The acquisition of particle verbs in Dutch

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The acquisition of particle verbs in Dutch

De verwerving van scheidbare werkwoorden in het Nederlands

(met een samenvatting in het Nederlands)

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Chapter 1

Acquiring particle verbs

1. Introduction

This study discusses the acquisition of particle verbs in Dutch. The discussion operates on two levels. First and foremost, it will attempt to provide an answer to how children acquire the lexical categories V, A and P and to how children acquire the complex predicate status of particle verbs. These issues will be addressed in chapter 2, which discusses the acquisition of the category V and complex predicate status, and chapter 3, which discusses the acquisition of the categories A and P. Next to the acquisition of particle verbs, the study also addresses more general questions concerning the acquisition process. Consequently, the goal of this chapter is twofold. It will set the stage for the discussion of the more general questions on the acquisition process and it will introduce current theories on the syntactic structure of particle verbs. Both the more general questions and the theories on syntactic structure of particle verbs will be discussed more in-depth in chapter 5, after the presentation and discussion of the data in chapters 2, 3 and 4.

This chapter will start by introducing, in part 1, the acquisition process as it will be adopted throughout the study. The acquisition process proposed in this study is situated in the framework of Principles and Parameters (Chomsky 1981, Chomsky & Lasnik 1993). Section 2 will first briefly introduce the framework. One of the aims of this study is to explain, at least a part of, the acquisition process without making use of innate specifically linguistic knowledge. Therefore, section 2 will also present a discussion on how to adapt the Principles and Parameters framework in such a way that it is compatible with the assumption that there is no innate specifically linguistic knowledge. Section 3 will then turn to the bootstrapping problem. Any theory on acquisition has to address the bootstrapping problem and three existing solutions will be presented and discussed. Finally, section 4 will present a take on the acquisition process, as it will be adopted throughout the study.

Once the general acquisition process had been outlined, this chapter will, in part 2, turn to the syntactic structure of particle verbs. Two leading theories of the syntactic structure of particle verbs will be introduced and discussed in section 6. Section 7 will then outline what exactly the child needs to acquire when she acquires particle verbs and section 8 will provide an overview of the rest of the study.

Part 1: Acquisition

2. Principles and Parameters

A careful study of the languages spoken across the world has led to the conclusion that languages, despite their obvious differences, share a certain amount of properties. To name a few of those properties: (i) all languages seem to obey abstract linguistic notions such as c-command, (ii) all languages seem to make use of syntactic notions such as displacement and (iii) all languages seem to make use of semantic notions such as predication and scope relations. At the same time, one also cannot help but notice that although languages vary, there is a limit to the variation (cf. Greenberg's 1963 universals). The combination of these two observations, the fact that languages share a core of properties and the limit on linguistic variation, has led to the proposal of the Principles and Parameters framework (Chomsky 1981, Chomsky & Lasnik 1993). In this framework, the (structural) properties that all languages share are encoded as language universal principles. The points at which language can vary, for example the choice between an OV and a VO word order, are encoded as parameters. A parameter provides a choice between several (syntactic) realizations of the same phenomenon. Theoretically, a parameter can have any number of choices, depending on how many different ways a syntactic phenomenon can be realized. Considerations from language acquisition, however, have limited the choices to two. Such a dual choice would simplify the acquisition process considerably in that the child only has to decide whether her language has a certain property or not. Both the language universal principles and the parameters are argued to be innate and should account for all the language variation in the world.

The Principles and Parameters framework is also used to provide answers to certain questions posed by first language acquisition. To appreciate the contribution, consider the following. Children acquire a language very differently from how teenagers or adults acquire a language. Teenagers and adults usually learn their second or third language through explicit instruction and will never reach the level of a true native speaker. Children, on the other hand, acquire their native language seemingly effortlessly, without any explicit instruction, at a rapid speed while hardly making any mistakes at all. Considering that the child will have to arrive at a highly complex grammar that contains very abstract linguistic knowledge, this is quite an achievement. It raises the question of exactly how the child comes to acquire this highly complex, abstract linguistic knowledge.

A part of the answer seems straightforward: not all of the abstract linguistic knowledge can be innate. Languages differ with respect to phonological and morphological realizations of words and sentences. Languages also differ with respect to syntactic realizations, such as word order, and at least some of the displacement rules. The child will have to rely on the (maternal) input to acquire these aspects of her grammar. This partial answer seems to complicate things further. Consider the nature of the (maternal) input: it is a finite set of predominantly grammatical sentences of the language the child has to acquire. The child will have

to base at least some of the rules of her grammar on this set of data. These rules determine when a certain sentence is grammatical and when it is not. The problem the child is faced with is that she has no way of telling which sentences in the input are grammatical and which are not. As such, the child does not know which sentences to base the rules on.

The absence of information about ungrammatical sentences is known as the lack of negative evidence (Grimshaw 1981, Pinker 1984). The puzzle that the lack of negative evidence poses is to understand how the child learns that certain constructions are ungrammatical if they are not identifiable as such in her input. The Principles and Parameters framework is argued to provide a solution to this puzzle. The framework provides the child with both knowledge of the universal conditions her language should adhere to and of the parametric choices that her language has. This knowledge will sharply diminish the hypothesis space and should enhance acquisition. Briefly put, all the child will have to do is to determine the setting of each parameter. The parameters, in turn, should be set up in such a way that the binary choice they provide can be made solely on the basis of the grammatical sentences that appear in the (maternal) input. Once the child has set all the parameters, she will arrive at an adult grammar that will automatically tell her which sentences are ungrammatical.

2.1 Principles and Parameters without innate knowledge

With this study, I will contribute to the attempt to explain as much of the acquisition process without making use of innate, specifically linguistic knowledge as possible. However, as said, I will also be adopting the Principles and Parameters framework. As became clear in the previous section, the Principles and Parameters framework makes use of innate specifically linguistic knowledge both in the form of language universals and in the form of parameters. Thus, if I want to adopt this framework, I will have to find a way to reformulate the origin of the language universals and parameters in such a way that they are not dependent on innate, specifically linguistic knowledge. Fortunately, I am in good company. One of the most important, aims of the Minimalist Program (Chomsky 1995) is to provide an understanding of syntax (at the very least) with the least dependence on innate specifically linguistic knowledge as possible. The drive for this program seems to partly originate from a biological perspective. It is known that language has evolved at some point, but it is not known how. The reasoning put forward is that the less innate specifically linguistic knowledge there is, the easier the existence can be explained by gene mutation. It is easy to see how the mutation of a gene could have led to the rise of one abstract linguistic feature such as merge or recursion. If, as advocated in the Principles and Parameters framework, there is much innate, specifically linguistic knowledge, it becomes much harder to explain through gene mutation and as a result it becomes much harder to explain language evolution.

Once one wants to limit the role played by innate specifically linguistic

knowledge, one has to provide another explanation for the existence of language universals and the limit on language variation. In the current debate in the Minimalist Program (cf. Hauser, Chomsky & Fitch 2002 and the debate that followed), the explanation is sought in the general architecture of the mind. Languages are argued to be shaped the way they are due to general conditions on how the brain is structured and on how different modules within the brain can communicate with each other. I would like to follow that explanation, with the added note that I think that acquisition plays a crucial role in shaping a grammar.
It is generally acknowledged that languages are partly designed the way they are due to the constraints that acquisition poses on languages. If a language had features that simply cannot be acquired, then it would not be acquired by the next generation and would cease to exist. I would like to propose a stronger position: acquisition is not just a reason languages are designed they way they are, it is the sole reason. Thus, the structure of a grammar is the result of how the mind acquires said grammar. As such, both the principles and the parameters in the Principles and Parameters framework are universal constraints resulting from acquiring a language.

2.1.1 Constraints on language imposed by acquisition

2.1.1.1 Language universals

The constraints imposed on the design of language can arise for a variety of reasons. One of them is exemplified by van Kampen (1997 and subsequent work), who proposes that acquisition is guided by language universals (as described by Greenberg 1963). She shows that language universals, such as word order, are among the first properties of a language the child acquires. This fact can be interpreted as pointing to a common design feature. The way this can be viewed is as follows. In order for a child to acquire a language, she will need an acquisition strategy. This acquisition strategy, or the underlying principles guiding this acquisition strategy, will have to be language independent and innate. With this innate acquisition strategy, children acquiring different languages will approach analysing the input in an identical way. As such, it could be argued that the features that they will induce from the input first are most likely the features that are the most general, such as word order, and posit the strongest language universals. Or put differently, language universals are a result of an attempt to accommodate the language learning child. This idea is identical to the one proposed in the Principles and Parameters framework, with the difference that it does not propose that universals are innate. It rather suggests that language universals are the result of generations' worth of language acquisition. Because children approach languages in the same way, they will pick up on similar features. These similar features then remain in the grammar for the next generation to acquire. With each generation the similarity between the features will grow stronger until it reaches a point where it has become a language universal. Language universals, then, are the result of how

children analyse the input.

