santa Claus) has volitionally performed the coming-event.⁸² On the other hand, (272b) does usually not entail any volition in the coming-event since the subject NP *julekortet* (Christmas card) is an inanimate entity which lacks the ability to want something at all.

272

- a Julenissen kom ned pipa.
SANTA CLAUS-THE CAME DOWN CHIMNEY-THE
"Santa Claus came down the chimney."
- b Julekortet kom i postkassa.
CHRISTMAS CARD-THE CAME IN MAILBOX-THE
"The Christmas card came in the mailbox."

The discussion of these examples shows that it is not possible to assign a lexical entailment of volition based on the semantic content of the verb alone. Whether *komme* (come) involves volition or not depends on our knowledge of the NP occurring as the argument of this verb. In contrast to Dowty, I will not maintain that a property like volition can be entailed from the predicate alone. I believe that Kako (2006) supports this claim because his experiments showed that people can, and indeed do, ascribe different properties to the arguments in a sentence even though they do not know the meaning of the verb in the sentence. This indicates that the structural slots themselves influence the speakers' interpretation of the various arguments. One possibility in the neo-constructional approach would be to maintain that Dowty's proto-agent and proto-patient properties are associated with the actual argument structure slots, not the particular verb. This proposal has however several problems; for example, it is clear that arguments in the subject position do not need to have any of the proto-agent properties, cf. (273a)

⁸² In fact, volition does not need to be involved here either, if Santa Claus fell down the chimney by accident.

a Potteplanten står i vinduskarmen.

POTTED PLANT-THE STAND_{PRES} IN WINDOW FRAME-THE

"The potted plant is standing on the window frame."

If the subject position had agent properties that were transferred to the argument in this position, we would expect that the argument in (273a) would at least have one of the properties in (268a). Instead I believe that our interpretation of properties such as volition, movement and causally affected also depends on what we know of the referent associated with the NP arguments in the particular sentence. If the argument refers to a human being, we will assign the property volition to this argument, based on our knowledge of human beings. If the argument refers to an inanimate entity like a tree, we usually do not associate this entity with volition. The decision of whether a given verb entails various semantic properties can only be made in relation to a given sentence structure and the arguments found there. Rather, to pin down the meaning of any verb, we need to consult the other lexical and grammatical items in the sentence along with the inherent meaning of the frame into which these elements have been inserted.

The question of thematic roles and how they relate to syntactic realization has been discussed for decades, and many suggestions have been put forward. I have focused on the suggestion made in θ -theory and the Proto role hypothesis, and concluded that both seem to encounter some problems. It is far beyond the scope of this thesis to present a full-fledged theory of thematic roles. Thus, the proposal for how thematic roles relate to the argument structure frames presented earlier will be very tentative, and will only sketch a possible solution in a coarse-grained manner.

As we have seen, the conceptual content of the verb will influence how we interpret a particular argument, but our world knowledge of the argument itself will also contribute to the interpretation. If we take the neo-constructional approach as our departure, we would maintain that the slots for the various arguments in the frames are associated with some sort of meaning. This structural meaning is, however, not associated with world knowledge relating to volition, movement or change. The inherent meaning of the slots is far more abstract. The subject position in the argument structure frames could simply be a position that signals that this is the most prominent participant in the event. The notion of "most prominent" is not to be viewed as a syntactic or semantic primitive. Rather, this has to do with our conception of the world. The syntax module has a strategy that makes it possible for us to reveal which participant in an event we as speakers consider most prominent. We can

compare this strategy to the art of photography. When we take a picture, we zoom in on particular entities that we consider to be the most important entity in the scene. In a sentence, we must exhibit our focus by other means, and the subject position in Norwegian is this language's strategy for signalling prominence.⁸³ If I utter the sentence in (274a), the important thing is that I, i.e. the speaker, got something to eat, rather than who gave it to me. If I utter (274b), I describe the same event, but my focus is now on the person who actually gave me the food.

274

a Jeg fikk mat.

I GOT FOOD

"I got food."

b Jon ga maten sin til meg.

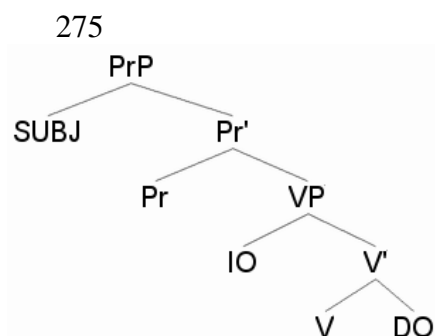
JON GAVE FOOD-THE HIS TO ME

"Jon gave me his food."

In addition, there are syntactic processes that can deprive a participant in an event of its prominence by removing it from the subject position. An example of this would be the passive construction, where the participant that is the subject in the equivalent active sentence is removed from the structure. Processes like topicalization, clefting and stress (speech) would be means for signalling that the subject has less prominence than in a regular argument structure frame. This is also relevant for the use of expletive *det* (it/there) in existential constructions, see 4.2.3. The existential constructions exemplify how arguments are deprived of their prominence when they are removed from their subject position.

My tentative proposal aims at an abstract inherent meaning associated with the slots in the argument structure frame. Thus, the subject position in the argument structure frame, <spec, PrP> is associated with what the speaker perceives as the most prominent participant. The <comp, VP>, which is the direct object position, is also considered to be a prominent participant in the event, but not on par with the argument in <spec, PrP>. In the argument structure frames, this hierarchy of prominence is reflected in the structural hierarchy of the argument slots, cf. (275).

⁸³ To make universal claims about structural position and their status in other languages is of course impossible without a comparative analysis. In addition, spoken language also uses stress to signal prominence.



Since the indirect object is higher in the structure than the direct object, this participant will be regarded as more prominent than the direct object when present. I will argue that all other features that linguists usually attribute to the subject (agent, volition, movement, change) come from knowledge of the referent of the NP and the concept denoted by the verb.

4.2.3 The expletive "det" in argument structure frames

The expletive is actually quite a puzzle in linguistic theory. It is a lexical item which has no reference or meaning. It is the linguistic equivalent of filler material. The question is why we have, or need, the expletive *det* (it/there) at all. I will present a proposal put forth by Áfarli and Eide (2000) who maintain that expletives are needed for both semantic and syntactic reasons. Then I will investigate argument structure frames in which we find examples of expletives. Next, I will focus on the semantics of the expletive construction, i.e. what separates this construction from a similar sentence in which the subject *has* semantic content. Since expletives have no semantic content, one might expect that two sentences separated only by the expletive would express the same proposition, but this does not seem to be the case. Furthermore, I will investigate the occurrence of expletives in argument structure frames in relation to semantic properties. Based upon this discussion, I will offer a proposal that can account for the restrictions of expletives in the argument structure frames.

The first question that needs to be answered concerns the purpose of expletives. As already discussed, the subject requirement (the EPP) in the endo-skeletal approach states that a subject must be present independently of the verb's lexical specification. The expletive fulfils the EPP by being inserted whenever a verb is not specified for an external role in the lexicon. However, Eide and Áfarli (1997) and Áfarli and Eide (2000) maintain that the EPP is based on a stipulation, and they suggest that the subject requirement should be explained as a consequence of predication instead. They argue that the formation of a proposition, i.e. the saturation of the PrP, inevitably creates an argument position that needs to be filled. The "filler" for this position can be an entity with semantic content, or it can be an entity devoid of any semantic content, cf. (276).

"That is, an expletive is a syntactic element that fulfils not only a formal, syntactic saturation demand. It also performs a crucial semantic task by permitting the proposition to be formed" (Áfarli and Eide, 2000:36).

I will follow this line of argument because the proposal that the expletive occurs as a result of a syntactic process rather than as a result of information in the particular verb's specification is more in line with the assumption made in the neo-constructional approach adopted here.

The next topic that needs to be investigated is the distribution of expletives with respect to the various argument structure frames. In 4.2.1, I suggested that the sentences in (277) should be analysed as instantiations of a transitive frame, where the expletive is inserted into the subject position, so that the internal argument should be analysed as a direct object.

277

- a Det falt et tre.
IT_{EXPL} FELL A TREE
"There was a tree falling."
- b Det kom en mann.
IT_{EXPL} CAME A MAN
"There was a man coming."
- c Det smeltet mye snø.
IT_{EXPL} MELTED A-LOT-OF SNOW
"There was a lot of snow melting."
- d Det skjedde en ulykke.
IT_{EXPL} HAPPENED AN ACCIDENT
"It happened an accident."

What also needs to be noted is that the omission of the direct object will automatically cause *det* (it/there) in the subject position to be interpreted as referential, cf. (278).

278

- a Det falt.
IT FELL
"Something fell"
- b Det kom.
IT CAME
"Something came"
- c Det smeltet.
IT MELTED
"Something melted"
- d Det skjedde.
IT HAPPENED
"Something happened"

Based on these examples, one might assume that the reading of *det* (it/there) as an expletive is crucially dependent upon the presence of an internal argument, here the direct object, and that

expletives cannot occur in the intransitive frame. However, verbs denoting weather phenomena as illustrated in (279) have no direct object. In P&P-theory, these verbs have usually been classified as zero-valent verbs because they are assumed to not have any semantic role specified in their lexical entries. (I will come back to the discussion of expletives as the only "argument" in the intransitive frame later in this section.)

279

- a Det snør.
"It snows"
- b Det regner.
"It rains"
- c Det blåser.
"It blows"

The example in (280a) further shows that the expletive *det* (it/there) can be found in the ditransitive frame. In (280a-b), the direct object is realized as an NP. The examples in (280c-d) are taken from Bech (1998), where the direct object is realized as a complement clause.

280

- a Det skjedde ham en ulykke.
IT_{EXPL} HAPPENED [HIM_{IO}] [AN ACCIDENT_{DO}]
"An accident happened to him"
- b Det tilfalt enken en stor arv.
IT_{EXPL} TO-FALLS [WIDOW-THE_{IO}] [A LARGE INHERITANCE_{DO}]
"The widow got a large inheritance."
- c Det forekommer meg at han kan ha sagt det.
IT APPEARS [ME_{IO}] [THAT HE COULD HAVE SAID IT_{DO}]
"It appears to me that he could have said it."
- d Det aner meg at han kan ha sagt det.
IT SUSPECTS [ME_{IO}] [THAT HE COULD HAVE SAID IT_{DO}]
"I suspect that he could have said it."

We can also find examples of *det* (it/there) in the subject position of a ditransitive-resultative frame, cf. (281a).

281

- a Det kom oss en mann i møte.
IT_{EXPL} CAME US A MAN IN MEETING
"A man came towards us."

In order to put forth a proposal for this distribution of expletives in the argument structure frames, I must first present some semantic characteristics of the existential construction. The main idea proposed here is based on a suggestion made by Dyvik (1989), but he does not suggest how these semantic characteristics could be incorporated into a syntactic structure.

The sentences in (282) contain the exact same words, except for the expletive. The expletive does not have any semantic meaning, and consequently one might conclude that these two sentences express exactly the same proposition of owls nesting in a tree.

282

- a Ugler hekker i treet.
OWLS NEST IN TREE-THE
"Owls nest in the tree."
- b Det hekker ugler i treet.
IT_{EXPL} NEST OWLS IN TREE-THE
"There are owls nesting in the tree."

However, Dyvik (1989) maintains that the use of existential constructions represent a change in agentivity. He purports that the existential construction is used to *describe* an event rather than focusing on the action of the event, cf. (283).

283

"Presenterings-konstruksjoner med sine ikke-agentive egenskaper nærmest gjør agentive verb ikke-agentive for anledningen. "Det skrek et barn i naborommet" og "Det løp en mann over veien" er beskrivelser av hendelser snarere enn handlinger – den handlende deltaker trer så å si i bakgrunnen" (ibid. p. 67).

"Existential constructions with their non-agentive properties almost transform agentive verbs into non-agentives for the occasion. "There was a child screaming in the adjacent room" and "There was a man running across the road" are descriptions of episodes rather than actions – the acting participant steps back, so to speak."

This means that the sentence in (282a) has focus on the activity of nesting. In contrast, the sentence in (282b) is more a description of nesting owls in a tree.

If we accept the idea of the expletive construction as a description of a scene rather than an action, it is a natural to assume that the verbs occurring in these constructions actually conceptualize some action that is possible to sense or observe. It would be difficult to describe an event that does not have any observable features. The verb *tenke* (think) sounds odd in an existential construction, cf. (284a). Dyvik (1989) maintains that *lytte* (listen) is ungrammatical in an existential construction, cf. (284c).