2.1.1.2 An analogy

A more general way to approach the way language acquisition could constrain grammar is to compare acquiring a language to solving a problem. The child is posed with a problem in that she has the desire to communicate efficiently with those around her, but does not yet know how to do so. Some parts of solving this problem will be severely limited by how the brain functions, while other parts will allow for some more variation. This can be argued to be similar to problem solving. One could draw a parallel with other human (cultural) achievements.[1] Consider, for example, a person who wants to build a flying contraption. The laws of physics will limit the types of contraption this person can build, since only certain constructions will fly or float. On the other hand, the person will have a choice as to what colour he gives his contraption, the amount of people or cargo he wants it to be able to carry or how high and how far he wants his contraption to be able to fly. Now imagine this person goes to a convention of people who like to build flying contraptions. At certain points, all of the flying contraptions will be identical. These points are the result of the strict limits posed on flying contraptions by the laws of physics. At other points, though, the flying contraptions will be very different. These are the points where the laws of physics allow for some variation.

To connect this parallel with language acquisition, the laws of physics represent the ways in which the brain deals with analysing and organizing data. Large parts of this will be determined by the acquisition strategy, but some of it will also be due to the several modules in the brain, responsible for meaning or vocalization, having their own internal restrictions and having restrictions on intra-module communication. Within the Principles and Parameters framework, the laws of physics are the principles, the language universals. These principles, then, are the result of those areas in which the brain only has a restricted set of solutions (possibly only consisting of one solution, like structures needing to obey c-command) to solve the communication problem. The areas where the brain allows for some variation are responsible for the parameters in the Principles and Parameters framework. If this is on the right track, then the principles and parameters in the Principles and Parameters framework are not directly innate, but are the result of an innate urge to acquire language, or possibly anything, and the general architecture of the brain.

1 Of course, the limit on variation in language could be different from the limit on variation in other human (cultural) achievements. However, following the proposal in the Minimalist Program, the idea would be to try to explain this difference through restrictions posed by interfaces, rather than through the stipulation of innate, specifically linguistic knowledge.

2.1.1.3 Conclusion

If language design is indeed severely restricted by language acquisition, then a careful study of language acquisition should reveal what limits acquisition poses on language design. This study will mainly focus on the design of the lexicon, but will also pay attention to the acquisition of the syntactic phenomenon of displacement. Chapter 2 will attempt to show that displacement can be learned from the input and chapter 3 will attempt to show that limitations on displacement can also be learned from the input. Since displacement is generally considered too abstract a principle to be acquired, especially when it is obligatory as in the case of verb-second discussed in chapter 2, the fact that it can be acquired brings us one step closer to understanding language acquisition without the need to posit innate specifically linguistic knowledge. As a result, it will also bring us closer to understanding language design in general.

3. The bootstrapping problem

Irrespective of whether the principles and parameters are innate, there is one specific acquisition problem that the Principles and Parameters framework does not solve. That problem has come to be known as the bootstrapping problem. The bootstrapping problem points to the gap between the highly abstract linguistic terms used to formulate the principles and parameters and the input. This gap is a result of the fact that the abstract linguistic properties cannot be directly deduced from the input (Dresher 1999, Pinker 1984). To appreciate the problem, consider the OV/VO word-order parameter. The child sets this parameter based on whether the direct object precedes the verb in the input, the OV setting, or on whether the direct object follows the verb in the input, the VO setting. Thus what the child needs to do to be able to set the parameter is to first identify the direct object and the verb and then determine in which order they occur. The question now is how the child identifies the direct object and the verb. The most straightforward answer seems to be to make use of the morphological markings. In most languages, verbs and direct objects carry unique morphological markings (tense and case marking) that would allow the child to identify them. However, these markings are always language-specific. English does not mark the past tense the same way French does, nor does German mark its direct objects the same way Russian does. It is, therefore, generally accepted that the morphological information needed to identify the direct object and the verb cannot be innate, but has to be acquired. This immediately raises a question. If the information needed to set the parameter has to be acquired, then what additional value does the parameter have? In the case of the OV/VO word-order parameter, once the child has acquired the morphological markings needed to identify the direct object and the verb, she automatically knows the order in which the two appear. The word-order parameter would, at that point, be redundant.

The general answer to this question is that the child will have to have

access to information that will allow her to set the parameter before she has a chance to acquire the language-specific information encoded in the parameter. The only information that fits this requirement is information that is already innate. This innate information provides the child with tools to begin analysing, or bootstrap, the adult grammar. What type of information one considers to be innate largely depends on the framework one adopts. As such, there are different bootstrapping theories. Three of them will be presented here. Two of these approaches are bootstrapping approaches in the strictest sense of the word: they both allow the child to break into the grammar from the very start. These two approaches are the semantic bootstrapping approach, which takes semantic notions to be the tool children use to bootstrap grammar, and the pragmatic bootstrapping approach, which proposes that children use pragmatic notions to bootstrap grammar. They will be presented in sections 3.1 and 3.2 respectively. In section 3.3 it will be shown that later on in the acquisition process, syntactic information can be used to 'bootstrap' semantic aspects of the grammar.[2] Section 3.4 will then provide a small discussion and in section 3.5 I will present the bootstrapping strategy that I will adopt throughout the study.

3.1 Semantic bootstrapping

Pinker (1984) proposes that children make use of semantic notions when they get into the grammatical system. He takes semantic notions, such as action, to be universal and innate. He then argues that there is a close relation between the semantic and the syntactic functions of words. As such, the child can use the innate semantic information to gain access to the language-specific syntactic information. Pinker supports his claim with an analysis of the adult input a child receives. The analysis shows that in the unmarked situation, adults express most actions as verbs, refer to most physical objects either by full nouns or by pronouns and express most physical attributes as adjectives. There is thus a clear one-to-one mapping between semantics and syntax in the adult input. Pinker proposes that the child makes use of this mapping to bootstrap the grammar. To exemplify, when the child hears the adult express an action, then the child can safely deduce that that action carries the function of a verb.

Being able to identify an action as a verb does not directly lead to a fully-fledged grammar. Pinker therefore argues that once the child has deduced the syntactic function of a word, she has access to all the grammatical rules this word occurs in. The argument is based on the assumption that certain features of syntax are universal and are therefore innate. Since these features are innate, they are available to the child from the earliest stage in acquisition onwards. The example

2 The word bootstrap is given in apostrophes because it is not a true case of bootstrapping, but rather a case of cueing. Throughout this chapter I will reserve the term bootstrap for those strategies that enable the child to gain access to the grammar. Strategies that allow the child to further enhance her grammar will be referred to as cueing.

Pinker gives involves syntactic subjects, which can appear in different environments. Some of the environments he mentions are: a syntactic subject can be the agentive argument to an action verb, it can be the thematic object in a passive construction and it can be the sole argument of a non-verbal predicate. Pinker argues that the child most likely deduces the grammatical label 'subject' from its agentive use. Once the child has acquired the notion of subject, she instantly has access to all the grammatical rules involving subjects. Thus the child only has to acquire the notion of subject in one environment to be able to know all the environments subjects appear in.

Semantic bootstrapping, then, proposes that children make use of universal semantic notions such as action and agent to gain access to their language specific syntactic structure.

3.2 Pragmatic bootstrapping

Bates & MacWhinney (1982) propose that children make use of pragmatic (or discourse) notions such as topic and comment to gain access to the grammar of their language. Bates & MacWhinney define the notions of topic and comment as follows (p.199):

(1) (i) topic is defined as what is being talked about
(ii) comment is defined as the point being made about that topic

These pragmatic notions resemble the syntactic and semantic notions of subject (topic) and predicate (comment) very closely. Thus, Bates & MacWhinney argue that children make use of these pragmatic notions to acquire the syntactic and semantic concepts. They show that the notion of subject is heavily dependent on the notion of topic in adult languages such as Hungarian and Italian. If topic and subject are closely related in the adult language, then the pragmatic notion of topic should provide the child with a clear bootstrap for the syntactic notion of subject.

Unlike Pinker (1984), who argues that the child only has to acquire a syntactic notion in one situation to be able to apply it to all, Bates & MacWhinney argue that the child has to acquire all the grammatical rules that subjects appear in separately. Learning the notion of subject through the pragmatic notion of topic does not grant the child direct access to all the grammatical rules that subjects appear in. Rather, the child will have to acquire the grammatical rules and configurations separately and will eventually have to construct a single subject category.

The semantic and pragmatic bootstrapping approaches do agree on the assumption that information based on something other than syntactic structure (whether it be semantic meaning or discourse use) is needed to bootstrap a grammar.

3.3 Syntactic cueing

Opposing Pinker (1984), and indirectly also Bates & MacWhinney (1982), Gleitman (1990) argues that semantic bootstrapping cannot account for all the information the child has to acquire. She points out that the semantic information expressed by a word is not always directly deducible from the situation the word is used in. If semantic (or pragmatic) bootstrapping were all the child had at her disposal, then this would pose a serious problem. Her argument is based on the semantic information encoded by verbs and she states that syntactic structure is needed to allow the child to access verb meaning. The argument runs as follows. The semantic meaning of verbs poses two problems:

(2) i. Verbs carry semantic content that cannot be deduced directly from the situation in which the verbs are used.

ii. Even if the semantic content of the verb can be deduced from the situation, it is not always evident which part of the situation the verb refers to.

To exemplify (2ii), consider the verb 'to push' in a situation where Johnny is pushing a train. In this situation there is clearly a pushing action going on. But there is also at least a moving action (the train is moving), a touching action (Johnny is touching the train) and a sound emitting action (Johnny, the train, or both could be making noise). The question Gleitman raises is: How does the child know that 'push' refers to the pushing action and not to any of the other actions involved in the same situation?

A case exemplifying (2i) involves verb pairs such as 'chase' and 'flee'. The interpretations of 'chase' and 'flee' are dependent on each other and on the perspective of the subject. A fox can only chase a hare if the hare is fleeing from the fox. And vice versa, a hare can only flee from the fox if the fox is chasing the hare. Thus a sentence like 'the fox chases the hare' actually involves two actions, one of chasing and one of fleeing, which are the mirror images of each other. The only difference between 'chase' and 'flee' is the perspective: 'chase' describes the action from the perspective of the chaser, the fox, whereas 'flee' describes the action from the perspective of the chasee, the hare. The question that these pairs raise is: How does the child learn that 'chase' is a unidirectional verb viewing the situation from the perspective of the fox if a chasing action always has to be accompanied by a fleeing action?

An even stronger example of (2ii) is verbs that do not even refer to a physical situation. These are verbs describing mental states such as 'think' and 'know'. Imagine the same situation of Johnny pushing the train. Now the child who is watching this situation hears either 'mommy thinks Johnny is pushing the train' or 'mommy knows Johnny is pushing the train'. Nothing in the situation of Johnny actually pushing the train is going to give the child any information on the

interpretation of either ‘think’ or ‘know’. So, again, the question arises how children acquire the interpretation of these verbs.

In order to solve these problems, Gleitman proposes that children make use of the syntactic constructions the verbs appear in to deduce the semantic interpretation. For example, to distinguish between ‘chase’ and ‘flee’, the child only has to pay attention to the role the subject plays. For ‘chase’ the role of chaser is mapped onto the subject position, whereas for ‘flee’ the role of chasee is mapped onto the subject position. Deducing the semantic interpretation of a verb from the syntactic environment it appears in also enables the children to distinguish between intransitive, transitive and ditransitive verbs. Gleitman argues that this is useful in that the semantic interpretation of a verb often relates to how many arguments it carries. As an example she mentions that verbs that describe externally caused transfer or change of possessor of an object from place to place are often ditransitive. Hence, if a verb appears in an intransitive or transitive structure, then the child can most likely rule out that specific interpretation.

If children do indeed use the syntactic structure to gain access to the interpretation of the verb, then one would expect the child to use that strategy to assign an interpretation to an unknown verb. Gleitman carried out an experiment to test this prediction. She presented two year olds with both a transitive and an intransitive situation. Both situations involved the same actors and the same action. The difference between the situations was that in the transitive situation one actor was causing the other actor to do something, whereas in the intransitive action both actors carried out the same action. She then presented the children with either a transitive or an intransitive sentence. Again, both sentences involved the same actors and the same unknown verb. She made use of the preferential looking method to see whether the child could link the sentence to the correct situation. The result was that children were indeed sensitive to the syntactic structure the verb appeared in. When the child was presented with the transitive sentence, she would look at the transitive situation. And when she was presented with the intransitive sentence, she would look at the intransitive situation. Since both sentences involved the same number of noun phrases, Gleitman deduced that the child must be sensitive to the structure the verb appears in.

To sum up, Gleitman proposes that children use syntactic structures to gain access to the semantic interpretation of words. In this she opposes Pinker (1984), who argues that children use semantic information to gain access to syntactic structures.

3.4 Discussion

Bates & MacWhinney differ from both Pinker and Gleitman in that they propose that child will have to acquire all the rules and configurations separately. The acquisition strategies proposed by Pinker and Gleitman are dependent on innate, specifically linguistic knowledge, whether that knowledge is semantic or syntactic.

It could be argued that the pragmatic notions that Bates & MacWhinney employ do not necessarily have to be specific to language. As such, the pragmatic bootstrapping approach provides a non-specific linguistic bootstrap to a specific linguistic grammar.

Gleitman actually sees the fact that her theory is dependent on innate specifically linguistic knowledge as a potential problem. She notes that although the linking rules that she proposes between semantics and syntax are relatively universal, there are differences between languages. The rules that differ per language might not be innate. But if they are not innate, the question once again is how they are acquired. And even if all the rules are innate, it is not at all clear where the rules originate from. This problem is of course not specific to Gleitman's proposal but applies to all theories that propose innate knowledge. The concerns are, however, legitimate and should not be glossed over.

Next to differing in the dependence on innate specifically linguistic knowledge, there is another difference between the three approaches. The syntactic and semantic approaches are dependent on each other. To see why, take for example the semantic notion of "predicate". A predicate always occurs in a predication structure. A predication structure is a syntactic construct in which a predicate acts as a function over its argument. Since a predicate always appears in a predication structure, it is impossible to tell whether the child has used the semantic bootstrap of predicate to acquire the predication structure or vice versa, whether the child has used the syntactic cue of predication structure to acquire the notion predicate. Both Pinker and Gleitman admit that acquisition probably makes use of both semantic bootstrapping and syntactic cueing.

Pragmatic bootstrapping is not dependent on either semantic bootstrapping or syntactic cueing, since there is never a clear one-to-one correspondence between a pragmatic notion and either a semantic or a syntactic notion. The pragmatic notion of topic does not always correspond with the syntactic notion of subject and the pragmatic notion of comment does necessarily correspond with the semantic notion of predicate. To see the latter, consider the following. A semantic predicate always coincides with the syntactic predication structure. The same does not hold for comment. Imagine someone looks at a hill and comments 'steep'. This utterance arguably does not need any syntactic structure, but still counts as a pragmatic comment. Since comment does not need a syntactic structure, it is distinguishable from the semantic notion of predicate. As a result, one should, theoretically, be able to determine whether the child makes use of pragmatic bootstrapping.

3.5 A combined approach

Since I will be arguing that acquisition should be able to occur without the use of innate, specific linguistic knowledge, the pragmatic bootstrapping approach is the most suitable. The added advantage of adopting the pragmatic bootstrapping approach is that it is not dependent on the other approaches and hence provides a

clear testing ground. The pragmatic bootstrapping approach, however, does not clearly state how the child arrives at a rule-based grammar on the basis of pragmatic notions such as topic and comment. This gap in the acquisition path is the reason for Pinker to dismiss the pragmatic bootstrapping approach and to argue for the semantic bootstrapping approach instead. But this gap does not have to be a reason to completely discard the pragmatic bootstrapping approach. Van Kampen (1997, 2010) proposes a solution. She takes the pragmatic bootstrapping approach and combines it with the syntactic cueing approach in an attempt to explain how the child arrives at a rule-based grammar with the use of pragmatic information. I will be adopting her combined approach throughout this study.

Van Kampen argues that at the start of the acquisition process, the child solely makes use of pragmatic notions in classifying lexical items. She follows Bates & MacWhinney in using the pragmatic notions of topic and comment and adds the notion of operator. The definitions differ slightly from the ones used by Bates & MacWhinney and are as follows:[3]

(3)
a. topic = referential element
b. operator = small, closed set of illocution elements
c. comment = characterizing element, functions as a pragmatic predicate.

Bates & MacWhinney argue that the notion of comment is recursive. Van Kampen states that the comment is the essential element that is always present in every utterance. The single word in a one-word utterance is automatically a comment. In a two-word utterance, the comment is combined with either a topic or an operator. The result is a complex comment.

(4)

one-word utterance:	comment
two-word utterance:	[COMMENT topic comment]
	[COMMENT operator comment]

The binary structures in (4) can then be extended to a multi-word utterance by adding either a topic or an operator to the complex comment, depending on which is already present in the binary structure.