284

- a *Det tenker mange barn i klasserommet.
IT_{EXPL} THINKS MANY CHILDREN IN CLASS ROOM-THE
- b *"There are many children thinking in the classroom."*
- c *Det lytter en rev på stranden. (Dyvik, 1989:65)
IT_{EXPL} LISTENS A FOX ON THE BEACH
"There is a fox listening on the beach."

Both these verbs describe actions that are not directly observable. Whether somebody is listening or thinking cannot be observed directly. It is difficult to imagine a scene or a freeze-frame showing a fox listening or children thinking. If this assumption is correct, verbs of cognition and perception like *tenke*, *høre* and *føle* (think, hear and feel) cannot easily be used in an existential construction. One restriction for the use of expletive in the argument structure frames seems therefore to hinge on the conceptual content of the verb.

The existential construction as a description of an observable scene can also explain why *det* (it) cannot be interpreted as an expletive in the intransitive frame, cf. (278), here repeated as (285).

285

- a Det falt.
IT FELL
"Something fell."
- b Det kom.
IT CAME
"Something came."
- c Det smeltet.
IT MELTED
"Something melted."
- d Det skjedde.
IT HAPPENED
"Something happened."

In (285), there are no arguments in the intransitive frame that can be interpreted as describing a scene, simply because this frame does not *have* any VP internal arguments that can denote the participants in a scene. If this assumption is correct, a sentence with no internal arguments should not be able to be interpreted as an existential construction. If this is correct, then the challenge is to account for the weather verb in (279). These verbs do not have any VP internal arguments, but the expletive is still not interpreted as referential on par with (285). I have repeated one sentence from (279) in (286a) for convenience.

286

- a Det snør.
"It snows."

The common analysis of these sentences is to label *det* (it) as an expletive due to the postulation of weather verbs as being zero-valent. In that case, these sentences will constitute a group of exceptions from the previous suggestion that existential constructions need internal arguments to fulfil the roles of the described scene. One possible solution, which is supported by assumptions made in Holmberg and Platzack (1995), is that the expletive found with

weather verbs is not a "true expletive" as opposed to the expletives found in (277). I have repeated one sentence in (287a) for convenience.

287

- a Det falt et tre.
IT_{EXPL} FELL A TREE
"There was a tree falling."

Holmberg and Platzack (1995) present the sentence in (288a) as an example of a quasi-argumental *pro* (Holmberg and Platzack's example (4.16)).

288

- a Rigndi í gær?
RAINED *PRO* YESTERDAY
"Did it rain yesterday?"

Further, Holmberg and Platzack (1995) maintain that mainland Scandinavian must have an overt expletive subject in sentence comparable to (288a). If we follow this line of argumentation, i.e. that small *pro* is divided into three distinct categories according to its features (ibid. p. 107), it is reasonable to assume that overt expletive subjects can also be subdivided this way. Thus, the sentence in (286a) does not contain a true expletive *det* (it), but a quasi-argumental *det*. This analysis is supported by the observation that some Norwegian dialects actually allow for the referential pronoun *han* (he) with the weather verbs, cf. (289).

289

- a Hainn blæs frøkteleg i dag.
HE BLOWS TERRIBLE IN DAY
"It is terribly windy today."
b På Folla han blæs frå sørvest.⁸⁴
ON FOLLA HE BLOWS FROM SOUTHWEST
"On Folla, it blows from southwest."
c Han blæs godt i Danmark.⁸⁵
He blows well in Denmark
"It is quite windy in Denmark."

I will not make any firm conclusions with respect to the exact status of *det* (it) with weather verbs because it does not affect the main idea of existential constructions presented in this thesis.

If the existential constructions change the focus from action to description in transitive and resultative constructions, we might expect that the same will happen in the ditransitive construction and the ditransitive-resultative construction, cf. (290).

⁸⁴ Lyrics from Johannes Kleppevik http://www.foss.no/johannes/nycd_tekster.html [Accessed 16. Feb. 2007]

⁸⁵ The example is found at <http://oluffa2004.blogspot.com/2004/07/han-bls-godt-i-danmark.html> [Accessed 16. Feb. 2007]

290

- a En stor arv tilfalt enken.
[A LARGE INHERITANCE_{SU}] TO-FALLS [WIDOW-THE_{DO}]
"A large inheritance fell to the widow."
- b Det tilfalt enken en stor arv.
IT_{EXPL} TO-FALLS [WIDOW-THE_{IO}] [A LARGE INHERITANCE_{DO}]
"The widow got a large inheritance."
- c En mann kom oss i møte.
[A MAN_{SU}] CAME [US_{IO}] IN MEETING
"A man came towards us."
- d Det kom oss en mann i møte.
[IT_{EXPL-SU}] CAME [US_{IO}] [A MAN IN MEETING_{DO}]
"It came a man towards us."

Even though the difference between these two constructions is subtle, I maintain that the statement made by Dyvik (1989) is upheld in these constructions as well. The sentence in (290a) implies more focus on the action of falling to, i.e. transfer of the inheritance to the widow, while (290b) has more focus on the scene describing the widow as the beneficiary of a large inheritance. In (290c), the speaker is focussing on the man and the fact that he is coming; the action is regarded as the important feature in this scene. In contrast, (290d) focuses the indirect object *us* and their encounter with this man, not the actual movement of the man.

I will now return to the sentences presented in (240), here repeated as (291), and will examine them in light of the discussion in the previous sections.

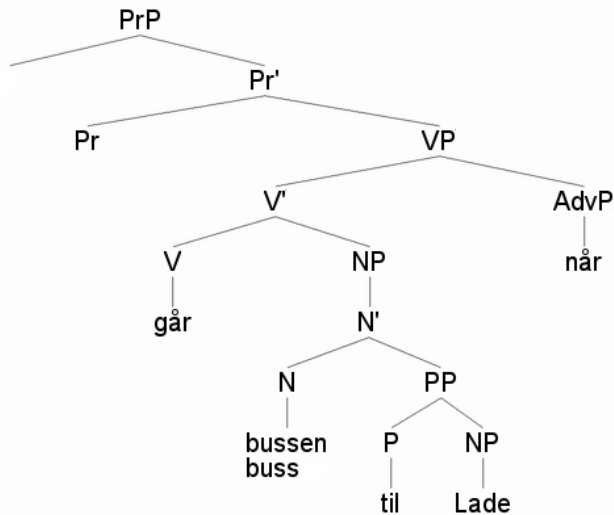
291

- a Når går det buss til Lade?
WHEN GOES IT_{EXPL} BUS TO LADE?
"When does the bus go to Lade?"
- b Når går bussen til Lade?
WHEN GOES BUS-THE TO LADE?
"When does the bus go to Lade?"

Based on the earlier discussion, the sentences in (291a) and (291b) can either be an instantiation of the transitive frame or the resultative frame. I will consider the analysis with the transitive frame first. Here, the single argument *buss* (bus) or *bussen* (the bus) would be instantiated in the direct object position.⁸⁶ The PP *til Lade* (to Lade) is analysed as a complement to the NP. This analysis is illustrated in (292).

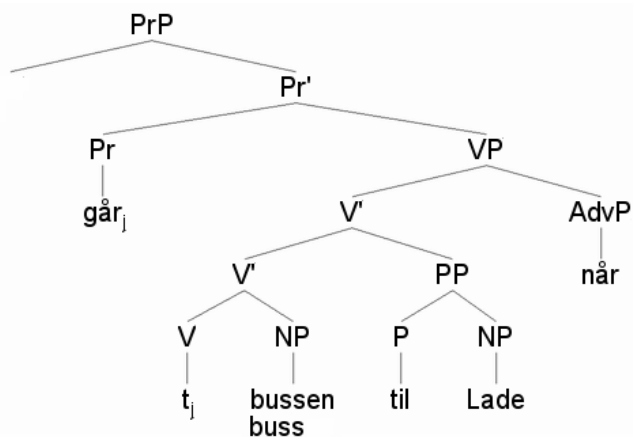
⁸⁶ In Norwegian, the direct object in an existential construction must be indefinite (Åfarli, 1997:99). The sentence *"*Når går det bussen til Lade"* (WHEN GOES IT BUS-THE TO LADE) is therefore ungrammatical. I will not discuss how this indefinite requirement can be incorporated into the neo-constructural approach in this thesis.

292



The analysis in (292) indicates that the PP *til Lade* specifies a particular property of the bus. The interpretation of the NP phrase is equivalent to the proper name *Lade-bussen* (the Lade bus), i.e. a particular bus which is distinguishable from all other buses because of its Lade feature. However, if the NP *buss/bussen* (bus/the bus) is instantiated as the direct object, it is also possible to analyse the PP *til Lade* (to Lade) as **not** a part of the NP, but adjoined to V'. This proposal is similar to the suggestion made in relation to the structure illustrated in (265). For the sentences in (291), the structure is given in (293).

293



The preposition *til* (to) is directional, and according to Tungseth (2006), directional PPs with *til* (to) cannot be stranded under VP topicalization, which holds for (293) as well, cf. (294).

294

- a *Gå har bussen aldri gjort til Lade.
 DRIVE HAS BUS-THE NEVER DONE TO LADE
 "Drive to Lade has the bus never done."
 b Gå til Lade har bussen aldri gjort.
 DRIVE TO LADE HAS BUS-THE NEVER DONE
 "Drive to Lade has the bus never done."

Since the PP no longer modifies the NP *buss/bussen* (bus/the bus), but rather the event denoted by the verb *gå* (go), the PP *til Lade* (to Lade) specifies the direction towards which the going-event takes place.

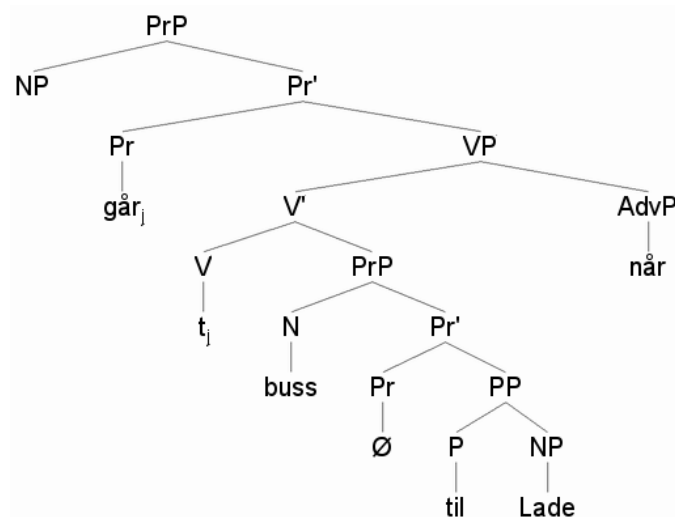
To get the two alternating structures presented in (291), here repeated in (295), the NP phrase can either move to the subject position in <spec, PrP> yielding (295b), or alternatively, the expletive *det* (it/there) can be inserted in this position, yielding (295a).

295

- a Når går det buss til Lade?
WHEN GOES IT_{EXPL} BUS TO LADE?
"When does the bus go to Lade?"
- b Når går bussen til Lade?
WHEN GOES BUS-THE TO LADE?
"When does the bus go to Lade?"

The other possibility is to analyse the phrase *buss til Lade* (bus to Lade) as an instantiation of a resultative frame. This analysis is illustrated in (296).

296



As already discussed in relation to (262), the resultative construction yields an interpretation which can be paraphrased as: "As a result of the bus's going-event, it ends up at Lade". The derivation can follow the same steps as indicated with the transitive frame, i.e. either insertion of an expletive or movement of the constituents in the small clause.

As already mentioned, Nordgård (2002) argues for a small clause analysis of the constituents found in existential constructions, with her analysis based on several semantic and syntactic criteria. I will now present some of the diagnostics for separating a direct object from a small clause subject. I will primarily focus on the syntactic features, because the

semantic properties of the expletive construction have already been discussed, and I adopted Dyvik's (1989) proposal for the existential construction as a description of the scene.

In coordinated sentences, a missing constituent can be co-referential with a small clause subject, cf. (297a). In the second conjunct, the subject of *synger* (sings) is missing. The missing element is co-referential with the small clause subject *en gutt* (a boy) in the preceding sentence. In contrast, in (297b), the missing constituent cannot be interpreted as co-referential with the direct object *lærerinnen* (female teacher) in the preceding sentence.⁸⁷

297

- a Det går en gutt i gata og Ø synger.
IT GOES [A BOY_{SC-SUBJ} IN STREET-THE] AND SINGS
"There is a boy in the street and (he) is singing."
- b Rektor slo lærerinnen og Ø ble umiddelbart sykemeldt.
*THE RECTOR HIT [TEACHER-THE_{FEM DO}] AND (THE TEACHER_{FEM}) WAS IMMEDIATELY REPORTED SICK
"The rector hit the female teacher and (she) was immediately reported sick."
- c Rektor slo lærerinnen og Ø ble umiddelbart sykemeldt.
THE RECTOR HIT TEACHER-THE_{FEM} AND (THE RECTOR) WAS IMMEDIATELY REPORTED SICK
"The rector hit the female teacher and (the rector) was immediately reported sick."