(5) multiple-word utterance:

operator [COMMENT topic comment]
topic [COMMENT operator comment]

The logically possible combinations that result in the presence of two topics or two operators are excluded from the grammar on the pragmatic grounds that having two

3 See chapter 2 for a further elaboration and actual data.

topics or two operators in the same utterance is forbidden.[4]

The key in van Kampen's approach is that children use the pragmatic notions to build a syntactic structure. These rudimentary syntactic structures become more and more enhanced with the growth of the lexicon and the use of a general learning strategy. Van Kampen proposes that children make use of a general learning strategy that tells them to first ignore any word that cannot be immediately classified. Once the child has built a small lexicon, she can start to address utterances that contain one unknown word. By comparing utterances with the unknown word to utterances without the unknown word, the child can determine the function of the word. The child thus uses the syntactic environment the word appears in to determine its lexical classification (see chapters 2 and 3 on the acquisition of the lexical classes V, A and P). As a result, the child will use pragmatic notions as a first attempt to bootstrap her grammar. Once she has gained enough information, she will switch to syntactic cueing to further refine her grammar.

4. On the acquisition process

So far I have argued that that the acquisition process is set within the Principles and Parameters framework and makes use of the combined pragmatic bootstrapping and syntactic cueing approach proposed by van Kampen (1997, 2010). The remaining details of the acquisition process will be given in this section. First I will elaborate on the general learning strategy, which was briefly mentioned in the previous section. Then I will propose that children make productive use of generalisations when they acquire their grammar, that acquisition takes place without innate specific linguistic knowledge and that grammar is layered. The last section provides a summarizing overview of the entire acquisition process.

4.1 The general learning strategy

As said, I will follow van Kampen (1997, 2010) in assuming that children make use of pragmatic notions to bootstrap their grammar and that children have access to a general learning strategy that allows them to determine the syntactic functions of unknown words (c.f. MacWhinney (1982) for a somewhat similar proposal). How the pragmatic bootstrapping process generally functions was explained in section 3.2. This section details the general learning strategy.

Some information on the general learning strategy was already given in section 3.5. To repeat, van Kampen proposes that the general learning strategy first enables children to ignore words that cannot be immediately classified and then helps them determine the function of the unclassified words one at a time. In doing

4 Both the topic and the operator have a unique function in the structure. Having more than one topic or more than one illocution marker (i.e. operator) could lead either to redundancy or to conflicting information. Therefore, only one of each is allowed per utterance.

so, the general learning strategy enables the child to build a more and more complex grammar. When the function of an unclassified word has been determined, that word can be stored properly in the lexicon. And once the unclassified word is no longer an unclassified word, it can be used in determining the function of other unclassified words. The child will then be able to analyse increasingly more complex sentence structures. Van Kampen proposes that utterances that contain one or more unclassified words will be stored as unanalysed chunks until the child has a chance to determine the functions of these unclassified words.

The child has two strategies in determining the function of an unclassified word. First, as mentioned in the previous section, the child will compare utterances with one unclassified word, (*is* in 6b), to identical utterances without the unclassified word, (6a).

(6) a. mama lief
mommy nice

b. mama is lief
mommy is nice

By comparing the two structures, the child can determine the actual contribution of the unclassified word and consequently assign it a function. The second strategy is to make use of local binary frames. In chapter 3 I will show that the child makes use of local binary frames in deciding whether an element in the category P is a preposition or a particle. In adult Dutch, prepositions occur with nouns and particles occur with verbs. The adult input thus offers the child a local binary frame that distinguishes prepositions from particles, as in (7).

(7)	a.	op tafel on table	preposition
	b.	opeten up-eat	particle

The binary frame for prepositions is [P+N] and the binary frame for particles is [P+V]. The child makes use of binary frames, because they encode a relation that is local. As such, they are easy to identify in the input.

With the function of more and more unknown words being deciphered, the lexicon can grow. The child stores words with their syntactic information (cf. chapter 5). Inevitably, at some point a word will appear in more than one syntactic environment. At first, the child will store this word twice, one entry for each syntactic environment. But with more and more words showing the same syntactic variation (see chapter 2 on the acquisition of verb-second), the burden on the lexicon grows and grows. At some point, the child will switch from storing several entries per word to introducing a rule that allows for fewer entries per word while still

explaining the occurrence of that word in different syntactic environments. With the introduction of the rule, the burden on the lexicon decreases. It is thus the growth of the lexicon that leads to a rule-based grammar.

To sum up, the general learning strategy enables the child to determine the function of words and allows her to move beyond pragmatic bootstrapping. The ability to determine the function of words enables the child to build more and more complex grammars. This will initially pose a large burden on the lexicon, since the child will store each unique occurrence of a word in a syntactic environment separately. At some point, this pressure put on the lexicon leads to the introduction of grammatical rules, as it will allow the child to store less occurrences of a word.

4.2 On generalisation

In the acquisition literature it has often been proposed that children are conservative learners. Two of such accounts will be discussed in the next subsection: one involving the Subset Principle by Manzini & Wexler (1987) and the other introducing the Conservative Learner by Snyder (2007). Throughout this study I will argue against the conservative learner view. I will instead propose that children make use of generalisations as part of their learning strategy, as is already commonly accepted in morphology (overgeneralisations of regular markings) and semantics (overextension).

4.2.1 Children are conservative

As we have seen, the Principles and Parameters framework provides an answer to the acquisition problem arising from the lack of negative evidence. However, Manzini & Wexler (1987) argue that the answer is not without problems. They point to what they have labelled the subset problem. The subset problem concerns the options of an individual parameter. Suppose a parameter has two options, option A and option B. And suppose further that the set of sentences generated by option A forms a proper subset of the set of sentences generated by option B. As a result, all of the sentences that option A generates are also generated by option B, but option B generates sentences that are not generated by option A. A child acquiring an adult grammar that has set the parameter at the subset option A now has a problem. Recall that the input does not contain any negative evidence. Hence, if the child were to mistakenly choose the superset option B, then there is nothing in the input to indicate she has made the wrong choice, since there is no sentence that option A generates that option B does not.

In order to solve the subset problem, Manzini & Wexler propose the Subset Principle. The Subset Principle states, that “given two languages, one of which is a subset of the other, if both are compatible with the input data, the Subset Principle will state that the learning function must pick the smaller one” (p.414). Thus in the

case of our parameter with options A and B, the child is conservative and chooses option A. If, by any chance, the child is acquiring a language that has set the parameter to option B, then the input will provide the child with positive data to encourage the child to opt for the superset option B. This positive data will consist of the group of sentences that are generated by option B, but are not generated by option A.

The idea that children are conservative in their language acquisition is also proposed by Snyder (2007). Snyder draws attention to the observation that children make few errors during the acquisition process. He first provides further evidence to support this observation and then states that the fact that children make few errors can only mean that they are conservative. His reasoning is based on the assumption that the child has access to all the potential settings of a parameter. Unlike Manzini & Wexler, Snyder does not propose that the child sets the parameter at the subset value. He instead proposes that the child waits to set the parameter until she has carefully analysed the input. To exemplify, one of the parameters he discusses involves the choice between preposition stranding, (8b), and pied-piping, (8c), in case of wh-movement of the complement of a preposition.

(8) a. John will always be waiting for Mary.
b. Who$_i$ will John always be waiting [PP for t_i]?
c. [$_{PP}$ For whom]$_i$ will John always be waiting t_i?

Snyder argues that the child is not experimenting with the two potential settings. Instead, she waits until she has determined which setting is available in her language. Thus a child acquiring a pied-piping language such as Spanish will never mistakenly strand a preposition and a child acquiring a preposition stranding language such as English will never mistakenly pied-pipe a preposition.
Snyder proposes that rather than exploring the alternative setting of the parameter, the child first carefully analyses the input and refrains from using the construction in her production until she has gathered enough positive evidence in favour of a parameter setting.

4.2.2 Children generalise

Both Manzini & Wexler and Snyder argue that the child is conservative in the acquisition process, but the way in which they argue that the child is conservative differs. Manzini & Wexler argue that the child chooses the subset and relies on positive evidence to arrive at the superset, whereas Snyder argues that the child refrains from choosing until she has determined the correct syntactic structure in the adult grammar.

The idea that the child is conservative in her syntactic learning seems to clash with ideas on how the child acquires other parts of the linguistic system. It is known that children generalise regular morphological markings (verb tense being

the most famous, thanks to Berko 1958 and her wug-test). It is also known that children make use of overextension in assigning meaning to words. If children can generalise in those areas of the lexicon, then why would they not do so in acquiring syntax?

In this study I would like to propose that they do. In chapter 3 I will provide a clear case of syntactic overgeneralisation, where children go through a stage at which they think that, unlike in the adult grammar, preposition stranding is unrestricted. I will show that going through this stage of overgeneralisation does not mean that the child cannot arrive at the adult grammar. Although the grammar with the overgeneralisation, where preposition stranding is unrestricted, provides a proper superset of the adult grammar, where preposition stranding is restricted, the adult grammar provides the child with positive evidence to retreat from the superset to the subset. This case will thus show that the Subset Problem posed by Manzini & Wexler can be solved. It will also show that, contra Snyder, children do not postpone uttering structures with preposition stranding until they have fully analysed all the aspects of the adult grammar involved in preposition stranding. The picture that emerges is rather that children are creative learners, who actively use their current grammar, while at the same time they continuously analyse and evolve it. I will come back to this in chapter 5.

4.3 The role of inherent specifically linguistic knowledge

The take on the acquisition process presented in this study is not dependent on the presence or absence of innate specifically linguistic knowledge. However, I will show in chapters 2 and 3 that the lexical categories V, A and P, the complex predicate nature of particle verbs and the r-pronoun restriction on preposition stranding in adult Dutch can be acquired solely on the basis of the pragmatic notions of topic, comment and operator and on the basis of a general learning strategy. Neither the pragmatic notions nor the general learning strategy consist of specifically linguistic knowledge. As such, the phenomena that are discussed in this study can be acquired without the need of innate specifically linguistic knowledge.

If innate, specifically linguistic knowledge is not needed to explain the phenomena, then Occam's Razor will favour a theory that can explain the phenomena without the use of such knowledge over a theory that does make use of such knowledge. The presence of innate, specifically linguistic knowledge has been debated ever since it was first posited by Chomsky (Pinker 1984) and has come under scrutiny once again within the Minimalist Program (Chomsky 1995). This study contributes to the discussion in showing that at least certain parts of language acquisition can be accounted for without the use of innate, specifically linguistic knowledge. And I would like to contend that careful observation of longitudinal data of child speech will reveal that other phenomena can also be acquired without the use of innate, specifically linguistic knowledge. It is my conviction that in the end we will be able to arrive at a comprehensive theory of acquisition without the need

for innate, specifically linguistic knowledge.

4.4 Grammar is layered

It is commonly accepted that children go through several grammars or stages before they arrive at the adult grammar. These grammars or stages are increasingly more specified, either because the child has set more and more parameters or because of maturation of the syntactic structure. As said, in this study I argue that the growing complexity of the grammar is due to the general learning strategy and the growth of the lexicon. I will also show that the intermediate grammars do not necessarily have to comply with the adult grammar (cf. chapter 3).

If the child goes through several grammars, the question arises whether when a child moves on to the next, more complex grammar, the previous grammar remains available. I would like to contend that it does. In chapter 3 I will show that children have a non-adult-like intermediate grammar with respect to preposition stranding (as mentioned in section 4.2.2). In chapter 4 I will argue that because of the existence of the non-adult-like intermediate grammar, the adult grammar has a repair mechanism. It would take us too far a field here to discuss the full case, so I will come back to it in chapter 5 in detail. What is important for the current debate is that the repair mechanism in the adult grammar is the result of the intermediate grammar still being accessible.

With the intermediate grammar remaining available, a picture arises of grammar being layered, almost like a cake. Intermediate grammar 2 does not replace intermediate grammar 1, but is rather placed on top of it. Rules that were valid in intermediate grammar 1, but are replaced in intermediate grammar 2, can still be accessible. The acquisition of the adult grammar is thus a fluid process, with one grammar making a transition into another without ever fully disappearing.

4.5 Conclusion

To briefly sum up the acquisition process proposed in this study, the child makes use of pragmatic notions to bootstrap her grammar. In her lexicon, she stores the words that fall into three pragmatic groups, namely topic, comment and operator, and combines them into binary structures. Then she makes use of her general learning strategy to determine the function of other, yet unclassified words. While she acquires more and more words, her is lexicon growing. At some point, the burden of the lexicon will lead her to introduce rules. She will build grammar after grammar, each increasingly more complex and each layered on top of the other grammar. Eventually she will arrive at the adult grammar. Throughout this process, she makes use of her generalisation skills to help her effectively group words together and to introduce rules. On occasion this will inevitably lead to overgeneralisation. However, the input contains sufficient positive evidence for the child to recover

from this overgeneralisation.

Part 2: Particle verbs

5. Introduction

Now that the acquisition process has been detailed, we can turn to the case study of this study: particle verbs. Particle verbs are verbs that, not surprisingly, consist of two parts: a verb and a particle. An example of a Dutch particle verb is given in (9).

(9)	opeten		'up-eat, to eat whole'
	particle:	op	'up'
	verb:	eten	'eat'

Dutch is obviously not the only language that has particle verbs. They can be found in other Germanic languages as well. (10) contains examples from English, (10a), German, (10b), Swedish, (10c), and Norwegian, (10d).

(10)	a.	*laugh off*		
		particle:	off	
		verb:	laugh	
	b.	*einsteigen*		'in-climb, to get in'
		particle:	ein	'in'
		verb:	steigen	'climb'
	c.	*hålla fast*		'hold fixed, to cling'
		particle:	fast	'fixed'
		verb:	hålla	'hold'
	d.	*sparke ut*		'kick out'
		particle:	ut	'out'
		verb:	sparke	'kick'

The particle in a particle verb can belong to different lexical categories. The Dutch cases in (11) show the particle as a preposition in (11a), as an adjective in (11b) and as an adverb in (11c).

(11)	a.	*inleveren*		'in-deliver, to hand in'
		particle:	in_{PREP}	'in'
	b.	*goedpraten*		'good-talk, to justify'
		particle:	$goed_{ADJ}$	'good'

c.	*weggooien*		'away-throw, to throw away'
	particle:	weg_{ADV}	'away'

Particle verbs are considered to be complex predicates, where both the particle and the verb contribute to the semantic interpretation of the particle verb (Den Dikken 1992). The exact nature of the contribution of the particle is not always clear, but particle verbs are generally argued to have a resultative or telic reading and it is the particle that is argued to contribute that reading. A clear example from English is given in (12). The regular verb in (12a) is a-telic. Once the verb is combined with a particle, as in (12b), it becomes telic. The particle on its own also carries the same telic reading, (12c).

(12) a. The fire burns.
b. The fire burns out.
c. The fire is out.

Particle verbs are often compared to resultative constructions, such as (13), where both the verb painted and the adjective red contribute to the meaning of the verbal expression.

(13) John painted the door red.

Just as with particle verbs, the verb denotes the action, whereas the adjective contributes the result state. There are differences between particle verbs and resultative constructions, the most notable probably being the level of compositionality. Resultative constructions are straightforwardly compositional. Both paint and red equally contribute to the interpretation and both maintain their individual meaning. This is not as straightforward for particle verbs, where the contribution of the particle often seems to be more abstract. The off in laugh off does not seem to carry the same meaning as the off in the lights are off. It would take us too far afield to discuss the difference between particle verbs and resultative constructions, but it is important to note that both are considered to be complex predicates.

Next to a discussion on the exact semantic composition of particle verbs, there is also a discussion on the syntactic structure of particle verbs. Particle verbs seem to exhibit both word like and non-word like behaviour, raising the question of where particle verbs are formed. It is the latter issue that this study will focus on. The emphasis in this study will lie on the acquisition of the syntactic structure of particle verbs that consist of a particle belonging to category P and a verb. The question of the exact semantic composition of particle verbs, and its acquisition, will have to remain for further research. The remainder of this chapter will therefore introduce two leading theories on the syntactic structure of particle verbs and will outline what exactly the child needs to acquire when she acquires the syntactic

structure of particle verbs. The chapter will be concluded with a detailed lay-out of the rest of the study.

6. The syntactic structure of particle verbs

As said, particle verbs form an interesting conundrum. On the one hand, they seem to behave as one word. They can carry derivational morphology, as illustrated in (14a) with the derivational morphemes *-baar* and *-lijk*, which transform verbs into adjectives, and the morpheme *-ing*, which transforms verbs into nouns. And they also often receive an idiosyncratic interpretation, as in (14b).

(14) a.

toelatenV	→ toelaatbaarADJ	
to-let	to-let-able	'admissible'
opmerkenV	→ opmerkelijkADJ	
up-notice	up-notice-able	'remarkable'
uitstervenV	→ uitstervingN	
out-die	→ out-die-ing	'extinction'

b. laugh off, count on, hurry up

For example, the interpretation of a particle verb like to laugh off is not a clear compositional combination of the meaning of laugh and the meaning of off.

Both the ability to carry derivational morphology and the occurrence of idiosyncratic interpretation seem to indicate that a particle verb is stored as one item in the lexicon. However, particle verbs also exhibit non-word like behaviour. In Dutch syntax, particle verbs are obligatorily split under verb-second, as in (15c).

(15) a. Jan zal de appel opeten.
Jan will the apple up-eat
'Jan will eat the whole apple.'

b. *Jan $opeet_i$ de appel t_i.
Jan up-eats the apple
'Jan eats the whole apple.'

c. Jan eet_i de appel op t_i.
Jan eats the apple up
'Jan eats the whole apple.'

In (15a) the particle verb opeten 'up-eat' is non-finite and appears to be one word. All main clauses in Dutch involve verb movement in the form of verb-second.

Movement of the entire finite particle verb, as in (15b), leads to ungrammaticality. Instead, only the verbal part moves to the verb-second position, leaving the particle behind, as in (15c). On the assumption that syntax is blind to the internal structure of words, this obligatory split indicates that a particle verb does not form a word.