The interpretation in (297c) is grammatical because the omitted constituent is co-referent with the subject *rektor* (rector) in the preceding sentence. This pattern indicates that elements which are co-referent with small clause subjects and ordinary subject can be omitted in coordinated structures, while direct objects cannot.

If *buss* (bus) in (291a) is a small clause subject, it should be possible to delete it in a coordinated structure. The sentence in (298a) is a grammatical sentence in Norwegian, which indicates that *buss* (bus) is not a direct object, but rather a small clause subject.

298

- a Det går en buss til Lade og Ø snur ved badestranda der.
IT_{EXPL} GOES A BUS TO LADE AND (BUS-THE) TURN BY BEACH- THE THERE
"There goes a bus to Lade and (the bus) turns by the beach there."

In his analysis of small clauses, Stowell (1983) argues that no adverbs can intervene between the small clause subject and its complement in English because they are one constituent, cf. (299), Stowell's example (30).

299

- a *I consider [the mayor *myself* very stupid]
- b *I want [him *very much* off my ship]
- c *We feared [John *with great concern* killed by the enemy] (sic)

⁸⁷ This is a slight simplification, since direct objects can be deleted in Norwegian, but only under very restricted conditions. See Åfarli and Creider (1987).

The observation that some of the participants insert temporal adverbials between the locative PP and the NP *buss*, cf. (300) seems to weaken the assumption that the phrase *buss til Lade* (bus to Lade) should be analysed as a small clause. Instead, this observation supports the analysis of (293) as an instantiation of a transitive frame where the directional PPs are adjoined to V'.

300

- a når går det buss etter klokka halv seks om ettermiddagen fra
 WHEN GOES IT_{EXPL} BUS [AFTER O'CLOCK HALF SIX IN AFTERNOON-THE_{T-ADV}] FROM
*"When does the bus leave after five thirty in the afternoon from
 Hegdalen til Risvollan
 HEGDALEN TO RISVOLLAN
 Hegdalen to Risvollan?"*
- b går det en buss senere på dagen fra Lade til Saupstad
 GOES IT_{EXPL} A BUS [LATER ON DAY-THE_{T-ADV}] FROM LADE TO SAUPSTAD
"Is there a bus later in the day from Lade to Saupstad?"

Based upon the discussion so far, the syntactic tests seem to be insufficient to determine whether the transitive frame or the resultative frame is the more likely candidate. One possibility could be that the participants *vary* between the two frames, depending on the proposition that they want to express. In the transitive frame, the participant is more inclined to regard the locative adverbial as a property of the bus, or the PP as denoting the end point of the event. In the resultative frame, the locative adverbial *til Lade* (to Lade) is viewed as a specification of the bus's result state after it has performed the going-event. Pursuing this hypothesis would imply that some participants in (300) are using the transitive frame since they can insert temporal adverbials between the direct object and the locative adverbial. Since we do not have access to the participants' intended meaning in (291), here repeated as (301), we cannot decide conclusively which frame they had in mind.⁸⁸

301

- a Når går det buss til Lade?
 WHEN GOES IT_{EXPL} BUS TO LADE
- i) Resultative frame: Paraphrase: *"When does a bus which has Lade as its final result go?"*
- ii) Transitive frame: Paraphrase: *"When does a Lade bus go?"*
- iii) Transitive frame: Paraphrase: *"When does a bus towards Lade go?"*
- b Når går bussen til Lade?
 WHEN GOES BUS-THE TO LADE

⁸⁸ According to Tungseth (2006), the preposition *til* (to) is directional because it always specifies a goal. *Til* (to) is therefore different from *i* (in), which can have both a locative and a directional reading, cf. (258a). Since *til* (to) is not associated with any *locative* conceptual content, the locative analyses suggested in (301aiii) and (301biii) are less probable. Even though these analyses are not ruled out on syntactic grounds, the inherent meaning of *til* (to) indicates that the structures proposed in (301ai-ii) and (301bi-ii) are the preferred ones.

- i) Resultative frame: Paraphrase: "*When does the bus which has Lade as its final result go?*"
- ii) Transitive frame: Paraphrase: "*When does the Lade bus go?*"
- iii) Transitive frame: Paraphrase: "*When does the bus towards Lade go?*"

Since my main aim in this section was to investigate which argument structure frames could be involved in the unaccusative construction, I have not discussed the variation between the definite NP *bussen* (the bus) versus the indefinite NP *buss* (bus), and how they intervene in the argument structure frames. If I may venture a personal speculation, it would be that the use of the definite NP *bussen* (the bus) versus the indefinite *buss* (bus) depends on the participant's own knowledge of buses to Lade, and his beliefs about the system's knowledge about buses to Lade. If the participant knows that there is in fact one bus that goes to Lade, and that he assumes that this should be common knowledge for the system as well, this participant would tend to use the definite form *bussen* (the bus). On the other hand, participants who perhaps have no knowledge about the Lade bus a priori to the experiment may prefer to use the indefinite form *buss* (bus). Another possibility is that the participant knows that there are several bus routes that go to Lade. In that case, it may be that he has no particular bus in mind, and uses the indefinite form.⁸⁹

4.2.4 Summing up

In this section on unaccusative constructions, I started with a presentation of the unaccusative and unergative verbs as they are perceived in the endo-skeletal approach. According to this approach, the unergative and unaccusative behave differently because the former has one external thematic role, while the latter has one internal thematic role. I showed that it is difficult to maintain a clear dividing line between these two classes of intransitive verbs. The syntactic tests for categorizing a particular verb as unergative or unaccusative yielded inconclusive results, and the unaccusatives, which allegedly lack the agentive role, can in some circumstances occur in sentences with agentive interpretation after all. This indicates that categorization of thematic roles associated with a particular verb is not sufficient in order to explain syntactic behaviour. I therefore presented an analysis of the unaccusative construction in the neo-constructional approach. The verbs are not assumed to be specified for any syntactic relevant information, but they can be inserted into different argument structure slots depending on their conceptual content. I proposed that the existential construction could be analysed as an instantiation of the transitive or the resultative frame, depending on the

⁸⁹ Thanks to Kaja Borten for helping me with the different interpretations with respect to definite and indefinite NPs.

interpretation of the sentence. In the transitive frame, we would obtain a locative reading, while the resultative frame would yield a resultative reading. The observation that a sentence like *Treet falt i grøfta* (The tree fell into the ditch) also can have these two readings made me propose that the same argument structure frames were involved here. In the locative reading, *et tre* (a tree) is moved from the direct object position of the argument structure frame, while in the resultative reading, *et tre* (a tree) is moved from the small clause subject position. The proposal that these two argument structure frames can be combined with different verbs is basically the same operation that has been described in relation to the insertion of lexical items in the argument structure frames in general. This approach also fits in nicely with the assumptions made in Chapter 3.3. I pointed out that the assertions made in Dowty (1991) encountered some problems because properties like volition, movement and sentience are also crucially dependent upon our encyclopaedic knowledge of the lexical element filling the structural positions. The claim that the predicate *alone* is responsible for the different properties associated with proto-agent role and proto-patient role must therefore be revised.

The tentative solution was that the slots in the argument structure frames are associated with very abstract semantic content, which relates to the prominence of the particular entity in the given event as perceived by the speaker. The entity given most prominence will be inserted into the subject position, but in addition, we have syntactic processes that will zero out the prominence of the subject position. One such process would be the insertion of an expletive. In the presentation of the expletive in the argument structure frame, I followed a suggestion made by Áfarli and Eide (2000) who maintain that the expletive fulfils a syntactic and semantic task in the creation of a proposition. I demonstrated that the expletive could be found in all argument structure frames apart from the intransitive. I argued that the reason for this was the semantics associated with the existential construction as describing a scene rather than focussing on an event or action. If the internal arguments were missing, there would be no elements that could denote this scene. The occurrence of *det* (it) with weather verbs constituted a challenge for this proposal. However, Holmberg and Platzack (1995) maintain that weather verbs in Icelandic occur with quasi-argumental *pro*, i.e. not a true expletive, and I proposed that the same could be the case for Norwegian weather verbs as well, except in Norwegian the quasi-argument must be phonetically realized. Finally, I proposed an analysis of the two sentence structures with *gå* (go) in the data material, and concluded that these structures also could be analysed as instantiation of a transitive or resultative frame.

4.3 Modal verbs

In this section, I will discuss the occurrences of modal verbs in the data, which can be divided into two main groups. In the first group, the modal occurs together with a main verb. There are 172 sentences in the material that consist of a main verb together with one modal, cf. (302a), and 5 sentences with one modal and the non-modal auxiliary *å ha* (to have) followed by a main verb, cf. (302b).

302

a Jeg vil reise fra Kattenskogen.

I [WANT-TO_{AUX}] [TRAVEL_{M-VB}] FROM KATTEMSKOGEN

"I want to travel from Kattenskogen."

b Jeg skulle ha kommet meg fra Kattem til Persaunet før klokka atten.

I [SHOULD_{AUX}] [HAVE_{AUX}] [COME_{M-VB}] ME FROM KATTEM TO PERSAUNET BEFORE O-CLOCK EIGHTEEN

"I ought to travel from Kattem to Persaunet before six o'clock."

Together with the auxiliary, or auxiliaries, both sentences contain a main verb *reise* and *komme* (travel and come), respectively. According to the assumptions about modals made in the P&P theory, which I will return to in detail later, a modal followed by a main verb is the predicted pattern.

In the second group, the modal verb is the only verb in the sentence. The data contains 45 sentences with this syntactic pattern, cf. (303a).

303

a Jeg vil gjerne til Gartnerhallen.

I WANT-TO LIKE-TO_{ADV} TO GARTNERHALLEN

"I want to go to Gartnerhallen."

The majority of sentences (35 occurrences) in the data that consist of only a modal verb and a directional locative, use the verb *skulle* (be required to/be supposed to), cf. (304a). *Ville* (want to), on the other hand, is used 9 times in these syntactic surroundings. Finally, there is one occurrence of a modal main verb *måtte* (must) with a directional locative, cf. (304b).

304

a Jeg skal fra Ringve museum til strandveien

I SHALL FROM RINGVE MUSEUM TO STRANDVEIEN

"I want to go from Ringve museum to Strandveien."

b Jeg må til barnehagen ved Valøyveien før klokka ni i morgen.

I MUST TO KINDERGARTEN-THE BY VALØYVEIEN BEFORE O'CLOCK NINE IN MORNING

"I must go to the kindergarten by Valøyveien before nine o'clock tomorrow morning."

Various researchers, including Barbiers (2002), van Riemsdijk (2002) and Eide (2005) have noted that modals can occur in constructions like (303a). The modals in (302) and (303) are interesting from a theoretical perspective for two reasons. First, modality and how to analyse

the different interpretations of modals have been given considerable attention in linguistic theories (see for instance Lødrup (1996), Barbiers (2002), van Riemsdijk (2002), Eide (2005), to name just a few). The observation is that modals display many syntactic and semantic features that separate them from main verbs, but at the same time (303a) shows that modals still seem to be able to function as a main verb. Second, modals have received little attention in neo-constructional approaches. In Borer (2005a), (2005b) and Åfarli (2005) I have found no discussion of this topic. I believe that an investigation of how modals can be analysed in the argument structure frames suggested by Åfarli (2005) will be a useful starting point in order to develop a neo-constructional analysis of modals.

Since modals are considered a subgroup of auxiliaries, I will start with an introduction of auxiliaries in general as described in the P&P theory. I then will present how Eide (2005) analysed modals as the only verb in a sentence, and will adopt her suggestion that modals can in fact act as the main verb. However, Eide (2005) does not categorize modals with a directional locative as an occurrence of a modal main verb. I will discuss Eide's (2005) analysis, and conclude that this might not necessarily be the only possible analysis. The central questions in this section revolve around whether the verb *vil* (want to) should still be analysed as an auxiliary in (303a) even though no other verbal element is present in the sentence. The other alternative is to analyse the verb *vil* (want to) as the main verb of the sentence. Finally, I will suggest an analysis of modal main verbs using the neo-constructional approach adopted in this thesis.