The data in (14) and (15) thus lead to contradictory results. On the basis of the data in (14) one can draw the conclusion that particle verbs are stored as one unit in the lexicon. But on the basis of the data in (15) one must draw the conclusion that a particle and a verb form two syntactic atoms. This contradiction has led to two different approaches to the syntactic structure of particle verbs. Both will be presented in the next section.

6.1 Two views on the syntactic structure of particle verbs

As said, the conflicting data in (14) and (15) have led to two different solutions in the literature. One solution takes the data in (14) to indicate the true status of particle verbs and tries to explain its non-word-like behaviour as exemplified in (15). The other solution takes the data in (15) to indicate the true status of particle verbs and tries to explain its word-like behaviour as exemplified in (14). Each solution will be presented in this study through the works of two Dutch linguists. Neeleman (1994) represents the first solution. He argues that particle verbs are formed in the lexicon and form complex syntactic heads. His theory will be presented in section 6.1.1. Den Dikken (1992) represents the second solution. He argues that particle verbs are formed in syntax, where the particle heads its own small clause. His theory will be presented in section 6.1.2. This section will be concluded with a summary in section 6.1.3.

6.1.1 The particle and the verb form a complex head

In order to explain both the morphological and syntactic behaviour of particle verbs, Neeleman (1994) suggests that particle verbs form complex syntactic heads that are formed in a pre-syntactic morphological component. This statement seems contradictory, in that one should not be able to form a syntactic head in a pre-syntactic component, but Neeleman provides a resolution to the contradiction. His arguments in favour of a complex syntactic head will first be laid out before his solution is presented.

Neeleman argues that the formation of a complex head in the morphological component straightforwardly explains the word-like behaviour of particle verbs. He also argues that the proposal that particle verbs form complex syntactic heads also enables him to explain the non-word like behaviour of particle verbs. To support his argument, Neeleman first provides evidence that a particle verb forms a complex head in syntax. Part of his argument will be repeated here. In Dutch, a stranded preposition is always adjacent to the non-finite verb.

(16) a. Daar$_i$ wil ik morgen [$_{PP}$ over t_i] praten.
there want I tomorrow about talk
'That I want to talk about tomorrow.'

b. *Daar$_i$ wil ik [$_{PP}$ over t_i] morgen praten.
there want I about tomorrow talk
'That I want to talk about tomorrow.'

The occurrence of the adverb *morgen* 'tomorrow' between the stranded preposition and the verb, as in (16b), leads to ungrammaticality. However, Neeleman shows that the moment a particle verb is used, the particle obligatorily intervenes between the stranded preposition and the verb.

(17) a. Daar$_i$ wil ik mijn moeder [$_{PP}$ over t_i] opbellen.
there want I my mother about up-phone
'That I want to phone my mother about.'

b. *Daar$_i$ wil ik mijn moeder op [$_{PP}$ over t_i] bellen.
there want I my mother up about phone
'That I want to phone my mother about.'

This seems to pose a clear contradiction to the observation that a preposition is always stranded adjacent to the non-finite verb. Neeleman argues that this contradiction can be resolved if one assumes that the particle and the verb form a complex head V. If a particle verb forms a complex V, then the preposition in (17a) is still stranded adjacent to the non-finite verb.

Another piece of evidence that Neeleman presents in favour of the complex head analysis comes from nominalisation. In Dutch, either an entire VP (18b), or just the V (18c), can be nominalised.

(18) a. [$_{VP}$ versleten fietsen [$_{V}$ berijden]]
worn-out bicycles riding

b. Dat constante versleten fietsen berijden
that constant worn-out bicycles riding

c. Dat constante berijden van versleten fietsen
that constant riding of worn-out bicycles

The same facts hold for particle verbs. So again either the entire VP (19b), or just the V (19c), can be nominalised.

(19) a. [$_{VP}$ de belastingdienst [$_{V}$ opbellen]]
the tax-authorities up-phoning

b. Dat constante de belastingdienst opbellen.
that constant the tax-authorities up-phoning

c. Dat constante opbellen van de belastingdienst.
that constant up-phoning of the tax-authorities

Neeleman argues that the fact that the particle verb *opbellen* 'up-phone' can be nominalised indicates that it must form a complex head V.

The data in (16)-(19) show that particle verbs form a head, but do not necessarily show that particle verbs form a complex head. Neeleman's proposal that particle verbs form a complex head is based on the fact that particle verbs can be split in syntax. Recall that particle verbs are obligatorily split under verb-second, as in (15). Particle verbs can also be split in the formation of a verbal cluster. Dutch forms verbal clusters at the end of an utterance either if the utterance contains more than one non-finite verb (20a), or in the case of embedded clauses, which do not involve verb-second (20b).

(20) a. Jan had graag dat boek willen lezen.
Jan had gladly that book want read
'Jan would have liked to read that book.'

b. Marie weet dat Jan graag dat boek had willen lezen.
Marie knows that Jan gladly that book had want read
'Marie knows that Jan would have liked to read that book.'

Particle verbs can either occur as one unit in this verbal cluster, as in (21b), or the particle can be stranded, as in (21c).

(21) a. … dat Jan de boterham [$_V$ opgegeten heeft].
… that Jan the sandwich up-eaten has

b. … dat Jan de boterham [$_V$ t_i heeft opgegeten$_i$].
… that Jan the sandwich has up-eaten

c. … dat Jan de boterham [$_V$ op t_i heeft gegeten$_i$].
… that Jan the sandwich up has eaten

If particle verbs formed simplex heads, then the ability to be separated in syntax would come as a surprise. Neeleman therefore proposes that particle verbs form complex heads and that syntax can target the verbal part of those complex heads in case of verb-movement. This, however, poses a problem for Neeleman. Recall that he argues that particle verbs are complex heads formed in a pre-syntactic morphological component. The principle of lexical integrity (Chomsky 1970) states

that syntax cannot see the internal structure of a complex word formed in the morphological component. This is to prevent syntax from separating a prefixed word such as uneasy, which clearly behaves as one word. If particle verbs are formed in a pre-syntactic morphological component, then, according to Lexical Integrity, syntax should treat them identically to prefixed words such as uneasy. The fact that particle verbs can be separated clearly shows that this is not the case. The solution that Neeleman proposes is to dispose of Lexical Integrity.

Neeleman argues that syntax can see the internal structure of a complex word formed in the morphological component. To explain why prefixed words such as uneasy cannot be separated, he proposes that syntax will only separate a complex word if the complex word consists of items that in themselves are words.
To exemplify, a particle verb consists of a particle and a verb, both of which are independent words.

(22) a. Jan wil de melk opdrinken.
Jan want the milk up-drink
'Jan wants to drink all the milk.'

b. De melk is op.
the milk is up
'There is no more milk.'

c. Jan wil melk drinken.
Jan wants milk drink
'Jan wants to drink milk.'

A particle verb such as *opdrinken* 'up-drink' consists of the particle *op* 'up' and the verb *drinken* 'to drink'. As can be seen in the examples in (22b) and (22c), both the particle and the verb are used as independent words in Dutch. As such, the particle and the verb can be separated in syntax. Dutch also has prefixed verbs. Prefixed verbs look very similar to particle verbs in that they consist of a verbal part and a prefix that, like a particle, often looks identical to a preposition and appears pre-verbally. As expected, unlike particle verbs, prefixed verbs cannot be separated in syntax. The difference is illustrated in (23), with a particle verb in (23a,b) and a prefixed verb in (23c,d)

(23) a. Brand komt$_i$ vaak voor t_i.
fire comes often for
'Fires occur frequently.'

b. *Brand voorkomt vaak t_i.
fire for-comes often
'Fires occur frequently.'

c. Jan voorkomt$_i$ een ongeluk t$_i$.
Jan for-comes an accident
'Jan prevents an accident.'

d. *Jan komt$_i$ een ongeluk voor t$_i$.
Jan comes an accident for
'Jan prevents an accident.'

The particle verb obligatorily separates under verb-second, which explains the ungrammaticality of (23b). As can be seen in (23c), the entire prefixed verb moves to the verb-second position. Separating the prefixed verb into a prefix and a verb, as in (23d), leads to ungrammaticality. This difference in behaviour seems mysterious since the particle and the prefix both resemble the independent preposition *voor* 'for', should therefore both be able to function as words and as a result should be able to be separated from the verb. To solve the mystery, Neeleman argues that the underlying reason why syntax cannot separate complex words that contain prefixes lies in phonology. A prefix is dependent on a phonological host. As such, moving the verbal part of a prefixed verb, as in (23d), would leave the prefix without a phonological host, which would violate certain phonological principles. It is thus phonological requirements that make it impossible for many complex words to be separated in syntax and not syntax's inability to see the internal structure of complex words. On the basis of this argument, Neeleman proposes to dispose of Lexical Integrity.