4.3.1 Auxiliaries – a short introduction

In P&P theory, auxiliary verbs are considered a different category than ordinary lexical verbs (Åfarli and Eide, 2003). The syntactic characteristic of an auxiliary is that it must be followed by another verb, cf. (305).

305

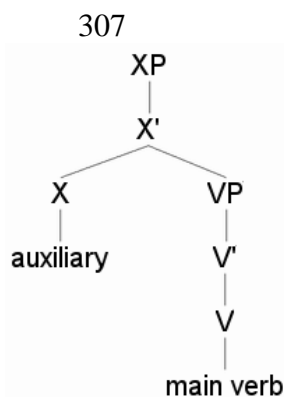
"Hva syntaktiske egenskaper angår, er det vanlig å si at hjelpeverb aldri kan danne predikat alene, de må alltid ha et annet verb etter seg" (Åfarli and Eide, 2003:131).

"When it comes to syntactic properties, it is common to say that auxiliaries can never create a predicate alone, they must be followed by another verb."

Haegeman and Guéron (1999) maintain that the auxiliary has no argument structure of its own, and that the auxiliary only modifies the situation described by the main verb in the sentence, cf. (306).

"Auxiliaries [...] express certain modifications of time, mood or aspect, with respect to the type of situation expressed by the verb and its arguments" (Haegeman and Guéron, 1999:62).

The projection that is assumed to host the auxiliary varies between different suggestions. Åfarli and Eide (2003) assume that the auxiliary is inserted into a V_{AUX} -projection. In the derivational process, the auxiliary necessarily moves to T for Tense. A similar suggestion is found in Haegeman and Guéron (1999) who investigate English syntax. They propose that the auxiliaries *be* and *have* are inserted into the outer VP in a VP-shell, and then move to I for Tense (ibid. p. 86). Holmberg and Platzack (1995) are "disregarding the question of whether or not the auxiliaries are base generated in I° or move there from some position within VP, [...]" (ibid. p. 61). The essential point in Holmberg and Platzack's analysis is that I° , which contains the feature [+F(inite)], must be lexicalized. Since they do not suggest any base position of the auxiliary, they insert the modal auxiliary *will* directly into the I° in the sentence "*John will surely understand this*". Radford (1997), who adheres to the minimalist program, maintains that auxiliaries merge with the VP, creating the IP. The essential assumption is that auxiliaries are never inserted into the same V-projection as the main verb. Even though the proposals differ with respect to which projection the auxiliary is associated with, they all assume that the auxiliary is found outside the VP, cf. (307).



If we look at the semantic features of the auxiliaries, they are often classified according to which subgroup they belong to, either non-modal or modal auxiliaries. The non-modal auxiliaries indicate the main verb's relation to aspectual properties. In Norwegian *å bli*, *å være*, *å få* and *å ha* (to become, to be, to get and to have) are members of the non-modal auxiliary group. This group will not be discussed any further in this thesis. The other group of auxiliaries, which are of most interest here, consists of the modal auxiliaries. The modal auxiliaries relate to semantic notions like ability, volition, permission, necessity and

obligation, all of which are united under the term modality. Thus, modality concerns the perception that the speaker holds towards the proposition. For instance, in (308a) the sentence can either mean that the speaker thinks it is likely that Jon is eating pancakes, cf. (308ai), or that the speaker gives Jon permission to eat the pancakes, cf. (308aaii), or it could mean that Jon has the ability to eat pancakes; perhaps he is very good at it, cf. (308aaiii).

308

a Jon kan spise pannekaker.

JON CAN EAT PANCAKES

i) "*It is possible that Jon is eating pancakes.*"

ii) "*Jon has permission/is allowed to eat pancakes.*"

iii) "*Jon has the ability to eat pancakes.*"

The interpretation in (308ai) is called the epistemic (non-root) reading, while (308aaii) and (308aaiii) are called root readings. The epistemic (non-root) reading expresses a particular propositional attitude on behalf of the speaker, while the root reading expresses necessity, obligation, permission, ability, etc. on behalf of the agent. One of the issues discussed in the literature is whether these two interpretations should be reflected in different syntactic positions for the modal in the structure. Since my focus is modals with directional locatives, I will not discuss how, or if, the root reading versus the non-root reading should be represented in different projections, because when the modal occurs alone with a directional locative, it will always have a root reading (Eide, 2005:413).

The Norwegian modal auxiliaries are *burde* (should/ought to), *kunne* (can/know/may), *måtte* (must), *skulle* (be required to/be supposed to), *ville* (want to/will), *trenger ikke* (need not) and *behøver ikke* (need not).⁹⁰ Holmberg and Platzack (1995) do not discuss the role of mood in their analysis (ibid. p. 23), and no structural position of a modal auxiliary is suggested. Radford (1997) analyses both modal and non-modal auxiliaries as the head of the I-projection (ibid. p. 115). Haegeman and Guéron (1999) suggest that modal auxiliaries must be inserted under INFL (ibid. p. 88). In yet another analysis, Cormack and Smith (2002) suggest that English has two possible structural positions for modals called Mod₁ and Mod₂ (ibid. p. 148). These projections are situated on each side of the Pol(arity)-projection, and Mod₁ is associated with obligation and Mod₂ is associated with permission.

I have already pointed out that auxiliaries in general are not associated with a particular projection in the various analysis presented earlier. What unifies their analyses is the structure

⁹⁰ This list is adopted from Eide's (2005) extensive investigation of Norwegian modals. The different translations relate to the possible interpretations of modal main verb versus modal auxiliaries in addition to the root versus non-root reading.

presented in (307). Modal auxiliaries follow the same pattern, i.e. they are structurally placed somewhere outside the VP. Since my aim is to investigate how modal main verbs interact with the argument structure frames presented earlier, I will not present any extensive investigation of how modal *auxiliaries* are represented in the structure. I will for the sake of simplicity merely assume that the modal auxiliaries in Norwegian are inserted under the V_{AUX}-projection due to the observation that modal auxiliaries in Norwegian can occur as complements to other auxiliaries (Eide, 2005:55). In English, the modal will always be the leftmost verb in the sequence.

309

a Mannen hadde måttet bære sønnen opp bakken.

MAN-THE HAD MUST_{PERF} CARRY SON-THE UP HILL-THE

"The man had had to carry the son up the hills."

If the modals are defined as a subgroup of auxiliaries, they should follow the syntactic behaviour of auxiliaries as presented in (305) and (306), but as already pointed out, the Trondheim WOZ material contains several occurrences of modal verbs that are not followed by another verb, cf. (303a), here repeated as (310a).

310

a Jeg vil gjerne til Gartnerhallen.

I WANT-TO LIKE-TO_{ADV} TO GARTNERHALLEN

"I want to go to Gartnerhallen."

A theory that adopts the assumption made in (305) and (306) will have to seek additional explanations for the sentence in (310a). I will now present how Eide (2005) analyses modals that do not conform to the definition of an auxiliary presented in (305) and (306).

4.3.2 Eide's (2005) modal main verbs

Eide (2005) divides the Norwegian modals into two distinct groups which have different syntactic behaviour: the modal auxiliaries and the modal main verbs. As opposed to the modal auxiliaries, the modal main verbs *ville* and *kunne* (want to and know) *can* take CP/NP-complements, cf. (311a-b). They also accept *gjøre*-replacement, which is a feature associated with ordinary lexical verbs, cf. (311c). Moreover, they can be passivised, cf. (311d).

311

a Jon vil at jeg skal spille teater.

JON WANT-TO THAT I SHOULD PLAY THEATRE

"Jon wants me to act."

b Jon kan hele teaterstykket.

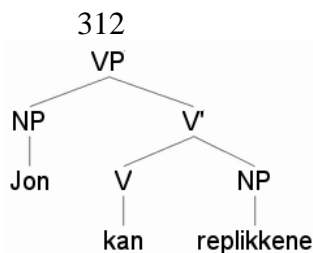
JON CAN WHOLE THEATRE PLAY-THE

"John knows the whole play."

c Jon kan replikkene, kan/gjør han ikke det?

JON CAN LINES-THE, CAN/DOES HE NOT THAT
"Jon knows the lines by heart, doesn't he?"
 d Diktet må kunnes til premieren.
 POEM-THE MUST CAN-PASS TO PREMIER
"You must know the poem for the opening night."

Thus, the syntactic properties illustrated in (311) lead Eide (2005) to the conclusion that *ville* and *kunne* (want to and know) have many similarities to ordinary transitive verbs. She maintains that these modals have versions that should be treated as modal *main* verbs, not modal auxiliaries (ibid. p. 70). Even though Eide herself does not present any structure illustrating this assumption, the natural consequence would be that the modal main verbs in (311) are analysed as heads of the V-projection instead of situated outside the V domain, as illustrated in (307). The syntactic analysis of the sentence in (311c) (without the tag-question) would be as illustrated in (312). (Whether the subject is placed in <spec, VP> or a functional projection outside VP is not essential to the points made here.)



The analysis suggested by Eide (2005) is appealing because she makes a clear distinction between modal auxiliaries, cf. (313a), and modal main verbs, cf. (313b). As we have seen, the latter group behaves in many ways just like transitive verbs.

313
 a Jon vil kjøpe løk.
 JON WANT-TO BUY ONION
"Jon wants to buy onions."
 b Jon vil at Marit kjøper løken.
 JON WANT-TO [THAT MARIT BUYS ONION-THE]
"Jon wants Marit to buy the onion."

The main modals differ with respect to the complements they occur with. While *kan* (know) is restricted to NP-complements, *vil* (want to) takes only CP-complements. The main modals *ikke behøve* and *ikke trenge* (need not and need not) can take NP complements, cf. (314a), while *måtte*, *skulle*, *burde* (must, be required to and ought to) can take the demonstrative pronoun *dette* (this), cf. (314b).⁹¹

⁹¹ The reasons for classifying *trenger ikke* and *behøver ikke* (need not) are based on their ability to have both root and non-root readings, and to take bare infinitivals (Eide, 2005)

314

a Jeg trenger ikke/behøver ikke denne boka.

I NEED NOT/NEED NOT THIS BOOK

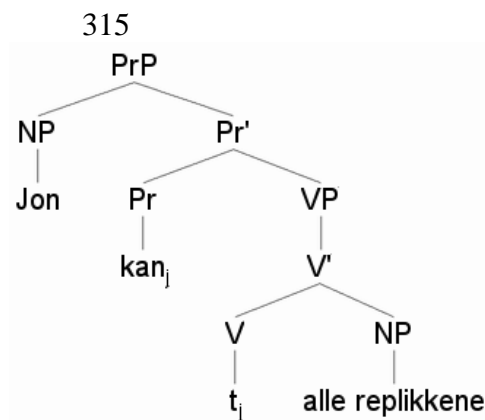
"I do not need this book."

b Jeg må/skal/bør dette.

I MUST/SHALL/UGHT-TO THIS

"I must do this/I'm required to do this/I ought to do this."

The proposed structure in (312) can easily be adopted under the neo-constructional approach suggested here. The verb *kunne* is inserted into the V-projection in a transitive frame, and is interpreted as the main verb of the sentence, cf. (315). Further, an argument placed in <comp, VP> in a transitive frame will be the direct object.



In the neo-constructional approach, the verb *kunne* (can) is similar to other verbs because it can occur in different argument structure frames.⁹² We need no extra theoretical machinery to explain why a modal can be found together with a direct object.

4.3.3 Modals with directional complements

However, in (310a) the modal verb is not followed by an NP or CP complement, but an adverbial complement. Eide (2005) gives several examples of similar constructions, cf. (316). (The examples are taken from Eide (2005:60)).⁹³

316

a Marit bør hjem.

MARIT OUGHT-TO HOME

"Marit should go home"

b Jon må på skolen.

JON MUST TO SCHOOL

⁹² Eide (2005:71) notes that only the modals *kunne* (know) and *ville* (want to) can occur with NP/CP complements. There are obviously restrictions with respect to the combination of argument structure frames and the lexical items inserted into the various slots. In order to investigate the reasons for this diversity among modals, a more thorough investigation of the various modals' properties is needed, which is a task beyond the scope of this thesis.

⁹³ I have changed the formatting of Eide's examples in order to make them more compatible with the rest of the examples in my thesis.

"Jon must go to school."

c Greina skal av.

THE BRANCH WILL OFF

"The branch will be cut off/in two."

d Alle vil tilbake tidlig.

ALL WANT-TO BACK EARLY

"Everyone wants to get back early."

e Jeg kan ikke på kino likevel.

I CAN NOT TO THE CINEMA ANYWAY

"I cannot go to the cinema anyway."

According to Eide (2005), these adverbial complements consist of mainly adverbs and preposition phrases, and they denote directional locatives or resultatives (ibid. p. 60). Even though Eide maintains that modals can have versions that are used as the main verb (as illustrated in (312)), she dismisses (316) as examples of modal main verbs. To the contrary, she argues that the sentences in (316) consist of modal *auxiliaries*, even though there is no other phonetically realized verb in the sentence. Her conclusion stems from several syntactic tests, which according to Eide indicate auxiliary status. In the following, I will present these tests. However, my main objection is that these tests seem to be inconclusive to whether a verb should be classified as a main verb or an auxiliary. I will argue that the results of these tests do not exclude the possibility that the modals in (316) are in fact main verbs.

The first test I will examine is a substitution test with the pro-verb *gjøre* (to do). It is assumed that if a verb must be replaced by *gjøre* (to do) in a tag question, this obligatory replacement suggests that it is a main verb, cf. (317a).

317

a Jon spiser løk, *spiser/gjør han ikke det?

JON EATS ONIONS, EATS/DOES HE NOT THAT

"Jon eats onions, doesn't he?"

Since the verb *å spise* (to eat) in (317a) must be replaced by the verb *gjøre* (to do) in the tag question, *å spise* (to eat) in this sentence is judged to be the main verb. The test also shows that the verb *å spise* (to eat) cannot be repeated in the tag question, because then the sentence will be ungrammatical. In contrast, if a verb must be repeated in the tag question (and substitution with *gjøre* (to do) is ungrammatical), the verb is judged to be an auxiliary, cf. (318a).

318

a Jon må spise løk, må/*gjør han ikke det?

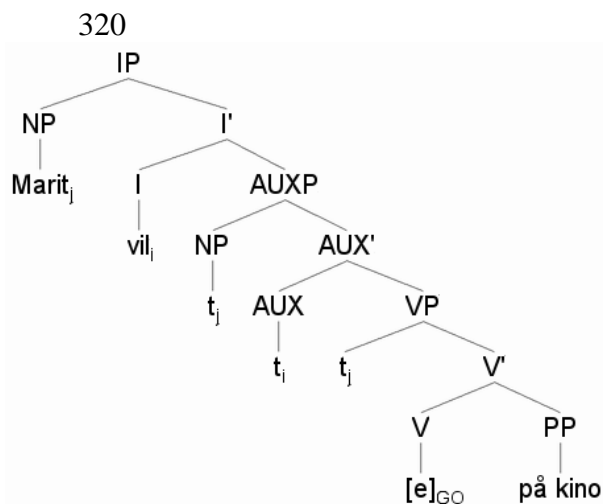
JON MUST EAT ONION, MUST/*DOES HE NOT THAT

"Jon must eat onions, mustn't he?"

Eide (2005) uses the *gjøre* substitution test illustrated in (318a) on the modals with directional locatives in (316), and concludes that these verbs cannot be replaced by *gjøre*. She argues that these verbs must be repeated in the tag question, cf. (319). (The grammaticality judgements are adopted from Eide's example (46) p. 71.)

- 319
- a Jon må hjem, må/*gjør han ikke det?
 JON MUST HOME, MUST/DOES HE NOT THAT
 "Jon must go home, mustn't he?"
- b Marit vil på kino, vil/*gjør hun ikke det?
 MARIT WANTS ON MOVIE, WANTS SHE NOT THAT
 "Marit wants to go to the cinema, doesn't she?"

Thus, Eide (2005) classifies the verbs in (316) as root modal auxiliaries followed by a phonetically empty verb of motion.⁹⁴ The analysis in Eide is based on van Riemsdijk (2002), who proposes a "super-light motion verb" labelled [e]_{GO} (empty GO). The natural consequence of this assumption is that the modals in (316) are analysed as heads in an auxiliary projection (here labelled V_{AUX}), which in turn governs the V-projection containing a phonetically empty element, cf. (320).



However, to use the substitution test as a criterion for determining the auxiliary status of a verbal element is not without problems. As Eide (2005) herself points out, there are some exceptions to the substitution test used in (317). One such exception is the verb *å få* (to get). In the example in (321a) the verb *få* (to get) is the only verb in the sentence. The argument *jeg* (I) is the subject and *førstepremien* (the first prize) is the direct object of this verb. Intuitively, the presence of any additional empty verb in this sentence seems superfluous.

⁹⁴ It seems from the examples that the phonetically empty verb does not have to be a verb of motion, though. In the resultative construction *Greina må av* (The branch must off), the phonetically empty verb does not belong to a class of motion verb, as Eide herself indicates by using the verb *cut* in the translation of the sentence.

321

a Jeg får førstepremien.

I GET FIRST-PRIZE-THE

"I get the first prize."

But even though *få* clearly is the main verb in (321a), this verb still can be repeated in the tag question, cf. (322a).⁹⁵

322

a Jeg får førstepremien, får jeg ikke?

I GET FIRST-PRICE-THE, GET I NOT

"I get the first price, don't I?"

Likewise, the verb *å ha* (to have) displays the same properties as *å få* (to get). In (323a), the usual assumption is that *å ha* (to have) is the main verb. *Barna* (the children) is analysed as the grammatical subject and the noun phrase *hodepine* (headache) as the direct object. According to the *gjøre* substitution test, a main verb cannot be repeated in the tag question, but in (323b) we see that the main verb *å ha* (to have) necessarily needs to be repeated in the tag question.

323

a Barna har hodepine.

CHILDREN-THE HAVE HEADACHE

"The children have a headache.

b Barna har hodepine, har/*gjør de ikke?

CHILDREN-THE HAVE HEADACHE, HAVE/*DO THEY NOT

"The children have a headache, don't they?"

The *gjøre* substitution test does not yield the predicted result with copula verbs either. In (324a), the copula is normally assumed to be the only verb in the sentence. Still, the copula necessarily needs to be repeated in the tag question, cf. (324b).

324

a Barna er sultne.

CHILDREN-THE ARE HUNGRY

"The children are hungry."

b Barna er sultne, er/*gjør de ikke?

CHILDREN-THE ARE HUNGRY, ARE/*DO THEY NOT

"The children are hungry, aren't they?"

⁹⁵ The verb *få* (get) can also be repeated with the proverb *gjøre* (do):

Jeg får førstepremien, gjør jeg ikke?

I GET FIRST-PRICE-THE, DO I NOT

"I get the first price, don't I?"

This observation only adds to my argument, since this indicates that the same verb can behave both like an auxiliary and main verb.

These examples show that the substitution test with *gjøre* (do) does not seem to be able to single out all instances of main verbs. As I have shown in this section, some verbs cannot be substituted for by *gjøre* (do), but they are still assumed to be main verbs. Thus, the *gjøre* substitution test can only suggest a tendency in syntactic behaviour, but it seems insufficient as an absolute dividing line between main and auxiliary status of a verbal element.

I would also like to point out a consequence of the analysis adopted in Eide (2005) with respect to verbs like *å ha*, *å få* and *å være* (to have, to get and to be). If repetition of the particular verb in the tag question is an indication of its auxiliary status and the existence of a phonetically empty verb, this analysis would have to assume that there is a phonetically empty verb after these verbs as well. Since there is no movement related to these verbs, [e]_{GO} does not seem like a good candidate for these verbs. Alternatively, the verbs *å ha*, *å få* and *å være* (to have, to get and to be) can be considered to be exceptions from the *gjøre* substitution test, and still be classified as main verbs even though they must be repeated in the tag question. The question that naturally arises if this latter suggestion is adopted is of course why these verbs can diverge from the predicated pattern and still be classified as main verbs, while verbs like *ville* and *kunne* (want-to and shall) cannot.

Another alternative, which is proposed in Lødrup (1996), is to maintain that *å ha* and *å få* (to have and to get) are the main verbs in the sentences in (322a) and (323b), even though they can be repeated in the tag question. He maintains that *å ha* (to have) must be repeated in the tag question as shown in (323b) due to the fact that the main verb *å ha* is "*parasitic upon auxiliary ha, [...]*" (ibid. p. 226). Or put differently, the main verb *å ha* has an auxiliary "twin sister", and this family likeness makes it possible for the main verb to behave as if it was an auxiliary in the replacement test. Regardless of the reasons for a main verb to be able to be repeated in the tag question, the important point is that there are obviously some main verbs that follow the auxiliary pattern in the tag questions without necessarily having an auxiliary status. I will argue that if there are verbs like *å ha* and *å få* (to have and to get), which must (or can) be repeated in the tag question, but still are analysed as main verbs, this possibility should be equally available for *vil* and *skal* (want to and is required to).

According to my own intuition, it is not ungrammatical to substitute the proverb *gjøre* (to do) for the modal verb *må* and *vil* (must and want to), as Eide (2005) indicates in (319). I have presented the sentence in (325a) to 9 native Norwegian speakers; their judgement of the grammaticality of the sentence is provided in Table A.

325

a Du vil til Paris, gjør du ikke?

YOU WANT-TO TO PARIS, DO YOU NOT
 "You want to go to Paris, don't you?"

Table A. Grammaticality judgement of *gjøre* substitution test with modal and PP

	Completely strange	A bit strange	Quite OK	Completely fine
	1	2	2	4

The results presented in Table A indicate that the assignment of ungrammaticality that Eide (2005) gives to the sentences in (319) is not the only possible verdict. On the contrary, because the results in Table A vary a great deal, it weakens the assertion in Eide (2005) that the verb *vil* (want to) in (325a) must be classified as an auxiliary.⁹⁶ In sum, I argue that it is difficult to conclude whether a verbal element has auxiliary or main verb status based on the *gjøre* substitution test. Since there are several other verbs like *å ha*, *å få* and *å være* (to have, to get and to be), which are classified as main verbs even though they cannot be substituted for by *gjøre* (do), I maintain that this could equally be possible for modal verbs.

I will now review the second test that Eide (2005) uses for postulating a phonetically empty verb, and consequently, in assigning the modals in (316) auxiliary status. This test is a substitution called VP pronominalization where the proform *det* (it) must substitute for the *whole* VP. If lexical items within the VP are for instance topicalized, *det* (it) will not be able to substitute for the whole VP, and the result will be ungrammatical. For instance, in (326a) we have a VP consisting of the items *reiser til Paris* (travels to Paris). The sentence in (326b) is grammatical because *det* substitutes for all the items in the VP. If *det* only substitutes for parts of the VP (here, only the adverbial *til Paris*), the sentence will be ungrammatical, cf. (326c).

- 326
 a Ola reiser til Paris.
 OLA TRAVELS TO PARIS
 "Ola travels to Paris."
 b Gjør Ola dét?
 DOES OLA THAT
 "Is Ola doing that?"
 c *Reiser Ola dét?
 TRAVELS OLA THAT

⁹⁶ The verb *skulle* (shall) diverges from the pattern found with *ville* (want to) in this respect, since this verb must be repeated in the tag question:

- (i) Du skal til Paris, skal/*gjør du ikke?
 (ii) YOU SHALL TO PARIS, SHALL/*DO YOU NOT
 (iii) "You are going to Paris, aren't you?"

I have no suggestions as to why these two modals differ in this respect.

"Is Ola travelling that?"

In contrast, when a sentence contains a modal and a main verb, the VP pronominalization includes only the main verb, while the modal can be fronted, cf. (327a-c). It is also possible to have a fronted auxiliary, and at the same time have the pro-verb *å gjøre* (to do) in the sentence.

327

a Ola vil reise til Paris.

OLA WANT-TO TRAVELS TO PARIS

"Ola wants to travel to Paris."

b Gjør Ola dét?

DOES OLA THAT

"Does Ola want to do that?"

c Vil Ola dét?

WANT-TO OLA THAT

"Does Ola that?"

d Vil Ola gjøre dét?

WANT-TO OLA DO THAT

"Does Ola want to do that?"

The purpose of the VP pronominalization test is thus to distinguish between an auxiliary and a main verb. If the verbal element is necessarily substituted along with the rest of the VP internal constituents, cf. (326), it is classified as a main verb. On the other hand, if the verbal element is necessarily singled out from the rest of the VP constituents and fronted as in (327), this element is considered an auxiliary. According to the VP pronominalization test, the contrast between (326c) and (327c) shows that *reise* (travel) is a main verb, while *vil* (want to) is an auxiliary not belonging to the VP.⁹⁷

However, if the modal is the only verb in the sentence, the pattern will resemble the one found in (327), cf. (328).