6.1.1.1 Including English

So far I have limited the discussion to Dutch. However, a large part of the literature on particle verbs is based on English. One of the best-discussed phenomena in English is that of particle shift. The particle in English can either be adjacent to the verb, as in (24a), or can be separated from the verb by the direct object, as in (24b).

(24) a. He turned off the tv.
b. He turned the tv off.

Just as for the ability to separate the particle verb in Dutch, Neeleman has to provide an explanation for particle shift in English. The example in (24a) fits in his theory in a straightforward manner. The particle and the verb are adjacent and can therefore still be argued to form a complex head. The fact that the particle verb can be split, as in (24b), also no longer forms a problem. The same explanation given for the ability to separate particle verbs in Dutch applies here: a particle verb is a complex word consisting of two words and can therefore be separated in syntax. What needs to be explained is the reason why the particle verb separates. For Dutch, an explanation must be given for why only the verbal part of the particle verb is targeted by verb-

second, rather than the entire particle verb. For English, an explanation must be given for why the particle moves. The challenge for English lies in the fact that particle shift often appears to be completely optional for full DPs. Both of the word orders in (24) are available without leading to a semantic difference. In order to deal with the optionality, Neeleman argues that particle verbs in English are inherently ambiguous. He proposes that a particle verb is a complex head that either consists of two heads, a particle and a verb, as in (24a). Or it consists of a head, the verb, and a maximal projection headed by the particle, as in (25b).

(25) a. $[_V [_V \text{turn}] [_{Prt} \text{off}]]$
b. $[_V [_V \text{turn}] [_{PrtP} \text{off}]]$

Neeleman then argues that in the latter structure, the PrtP intervenes in the case assignment relation between the verb and the direct object. In order for the verb to be able to assign its case to the direct object, the PrtP has to move across the direct object. The result of this move is particle shift.

(26) a. He $[_{V'} [_V [_V \text{turned}] [_{PrtP} \text{off}]] [_{DP} \text{the tv}]]$

~~case~~

b. He $[_{V'} [_V [_V \text{turned}] t_i] [_{DP} \text{the tv}]] [_{PrtP} \text{off}]_i$

case

Unlike the full projection, the head Prt in (25a) does not intervene in the case assignment relation between the verb and the direct object. As such, it does not have to move. The two different word orders in (24) then are the result of whether the particle projects or not.

Elenbaas (2007) observes that although Neeleman's proposal can explain the occurrence of particle shift, it does not provide any insight into why and when the particle can project. She therefore proposes to restrict the theory: the particle can only project if it is either modified or if it is focused. She first points out that particles can be modified.

(27) He spat the lies right out.

In order for right to be able to modify the particle but not the verb, the particle has to project. Elenbaas further argues that the particle also has to project when it receives focus. Following others, she states that only maximal projections can carry focus. Hence if the particle were to receive focus, it would have to project. Now consider the examples in (28).

(28) a. John chatted t_i her up$_i$.
b. *John chatted up her.
c. John chatted up HER.

The examples in (28) show that particle shift is obligatory with pronouns, unless the pronoun is stressed. Elenbaas explains this generalisation by making use of two notions. First she makes use of the idea that pronouns do not convey new information and can therefore in principle not be focused. And secondly, she relies on the observation that it is always the final item in a verb-object-particle or verb-particle-object string that receives focus. She argues that these two notions combined provide an explanation for the ungrammaticality of (28b). The pronoun in (28b) is the final item in the verb-particle-object string and as such receives focus. However, since the pronoun cannot carry focus, the sentence becomes ungrammatical. Elenbaas argues that a way to salvage the construction is to stress the pronoun, as in (28c). Stressing the pronoun would allow it to be focused, which would allow the pronoun to stay in its final position and would render the sentence grammatical. Now consider the example in (28a). The particle appears in the final position and the sentence is grammatical. Elenbaas therefore concludes that the particle in (28a) both receives focus and is able to carry focus.[5] Recall that according to Elenbaas, only maximal projections can carry focus. Since the particle in (28a) is in a focus position, it must be a maximal projection. Hence particles project when they receive focus.

6.1.1.2 Combining English and Dutch

The difference in behaviour of particle verbs in Dutch and English forces Neeleman to propose that particle verbs in Dutch must be structurally different from particle verbs in English. In Dutch, particle verbs are complex heads, where both the particle and the verb are individual heads. In English, the particle can optionally project. Since Neeleman does not offer a reason as to why particle verbs should have different syntactic structures, this account is unsatisfactory.

Elenbaas attempts to provide a reason as to why the particle would optionally project in English. Her account raises the question of what it would mean for a particle to receive focus. This problem becomes even more tangible in Dutch. Recall that in Dutch the particle verb obligatorily splits under verb-second. According to Elenbaas, a particle verb can only be separated if the particle projects. Since the particle verb obligatorily separates under verb-second, the particle must have projected. Recall further that a particle can only project either because it is modified, as in (27), or because it receives focus, as in (28). Hence in verb-second, the particle must either be modified or receive focus. Since the separation of the particle and the verb under verb-second is obligatory, modification seems to be an

5 It is not entirely clear what it would mean for a particle to receive focus, a point which I will come back to in the next section.

unlikely candidate. Unmodified particles will still have to be separated from the verb under verb-second. The only alternative is that particles in verb-second constructions always receive focus. This inevitably leads to the question of what it means for a particle to receive focus. Focus is generally associated with information structure. The proposal that whenever the particle verb undergoes verb-second, the particle always receives focus irrespective of the actual information structure of the sentence seems rather undesirable. As such, Elenbaas's account does not allow for a straightforward explanation of the behaviour of particle verbs in Dutch.

It appears then that the proposed complex head theory can either give a satisfactory explanation of the behaviour for particle verbs in Dutch or for the behaviour of particle verbs in English, but not for both.

6.1.1.3 Summary

The complex head theory proposes that particle verbs are stored as one word in the lexicon. It can then straightforwardly explain the morphological behaviour of particle verbs. In order to explain the syntactic behaviour of particle verbs, the complex head theory either disposes of Lexical Integrity, which then allows syntax to see the internal structure of particle verbs, or it proposes that particles optionally project, which frees up both the particle and the verb for movement.

6.1.2 The particle heads a small clause

Unlike Neeleman and Elenbaas, Den Dikken (1992) argues that the particle and the verb do not form a unit in morphology. He proposes a small clause theory instead, where both the particle and the verb head their own individual projections in syntax and only get interpreted as a particle verb in semantics. His argument is based on the observation that a particle can be an independent predicate. As can be seen in (29), a particle can both function as a primary predicate (29a), and can contribute an argument to a particle verb (29b,c).

(29) a. Het licht is uit.
the light is out
'The light is off.'

b. Jan werkt.
'Jan works.'

c. Jan werkt zijn collega in.
Jan works his colleague in
'Jan breaks in his colleague.'

The verb *werken* ‘to work’ in (29b) is intransitive. The particle verb *inwerken* ‘to break someone in’ in (29c) is transitive. It thus appears that the particle *in* ‘in’ has introduced an argument in (29c) and functions as a secondary predicate. As noted earlier, particle verbs are are not the only construction that involve secondary predication. Resultative constructions, such as (30), also contain a secondary predicate.

(30) Jan heeft de deur rood geverfd.
Jan has the door red painted
‘Jan painted the door red.’

The adjective rood ‘red’ is the secondary predicate to the verb *verven* ‘to paint’ and is predicated of the DP *de deur* ‘the door’. The interpretation of the complex predicate ‘painting red’ is as follows: ‘painting red’ is an action of painting which renders the internal argument red. Den Dikken argues that a similar relation of secondary predication holds for particle verbs. Hence the particle *in* ‘in’ in (29c) is predicated of the DP *de collega* ‘the colleague’. The interpretation of the complex predicate *inwerken* ‘to break someone in’ is, however, not as straightforward as the interpretation of the complex predicate ‘painting red’. Nevertheless, Den Dikken states that on a more abstract level it can be argued that the particle verb *inwerken* ‘to break someone in’ is an action of *werken* ‘work’ which renders the colleague *in* ‘in’.

Given the observation that a particle can function as a primary predicate as well as the proposal that the particle can maintain its predicative function in particle verbs, Den Dikken proposes that the complex predicate nature of particle verbs is reflected in syntax by allowing the particle to head its own projection. Den Dikken, like Elenbaas (2007), uses the argument that a particle can be modified as evidence in favour of the particle heading its own projection. The argument runs as follows. Dutch has modifiers that combine with PPs, but that do not combine with verbs (cf. right and straight in English).

(31) a. Jan heeft de bal (pal) over het doel gegooid.
Jan has the ball right over the goal thrown
‘Jan has thrown the ball right over the goal.’

b. Jan heeft de bal (*pal) gegooid.
Jan has the ball right thrown
‘Jan has (*right) thrown the ball.’