328

a Ola vil til Paris.

OLA WANTS-TO TO PARIS

"Ola wants to go to Paris."

b Gjør Ola dét?

DOES OLA THAT

"Does Ola want to do that?"

c Vil Ola dét?

WANTS-TO OLA THAT

"Does Ola want to do that?"

⁹⁷ Note that the possibility of replacing both the main verb and auxiliary with *det* (it) as in the sentence *Gjør Ola dét?* (Does Ola that) indicates that the auxiliary is a part of the VP after all. It seems like the VP pronominalization test is insufficient to decide whether an auxiliary should be regarded as a part of the VP or not.

(328c) is grammatical, even though the only verb in the sentence is moved to the initial position in the sentence. Thus, the proposed solution in Eide (2005) is that (328c) is grammatical because a phonetically empty verb constitutes a VP together with the adverbial *til Paris* (to Paris).

Also in the VP-pronominalization test, the verbs *å ha* and *å få* (to have and to get) do not follow the predicted pattern in (326). The examples in (329) show that *å ha* (to have) must be fronted, cf. (329a-c). *Å få* (to get) can either be pronominalized or fronted, cf. (329d-f).

329

- a Ola har vondt.
OLA HAS PAIN
"Ola is in pain."
- b *Gjør Ola dét?
DOES OLA THAT
"Does Ola have that?"
- c Har Ola dét?
HAS OLA THAT
"Does Ola have that?"
- d Ola får vondt.
OLA GETS PAIN
"Ola gets hurt."
- e Gjør Ola dét?
DOES OLA THAT
"Does Ola get that?"
- f Får Ola dét?
GETS OLA THAT
"Does Ola get that?"

Also with the copula verb *å være* (to be), the VP pronominalization test indicates that this verb should be classified as an auxiliary since it cannot be pronominalized along with the rest of the VP internal constituents, but must be fronted, cf. (330a-c).

330

- a Ola er trist.
OLA IS SAD
"Ola is sad."
- b *Gjør Ola dét?
DOES OLA THAT
"Is Ola that."
- c Er Ola dét?
IS OLA THAT
"Is Ola that?"

Even though the arguments regarding the VP pronominalization test resemble the ones put forth in relation to the *gjøre* substitution test, I will briefly point out my main observations. If the VP pronominalization test is used as the only test for postulating a phonetically empty

verb in the structure, the natural consequence of Eide's approach is that the verbs *to be*, *to have* and *to get* are followed by a phonetically empty verb as well. But again, the [e]_{GO} does not seem to be a good candidate for filling the V-projection.⁹⁸ As with the *gjøre* substitution test, the VP-pronominalization test seems to be inconclusive with respect to establishing the auxiliary versus main verb status of the verbal element in question. I have pointed out that some verbs fall outside the predicated pattern for main verbs in these tests, but they generally still are assumed to be main verbs. If verbs like *å ha*, *å få* and *å være* (to have, to get and to be) escape the predicated pattern, but are still classified as main verbs, I see no reason why the same cannot hold true with modals. In addition, I believe that the observation that modals can occur as the only verb with NP and CP complements, as two examples, makes it more likely that they in fact can occur as the only verb with directional locatives as well.

Finally, Eide (2005) uses examples from Trøndersk (a Mid-Norway dialect) to argue for a phonetically empty verb in the sentences in (319). She maintains that the infinitival marker *å* (to) can be found in front of an adverbial complement in Trøndersk, indicating that there actually is a verb in the structure, cf. (331a) (Eide's (31d) p. 62).

331
 a Han hadd itj løst te å Ø heim.
 HE HAD NOT WILL FOR TO HOME
 "He didn't want to go home."

I believe that Eide (2005) is correct in assuming an elliptical structure in (331a), but I'm not convinced that the structure in (331a) should be taken as evidence for phonetically empty GO in sentences like the one given in (328a). For instance, the ability to leave out the verb in the Trøndersk construction illustrated in (331a) seems to be restricted to adverbial phrases. If the infinitival marker *å* (to) is followed by a preposition phrase, the result will be ungrammatical, cf. (332).⁹⁹

332
 a *Hann hadd itj løst te å Ø te Paris.
 HE HAD NOT WILL FOR [TO_{INF-MARK}] TO PARIS
 "He didn't want to go to Paris."
 b *Hu hadd itj løst te å Ø på ballettkurs.
 SHE HAD NOT WILL FOR [TO_{INF-MARK}] ON BALLET CLASS

⁹⁸ It is of course possible to postulate several other empty verbs such as [e]HAVE and [e]GET, but then the empty verbs will merely be a repetition of the semantic content of the lexicalized verb, a solution that seems like an unnecessary duplication of both syntax and semantics.

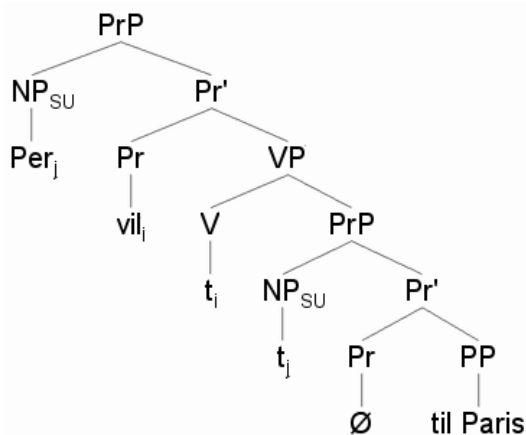
⁹⁹ The grammaticality judgements are not solely based on my own intuition, but are also the result of asking other people who speak Trøndersk. Even though the majority find these sentences unacceptable, the judgement does not seem to be absolutely clear-cut. Eide (p.c.) judged them as grammatical. This indicates that people from Trøndelag will differ with respect to how they judge these sentences. To obtain more reliable results, the test must be performed on a larger group of people, which is a research task beyond the scope of this thesis.

"She didn't want to go to ballet classes."

Thus, it seems like the alleged phonetically empty verb in (332) cannot be followed by preposition phrases, which the [e]_{GO} postulated in (325a) obviously can. If there really is a phonetically empty GO, one might expect that this element would have the same subcategorization frame, i.e. allowing for preposition phrases, regardless of the preceding lexical content.

Based on the discussion in this section, I will suggest an analysis in which the modal verb with the directional locative is inserted into a resultative frame, cf. (333).

333



The structure implies that the subject of the sentence originates in the <spec, PrP> in the small clause, but this constituent is later moved to the <spec, PrP> of the main clause. This analysis bears crucial similarities with the suggestion proposed by Barbiers (2002). He maintains that modals with non-verbal complements in Dutch should be analysed as illustrated in (334a). (Barbiers' example (14b) p. 58).

334

a Jan_j moet [_{PP} t_j naar Amsterdam]
 Jan must to Amsterdam

In Dutch, PP adjuncts can be extraposed, cf. (335a), while small clause complements cannot, cf. (335b). (Barbiers' (12a and 12b) p. 57). The sentence in (334a) behaves like a small clause complement, cf. (335c). (Barbiers' 13a) p. 57).

335

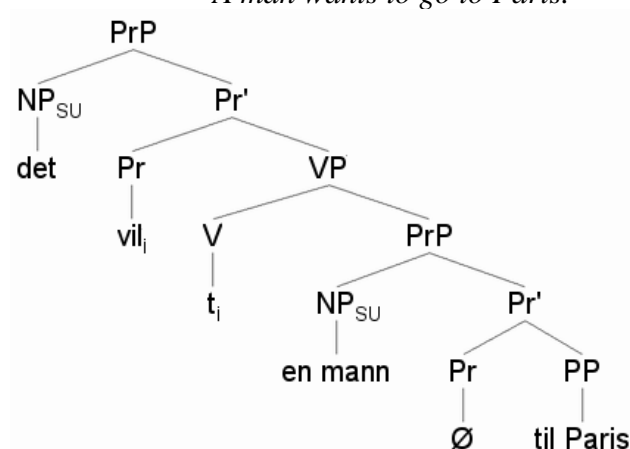
a dat Jan <in de tuin> zits te lezen <in de tuin>
 that Jan in the garden sits to read in the garden
 "that Jan in the garden sits to read in the garden"
 b dat Jan <naar huis> gaat <*naar huis>
 that Jan to home goes to home.
 "that Jan is going home"

c dat Jan morgen <naar Amsterdam> moet <*naar Amsterdam>
 that Jan tomorrow to Amsterdam must to Amsterdam

Thus, Barbiers (2002) states that *naar Amsterdam* (to Amsterdam) in (334a) must be a small clause complement (ibid. p. 57-58). *Jan* is then analysed as the small clause subject.

The assumption that the subject originates in the <spec, PrP> of the small clause in sentences like (333) can also be supported by the observation that the sentence in question can occur as an existential construction, cf. (336).

336 Det vil en mann til Paris
 IT_{EXPL} WILL A MAN TO PARIS
 "A man wants to go to Paris."



In the structure in (336), the subject *en mann* remains in the subject position of the small clause because the expletive *det* (it) is inserted into the subject position in the main clause. The possibility of having modal main verbs in existential constructions is not restricted to *vil* (want to), cf. (337).

337
 a Det skal en ekspert inn i tunnelen.
 IT SHALL AN EXPERT IN IN TUNNEL-THE
 "An expert is required to go into the tunnel."
 b Det må en flatskjerm opp på veggen.
 IT MUST A FLAT-SCREEN UP ON WALL-THE
 "A flat screen must up on the wall."

An attractive consequence of this approach is that the sentence in (336) and (337) will have the same analysis as the sentences discussed in relation to the unaccusative construction, cf. (338a). In the resultative reading of this sentence, the argument *et tre* (a tree) was analysed as instantiating the <spec, PrP> in the small clause.

338
 a Det faller et tre i grøfta.

IT FALL_{PRES} A TREE IN DITCH-THE
"A tree falls in/into the ditch."

In my presentation of the existential construction, I maintained that the sentence in (338a) could either be analysed as an instantiation of a transitive frame or a resultative frame. To decide whether the constituent was a small cause or a direct object, I looked at the possibility of deletion in coordinated sentences and insertion of additional adverbials. The examples in (339) show that deletion of the constituents in question is grammatical, which indicates that they are small clause subjects.

339

a Det skal en ekspert inn i tunnelen og detonere en bombe.

IT SHALL AN EXPERT IN IN TUNNEL-THE AND DETONATE A BOMB

"An expert is required to go into the tunnel and (the expert is required to) detonate the bomb."

b Det må en flatskjerm opp på veggen og reklamere for bedriften.

IT MUST A FLAT-SCREEN UP ON WALL-THE AND ADVERTISE FOR COMPANY-THE

"A flat screen must up on the wall and (the flat screen must) advertise the company."

If we consider the possibility of inserting an adverbial between the internal argument and the locative adverbial, the result will be ungrammatical, cf. (340). If the adverbial is inserted last, the sentence is fine.

340

a Det skal en ekspert (*i morgen) inn i tunnelen (i morgen).

IT SHALL AN EXPERT IN MORNING IN IN TUNNEL-THE IN MORNING

"An expert is required to go into the tunnel tomorrow."

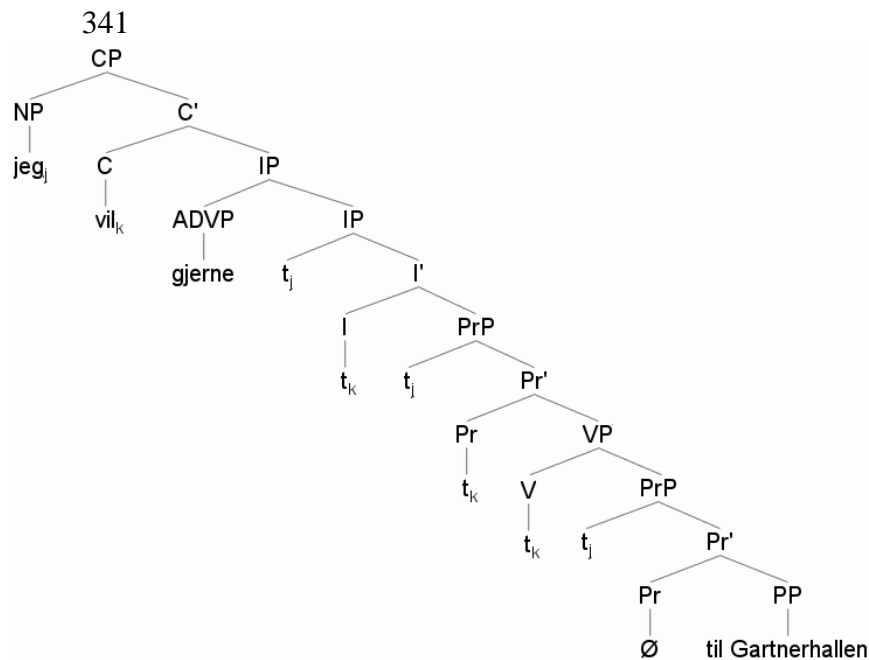
b Det må en flatskjerm (*i morgen) opp på veggen (i morgen).

IT MUST A FLAT-SCREEN IN MORNING UP ON WALL-THE IN MORNING

"A flat screen must up on the wall tomorrow."

Thus, the existential constructions with a modal verb seem to have many features that indicate that they should be analysed in a resultative frame.

However, if we look at the sentences in the data, there are 9 occurrences of adverbials between the modal main verb and the directional locative. Four of these are sentence adverbials like *gjerne, heller* and *fortsatt* (like to, rather and still). In Åfarli and Eide (2003), the sentence adverbials in Norwegian are assumed to be adjoined to T or TP. If we assume that the finite verb must move to C in a V2-language such as Norwegian, and the subject to <spec, CP>, these sentences can also be accounted for by assuming a resultative frame, cf. (341).



The sentence adverbial occurs between the small clause subject, *jeg* (I), and the small clause complement, but this is due to the movement of the small clause subject out of the resultative frame.

There are also 3 occurrences that contain an adverbial *med buss/bussen* (by bus/the bus), cf. (342).

342

a ja jeg skal med bussen til Selsbakk

YES, I SHALL [BY BUSS-THE_{PA}] TO SELSBAKK

"Yes, I want to go by bus to Selsbakk."

If we assume that the adverbial *med bussen* (by the bus) is an adverbial of manner adjoined to the VP, and follow the same analysis illustrated in (341), the adverbial *med bussen* (by the bus) would structurally end up after the PP *til Selsbakk* (to Selsbakk), i.e. sentence final, as illustrated in (343a).

343

a Jeg skal til Selsbakk med bussen.

I SHALL TO GARTNERHALLEN BY BUS-THE

"I want to go to Gartnerhallen by the bus."

Consequently, the word order in (342) does not automatically fall out if we assume that *med bussen* (with the bus) is a predicate adverbial adjoined to the VP. One solution could be that all the constituents *med bussen til Selsbakk* (with bus to Selsbakk) are in fact the small clause complement, i.e. that PP *til Selsbakk* is modifying the NP *bussen* found in the PP *med bussen*

in a bus-like manner. I believe that *med* (with) is used as a directional in these cases. When somebody utters (344), it can only mean that they want to get *on* the bus and go somewhere. In relation to (345a), I also noted that sentences with modals as the only verb followed by a temporal expression cannot be interpreted if the directional locative is recoverable from the context, cf. (347a). Likewise, the manner adverbial *med stang* (with a rod) cannot occur as the only phrase after a modal, cf. (347b).

- 347
 a #Jeg vil før klokka to.
 I WANT-TO BEFORE O'CLOCK TWO
 "I want to before two o'clock."
 b #Jeg vil med stanga.
 I WANT-TO WITH ROD-THE
 "I want to with the rod."

However, to have the PP *med bussen* (with the bus) or any other means of transport after a modal does not require that the information be recoverable from the context, cf. (348).

- 348
 a Jeg skal med bussen.
 I SHALL WITH BUS-THE
 "I must take the bus."
 b Jeg skal med flyet.
 I SHALL WITH PLANE-THE
 "I must get on the plane."

The PP *med bussen* (with the bus) should therefore *not* be analysed as a manner adverbial as is the case for the PP *med stanga* (with the rod). It is also evident that PP *med bussen* (with the bus) does not behave like a temporal expression after a modal. I believe that these examples support the assumption that the expression *med bussen* (with the bus) is interpreted as a locative or directional, which follows the previous hypothesis that modals as the only verb in a sentence are followed by a directional locative.

The last sentence with an adverbial between the modal and the small clause complement is given in (349a).

- 349
 a åja jeg skal videre fra Valøyveien til Risvollan senter.
 OH-YES I SHALL [CONTINUE_{ADV}] FROM VALØYVEIEN TO RISVOLLAN CENTER
 "Okay, I want to continue from Valøyveien to Risvollan centre."

Videre (continue_{ADV}) can be considered a directional on par with *hjem* (home) in (350a). It is in fact possible to utter (350b) where *videre* (continue_{ADV}) is the only complement. The interpretation of this sentence is that the person is moving on without specifying to where.

350

a Marit bør hjem.

MARIT OUGHT-TO HOME

"*Marit ought to go home*"

b Marit skal videre.

MARIT SHOULD CONTINUE_{ADV}

"*Marit is required to move on.*"

It is also possible to analyse the sentence in (349a) as an instantiation of restructuring, where the "heavy" preposition phrase *fra Valøyveien til Risvollan senter* is shifted to the sentence final position. Yet another possibility is to analyse *videre fra* (continue_{ADV} from) as a complex preposition phrase in line with *inn i*, *fram fra*, *opp på* and *ut gjennom* (into, from, onto, through). All three suggestions are plausible analyses under the approach adopted in this thesis. The advantage of adopting the latter proposal is that the sentence in (349a) can be analysed on par with the sentence in (333), except from the presence of a complex preposition phrase in the small clause complement.

The discussion in this section has revolved around modals with a locative directional complement, which have been proposed to be instantiations of a resultative frame. As presented in the beginning of this section, the modals *ville*, *skulle* and *måtte* (want to, is required to and must) can be found in the data with directional locatives. The proposed analysis is that all modals can occur in a resultative frame as illustrated in (333). The modals in the data material always occur in these syntactic surroundings, hence there are no occurrences of modals in a transitive frame. Likewise, there are no examples of modal main verbs in the ditransitive and the ditransitive-resultative constructions found in the data. However, I will not exclude the possibility that these two argument structure frames can combine with modal main verbs, but a more thorough investigation must be conducted to confirm or reject the existence of modals in ditransitive or ditransitive-resultative frames.

4.3.4 Summing up

Based on the observation and the examples in this section, I have proposed an analysis which suggests that the modal main verbs, like other verbs, can occur in various argument structure frames. The difference between (351a) and (351b) is reduced to a variation of the frame.

351

a Jeg vil gjerne til Gartnerhallen.

I WANT-TO LIKE-TO_{ADV} TO GARTNERHALLEN

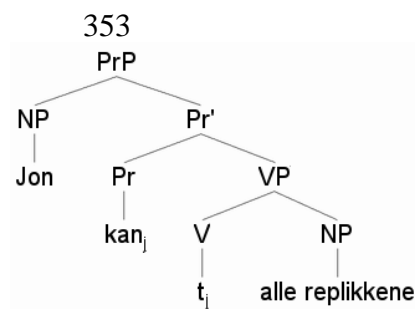
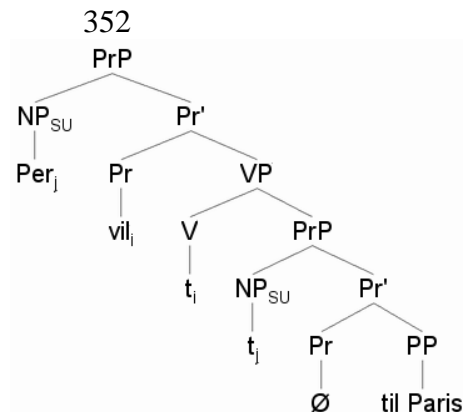
"*I want to go to Gartnerhallen.*"

b Jon vil at Marit kjøper løken.

JON WANT-TO [THAT MARIT BUYS ONION-THE]

"*Jon wants Marit to buy the onion.*"

The sentence in (351a) is an instantiation of a resultative frame, cf. (352), while (351b) is an instantiation of a transitive frame, cf. (353).



Even though I have concentrated on a subgroup of modals, the modal main verbs with directional locatives, the investigation in this thesis indicates that modals can be analysed in the argument structure frames suggested by Áfarli (2005). In fact, the argument structure frames suggest a solution to the problem encountered in P&P theory, namely that modals are assumed to not have any θ structure in the lexicon. The lack of a subcategorization frame forces the P&P theory to postulate additional rules for modals that occur with arguments. In the neo-constructional approach, no extra machinery is needed, since the verbs in general do not have any subcategorization frame. Instead, the slots in the frame sanction their arguments.

5 Summary and conclusion

5.1 Summary

This thesis started with a presentation of three Wizard of Oz-experiments conducted in Trondheim between 2003 and 2004. After I had investigated several variables that could have influenced the data from the experiments, I concluded that the experimental design had not affected the participants' choice of syntactic structures. Thus, the data was suitable for an investigation of the syntactic structures in computer-oriented talk.

In chapter 2, I presented a descriptive overview of the syntactic constructions in the TWOZ material. The classification was made according to well-established syntactic categories, such as main and subordinate clauses. I then classified these two groups further into interrogatives, declaratives, infinitivals, polar questions and so forth. This investigation of the syntactic structures in computer-oriented talk is the first of its kind for Norwegian, and hopefully, the work carried out in this thesis can be useful for others who are working with Norwegian human-computer interaction.

In addition, the classification in this thesis yields a more precise description of computer-oriented talk than existing labels, such as explicit, concise and strict, all of which are terms for describing computer-oriented talk found in HCI literature. I concluded that the material to a great extent consisted of complete and homogeneous sentences, which coincides with previous statements about computer-oriented talk. The difference between the current and previous investigations resides in my syntactically oriented classification of the actual sentence types and syntactic processes, which contributes to this impression of completeness and homogeneity.

Finally, this work on Norwegian computer-oriented talk, even though it is language-specific, can hopefully contribute to the body of international HCI research in a comparative perspective. Since research on spoken HCI mainly has prioritized language aspects other than syntax, my investigation is also a counterweight to the investigations of turn taking, politeness, and repair strategies, which have received the bulk of the attention in studies of computer-oriented talk.

The use of scientific theories and theoretical models are the most common procedures for studying and explaining phenomena in linguistics, and in Chapter 3, I compared two different theoretical approaches to syntax: the endo-skeletal and the exo-skeletal approach. The purpose of the discussion in Chapter 3 was to investigate the core ideas underlying these two approaches and their consequences. I maintained that the endo-skeletal approach

encountered several problems. These problems originated in the endo-skeletal approach's view of the relationship between the lexicon and syntactic structure. I maintained that the endo-skeletal approach had problems accounting for the verbs' flexible argument structure and the possibility of coercion. The endo-skeletal approach must either postulate facultative θ -roles or multiple lexical entries for the same verb; both solutions have undesirable consequences. I also maintained that θ -roles are problematic as theoretical primitives because the dividing line between different θ -roles is fuzzy, and there is a lack of consensus with respect to the number and types of θ -roles. Since the endo-skeletal approach assumes that the syntactic structure is created on the basis of the information found in each lexical item, I also pointed out that there is nothing in this theory that excludes the possibility of verbs marked for SVO and SOV word order to co-exist in the same language. However, investigations show that verbs in the same language do not vary with respect to this possible alternation.

Next, I presented the exo-skeletal approach, which belongs to the family of constructional approaches. Here, I mainly focused on a neo-constructional approach suggested by Áfarli (2005). I showed that the exo-skeletal approach's view of the relationship between lexicon and syntactic structure offered a solution to the problems encountered in the endo-skeletal approach. Issues such as flexibility in argument structure and coercion could easily be accounted for, along with the lack of SOV and SVO verbs in a language. In addition, the neo-constructional approach seems more in line with the assertions made about features found in spoken language. Miller and Weinert (1998), among others, have pointed out that the use of fixed expressions is strongly underestimated in linguistics. I argue that the view put forth by the exo-skeletal approach is in accordance with the widespread use of prefabricated chunks in spoken language. If we can store meaningful wholes, such as idiomatic expressions, this supports the assumption of meaningful, albeit abstract, constructions as well. Further, I compared Áfarli's (2005) argument structure frames to another constructional approach put forth by Ramchand (2006). I concluded that the latter encountered many of the same problems as discussed in relation to the endo-skeletal approach.

I also discussed the issue of a functional domain in the sentence. The historical retrospective showed that even though the number and content of the projections have varied, the functional domain appears to be a theoretical solid assumption. I maintained that the functional projections in many respect fit the description of a construction. They are hierarchically fixed, and they have inherent meaning. I argued that the functional domain also should be considered a construction, and this proposal would extend the constructional ideas

to a new domain since the constructionalist theories mainly have focused on argument structure until now.

The notion of thematic roles was not discussed at any depth in Áfarli (2005). In that respect, the argument structure frames lacked a vital part of their justification, i.e. having inherent meaning. Ramchand (2006), on the other hand, discussed this topic thoroughly, and I investigated whether her incorporation of thematic roles could be transferable to the argument structure frames adopted in this thesis. I concluded that several of her suggestions with respect to thematic roles were hard to support, and rejected Ramchand's proposal. I then turned to a promising suggestion made by Dowty (1991) called the Proto-Role hypothesis. In this proposal, a thematic role is not seen as a semantic primitive, but as a result of several properties that can be combined to yield different Agent-like and Patient-like roles. I argued that this view had several attractive features compared to the Theta theory in the endo-skeletal approach. However, Dowty's claim that the properties could be explained as entailments from the verb alone did not seem tenable. I maintained that our encyclopaedic knowledge about the argument in question also influenced whether we associate it with notions like volition, movement and sentience. My proposal was that thematic content usually associated with arguments are a result of our encyclopaedic knowledge about the words filling the argument structure frame. Put differently, whether an argument is agent/initiator or patient/undergoer are interpretations that do not arise only as a result of any syntactic process, but as a consequence of our world knowledge. However, I also argued that the slots for the arguments in the structure were associated with highly abstract thematic content related to prominence, i.e. how the speaker judges the relationship between the entities involved in the action described by the sentence. A sentence is a combination of the abstract meaning associated with the construction along with our encyclopaedic knowledge of the lexical items in question. The "making sense"-module will judge whether the inherent meaning of the construction and the meaning of the lexical items are compatible. Features that previously have been considered to be syntactically relevant, such as agent and patient, arise due to our encyclopaedic knowledge of the entities denoted by the lexical items.

In the presentation of the data material, I mentioned a factor influencing our language called "recipient design". Usually in theoretical linguistics, the language faculty is assumed to be a single unit that does not vary according to context. In this traditional view, the speaker has access to all the rules in the grammar of his or her language at any given time, and the speaker can freely choose any given rule. In contrast to this view, Roeper (1999) claims that the language faculty is organized in context-specific grammars. The context influences the

choice of a mini-grammar. This mini-grammar does not contain all the available rules in the grammar, but only a sub-division. Two grammars can also have contradictory rules. If we adopt the ideas put forth in Roeper (1999), the complete and homogeneous syntactic structures in the TWOZ material could be derived from such a mini-grammar. In light of Roeper's proposal, I also questioned Åfarli's claim that Norwegian only has five argument structure frames. Since the mini-grammars allow for contradictory rules, I suggested that "poetic grammar" could allow for different argument structure frames in Norwegian than those proposed by Åfarli (2005).

In Chapter 4, I analysed three different syntactic phenomena found in the Trondheim WOZ material. These phenomena were ellipses, the unaccusative construction and the modal main verbs. The motivation for choosing these three was primarily that they demand particular assumptions and analyses in the endo-skeletal approach. Thus, the occurrences of these phenomena are rather puzzling, given the classification of the syntactic structures in the TWOZ material as complete and simple. In addition, the three above mentioned phenomena have not been studied to any great extent in the neo-constructional approach, and they constituted a new set of data against which the theory could be tested.

I started with a review of how elliptical structures have been regarded in the endo-skeletal approach, since this phenomenon crystallizes the endo-skeletal approach's view on the relation between words and syntactic structure. Since syntactic structure is assumed to be a result of information attached to the lexical item, there necessarily has to be lexical items present in the structure at one point or another in the derivation process. For the endo-skeletal approach, the challenge with ellipsis is to get rid of the lexical item again. Various analyses have been proposed. One variant sees ellipses as a deletion process, while another claims that ellipses are some sort of base-generated empty element. All the analyses hinge on the assumption that syntactic structure is dependent on a source from which the structure can "grow". The various analyses of ellipses in the endo-skeletal approach were diverse, and I concluded that ellipses were represented as an uneconomical process in the deletion analyses.

I then presented the neo-constructional approach, which offers a shift in perspective with respect to ellipses. Since the argument structure frames exist independently of the items which instantiate them, there is no need to assume a deletion or an empty element. Compared to the deletion analyses in the endo-skeletal approach, ellipses in the neo-constructional approach are an economical process, because fewer items need to be inserted into the syntactic structure. Thus, ellipses in fact simplify the syntactic process. This view makes the occurrences of ellipses in the TWOZ material less puzzling, since the phenomenon minimizes

the syntactic process by leaving out items if they are not necessary. The occurrences of ellipsis in the TWOZ material do not oppose the general characteristics of this material as consisting of simple sentences. Even though ellipses represent a non-instantiation of an argument structure frame, they will not be a complicating factor in the derivation process of the structure. I also presented two important conditions that make the instantiation of a projection unnecessary: recoverability (the principles of pragmatic and semantic visibility) and licensing. The principle of pragmatic visibility was especially important for the missing items in the TWOZ dialogues. Even though I did not discuss issues of licensing, I acknowledge that this is a crucial question to be answered in future research. After a closer investigation of the data material, ten occurrences originally classified as ellipses were discharged, and only 8.4 % of the user turns were found to contain any elliptical structures.

In the endo-skeletal approach, the analysis of the unaccusative constructions is based on a division of intransitive verbs into two categories: unergative and unaccusative. I demonstrated that the dividing line between these two verb classes is unclear, and that reference to internal and external roles did not offer a satisfactory account of the syntactic behaviour of these verbs.

I then investigated how these constructions could be analysed in a neo-constructional approach, and proposed an analysis based on the argument structure frames presented in Chapter 3. The transitive frame resulted in a locative interpretation of the sentence, while the resultative frame yielded a resultative interpretation. The sentences in (64) and their various interpretations can thus be analysed as instantiations of these two frames.

354

- a Et tre falt i grøfta.
A TREE FELL IN DITCH-THE
"A tree fell in the ditch."
 - i) Locative reading: *"A tree in the ditch fell."*
 - ii) Resultative reading: *"A tree ended up in the ditch as a result of the falling-event."*
- b Det falt et tre i grøfta.
IT_{EXPL} FELL A TREE IN DITCH-THE
"There was a tree falling in the ditch."
 - i) Locative reading: *"There was a tree in the ditch which fell."*
 - ii) Resultative reading: *"A falling event caused a tree to end up in the ditch."*

The alternation between (354a) and (354b) does not require any particular assumptions in the neo-constructional approach. The different structures and their interpretation are a result of the verb being inserted into different argument structure frames. These so-called unaccusative verbs do not demand a particular analysis. In that respect, their occurrence in the TWOZ

material does not contradict my previous assertion that the sentences consisted of simple structures. I also proposed a restriction for the insertion of expletives in argument structure frames. This proposal rests upon an observation made by Dyvik (1989) who maintains that the existential constructions, (354b), yield a different interpretation than the constructions in (354a). According to Dyvik (1989), the difference is a change from action and agentivity in (354a) to more of a description or a scene in (354b). This observation also supports the notion of prominence put forth in relation to the argument structure slots. If the subject is replaced with an expletive, this entity is no longer considered the prominent participant in the event. I proposed two restrictions for the use of expletives in the argument structure frames. The first restriction is that the expletive requires an argument structure frame that actually has internal arguments. Thus, the expletive is excluded in the intransitive frame. In accord with this suggestion, I maintained that weather verbs had a quasi-argument, i.e. not a true expletive. This proposal is based on Holmberg and Platzack (1995), and the observation that Norwegian dialects frequently use the pronoun *han* (he) with weather verbs. The second restriction relates to the possibility of observation. The verb in an existential construction must denote an action that is observable. Verbs that refer to cognitive processes that are not easily describable, such as *lytte* and *tenke* (listen and think), will be semantically odd in the existential construction.

In the endo-skeletal approach, the modals are classified as auxiliaries. This means that they have no argument structure in their lexical entries, but are dependent upon the presence of another main verb to construct a sentence. The problem is that modals *do* occur as the only verb in sentences. Given the endo-skeletal assumptions, these occurrences must be given particular analyses, such as phonetically empty verbs of motion or multiple lexical entries for the same modal. I discussed the analysis of modals in Eide (2005), and concluded that her division of modals into main verbs and auxiliaries could easily be captured by the neo-constructional approach. She also argued that modals with directional locatives should be analysed as auxiliaries followed by an empty verb. I rejected this proposal, and maintained that these constructions could be analysed as instantiation of a resultative frame. My claim was that modals as the only verb in the sentence could be approached in the same fashion as the flexibility of verbs in general. Thus, the occurrence of modals in the various argument structure frames does not demand any particular assumptions. From this perspective, modals as the only verb in the sentence do not contradict the overall characteristics of the TWOZ material as consisting of simple and complete syntactic structures. I proposed that the sentence in (355a) should be analysed as an instantiation of a transitive frame, and (355b) as an instantiation of the resultative frame.

355

- a En mann kan alle replikkene.
A MAN CAN ALL LINES-THE
"A man knows all the lines."
- b En mann skal til Paris.
A MAN SHALL TO PARIS
"A man is required to go to Paris."

The main point in (355) is that the modal instantiates the V-projection in both sentences. I also assumed that the existential construction with a modal, as illustrated in (356a), was an instantiation of a resultative frame in line with the structure in (354b).

356

- a Det skal en mann til Paris.
IT_{EXPL} SHALL A MAN TO PARIS
"As a result of a requirement, a man is going to Paris."

I concluded that the neo-constructionalist approach could give a satisfactory account of modals that occur as the only verb in a sentence.

5.2 Conclusion

The main contributions of this thesis relate to the documentation of Norwegian computer-oriented talk and the exploration of theoretical issues from two linguistic approaches: the endo-skeletal and the exo-skeletal approach.

The investigation of the TWOZ material represents the first documentation of the syntactic structures found in Norwegian computer-oriented talk. My research of computer-oriented talk represents a different approach than the international investigations of spoken HCI, which tend to be more oriented towards other issues in HCI, such as dialogue management and disfluencies. The characteristics of the material supported descriptions of computer-oriented talk as explicit, concise and simple, as has been stated in previous studies of HCI. Contrary to these studies, I have classified of the material into well-established syntactic categories, which will yield a more precise description of the actual syntactic structures and processes that contribute to these characteristics. The natural continuation of my research will be to investigate how people interact with a computer system when they are not part of an experiment. I believe that a comparison between computer-oriented talk in an experimental setting versus a human-computer dialogue outside a laboratory would be an interesting task to pursue.

The documentation of the TWOZ material shows the participants are not so creative, but prefer to use fixed syntactic structures, yielding homogeneous data material. This supports

previous findings, namely that ready-made chunks are commonly used in spoken language. Since meaningful wholes appear to be a crucial property of language, the exo-skeletal approaches seem better suited for modelling language since they mirror this essential observation by acknowledging that larger meaningful units are part of how the innate grammar works. By using the neo-constructional approach, I argued that the elliptical structures, the unaccusative constructions and the modals as the only verb in a sentence did not need any particular assumptions or special syntactic analyses. Thus, their occurrences in the TWOZ did not contradict the overall characteristic of the sentences as simple syntactic structures. My analyses also brought up new issues that need to be addressed further. The proposal concerning the inherent meaning associated with prominence needs to be developed, and the division of labour between the syntax and the "making sense"-module is still quite rudimentary.

I also proposed that the functional domain should be considered a construction which will in fact expand constructional ideas to a new domain, since previous studies in constructional approaches have mainly focused on issues related to argument structure. This proposal was not pursued in my work, but I believe that this hypothesis is an interesting starting point for future research.

The analysis of ellipsis represents a new way of looking at this phenomenon. The main issue was that this approach offers an economical proposal of how ellipses arise in syntax. My investigation has only scratched the surface of this topic, and there are a lot of interesting issues that can be addressed. More research on Norwegian ellipses in general would be beneficial in shedding light on this phenomenon. In addition, questions of licensing conditions, which have been left unsolved in this thesis, would have to be investigated.

I also presented a novel idea in the neo-constructional approach using insight from Roeper (1999). He claims that humans possess several context-dependent mini-grammars. The simple and complete sentences found in the TWOZ material can thus be regarded as a result of such a context-dependent mini-grammar. The mini-grammars can consist of a subset of the constructions and rules in a language, but they can also contain contradictory rules. One interesting topic for further research would be to investigate whether Åfarli's five argument structure frames could account for the distribution of arguments in Norwegian "poetic grammar". The word order in poems is not completely free, and the hypothesis is that a particular grammar with different argument structure frames is responsible for the distribution of arguments in these texts.

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