The modifier *pal* ‘right’ can modify the preposition *over* ‘over’ in (31a), but it cannot modify the verb *gegooid* ‘ thrown’ in (31b). Now consider the sentence in (32).

(32) Jan heeft de bal pal overgeschoten.
Jan has the ball right over-shot
'Jan has shot the ball right over.'

Particles such as *uit* 'out' and *in* 'in' in (29) and *over* 'over' in (32) are morphologically identical to the prepositions *uit* 'out', *in* 'in' and *over* 'over' and are therefore argued to be part of the category P. As can be seen in (32), the modifier *pal* 'right' can combine with a particle verb. Den Dikken argues that since *pal* 'right' cannot modify a verb, but can modify an element from the category P, the grammaticality of (32) can only indicate that *pal* 'right' is modifying the particle. And in order for *pal* 'right' to be able to modify *over* 'over', the particle must head its own syntactic projection.

Another piece of evidence in favour of treating the particle as a separate head comes from the formation of verbal clusters in Dutch. Recall that Dutch forms verbal clusters at the end of an utterance and recall further that a particle verb can be split in such clusters. Next to particles, adjectives such as 'red' can also appear in the verbal cluster, as in (33b).

(33) a. … dat ze de schuur rood [V hebben geschilderd].
… that they the barn red have painted
'… that they had painted the barn red.'

b. … dat ze de schuur [V hebben rood geschilderd].
… that they the barn have red painted
'… that they have painted the barn red.'

However, the moment the adjective is combined with a particle verb, it can no longer appear in the verbal cluster.

(34) a. … dat ze de schuur rood over [$_V$ hebben geschilderd].
… that they the barn red over have painted
'… that they have repainted the barn red.'

b. … dat ze de schuur rood [$_V$ hebben overgeschilderd].
… that they the barn red have over-painted
'… that they have repainted the barn red.'

c. *… dat ze de schuur [$_V$ over hebben rood geschilderd].
… that they the barn over have red painted
'… that they have repainted the barn red.'

d. *… dat ze de schuur [$_V$ hebben rood overgeschilderd].
… that they the barn have red over-painted
'… that they have repainted the barn red.'

Den Dikken proposes that the ungrammaticality of (34c) and (34d) is the result of the particle head intervening between the verb and the adjective. As a result, the adjective can never adjoin to the verb to become part of the verbal cluster.[6] Den Dikken argues that the particle can only intervene between the adjective and the verb if it is an independent, syntactic head. To illustrate, if the particle heads its own projection, the situation would be roughly as in (35a). If, however, the particle does not head its own projection and is part of the verb, the situation would roughly be as in (35b).

(35) a. Adj Prt V
b. Adj [$_V$ Prt V]

In (35b) the adjective is adjacent to the complex verb and as such can be incorporated into V to become part of the verbal cluster. In (35a), on the other hand, the adjective is not adjacent to V, because the particle intervenes. As a result, the adjective cannot be incorporated into V and cannot be part of the verbal cluster. Hence, the ungrammaticality of (34c) and (34d) supports the assumption that particles head their own syntactic projection.

The advantage of treating a particle verb as a complex predicate in syntax is that it provides a one-to-one mapping between syntax and semantics. The direct object of the particle verb is in reality the complement of the particle. The constituent of particle and direct object then in turn form the complement of the verb, as in (36).[7]

(36) [$_{VP}$ [$_{V'}$ [$_{SC}$ [$_{DP}$ zijn collega]$_i$ [$_{PP}$ [$_{PRT}$ in] [$_{DP}$ t$_i$]]] [$_V$ werken]]]

This syntactic structure provides a direct representation of the complex predicate nature of particle verbs. The secondary predicate forms a small clause (SC) constituent and is the complement of the primary predicate, the verb. As such, the fact that particles contribute to the semantics of a particle verb is straightforwardly explained. Another advantage is that it also immediately explains how particle verbs are separated under verb-second. Since verb-second is verb-movement, it only targets the verb. The particle heads its own projection and is never a candidate to tag along.

The clear disadvantage to allowing particles to head their own syntactic projection is that is does not provide any explanation for the morphological behaviour of particle verbs. Under Den Dikken's proposal, the particle and the verb

6 I refer the reader to Den Dikken (1992:79) for the full, technical implementation.
7 The structure in (36) is a simplification for expository reasons. For full implementation of the actual structure see Den Dikken (1992).

do not form a morphological unit. As such, the fact that they can carry derivational morphology is a mystery. Den Dikken, basing himself on Borer (1991), dismisses this problem by stating that morphology works parallel to syntax and that there is free traffic between the two modules. As such, syntax can treat particle verbs as consisting of two independent units, whereas morphology can treat particle verbs as one word. It seems, then, that the advantage of a transparent mapping between syntax and semantics leads to a non-transparent mapping between syntax and morphology.

To sum up, the small clause theory proposes that the particle heads its own syntactic projection. This allows for a straightforward explanation of the ability to separate a particle verb in Dutch. It also allows for a transparent mapping between syntax and semantics in capturing the predicative nature of particles. In order to be able to explain the morphological behaviour of particle verbs, it is proposed that morphology and syntax form two independent modules, which operate parallel to each other and allow for free traffic between them.

6.1.3 Discussion

Both the small clause and complex head theories have to assume something special to accommodate the full behaviour of particle verbs. Den Dikken has to assume that morphology runs parallel to syntax, allowing for the formation of morphologically complex words that are syntactically independent units. And Neeleman has to assume that Lexical Integrity does not hold, so that syntax can see the internal structure of particle verbs. Neither theory, then, is without problems.

The fact that particle verbs can optionally separate in verbal clusters, see (21), also poses problems for both theories. Den Dikken has to stipulate an optional incorporation rule. This rule only applies to the formation of verbal clusters, to ensure that the particle does not move along under verb-second, and enables the particle to be incorporated into the verb. Once it is incorporated, it can move along with the verb to different positions in the verbal cluster. Neeleman, on the other hand, has difficulty explaining the fact that the particle and the verb can separate in syntax. He has to stipulate an optional projection rule for particles. But the conditions under which the particle projects are completely arbitrary. Elenbaas avoids both problems, but her account is inapplicable to Dutch since it cannot provide an adequate explanation for the obligatory separation of particle verbs under verb-second.

Since both the small clause and the complex head theories have their drawbacks, it seems almost a matter of personal preference which one of the two theories is adopted. The study of the acquisition of particle verbs presented here does not depend on either of the two approaches. Both theories agree on some basic properties of particle verbs and these will be focussed on. I will, however, return to the discussion in chapter 5 and argue that the data presented in this study provide evidence in favour of the complex head theory.

7. What the child needs to acquire

Irrespective of whether one adopts the small clause theory or the complex head theory for particle verbs, all particle verbs share at least the following features:

(37) i. particle verbs form a complex predicate
ii. particle verbs consist of a particle and a verb
iii. particles can belong to different lexical categories

In order to fully acquire particle verbs, the child therefore has to at least achieve the following:

(38) i. realize that a particle verb forms a complex predicate
ii. acquire the categorial status of the verb (V)
iii. acquire the categorial status of the particle (A or P)
iv. distinguish the particle from other elements in the categories A and P

This study discusses all of these points in chapters 2 and 3. Chapter 2 deals with the acquisition of the lexical category V and with the acquisition of complex predicates, points (38i) and (38ii). And chapter 3 deals with the acquisition of the categories A and P and with the acquisition of the distinction between particles and other elements in the categories A and P, points (38iii) and (38iv). All four points in (38) will be briefly introduced here.

7.1 Particle verbs are complex predicates

A child will have to learn that a particle verb is a complex predicate consisting of a primary and secondary predicate. The fact that a particle verb forms a complex predicate is not directly evident from the surface structure. In Dutch, a particle verb either forms one unit, when it is non-finite as in (39a), or it is split, when it is finite and undergoes verb-second as in (39b).

(39) a Jan moet de appel opeten.
Jan must the apple up-eat
'Jan must eat the whole apple.'

b. Jan eet_i de appel op t_i.
Jan eats the apple up
'Jan eats the whole apple.'

In its non-finite form, a particle verb looks identical to a prefixed verb (cf. (23) in section 6.1.1). As such it provides the child with no reason to treat it as a complex

predicate and, as will be shown in chapter 2, as a result children first treat non-finite particle verbs as single units. The particle verb also does not provide evidence of its complex predicate status in its split form. The surface structure in (39b) does not bear any direct evidence that the verbal part of the particle verb has moved. As such, there is no reason for the child to link the verbal part to the particle and treat them as a complex unit.

If the complex predicate nature of particle verbs is not directly evident from the surface structure, the question arises what type of evidence the child needs in order to arrive at the correct analysis. In chapter 2 it will be proposed that the acquisition of the complex predicate status of particle verbs is dependent on the acquisition of verb-second. With the acquisition of verb-second, the child has a reason to relate the verbal part of the particle verb in (39b) to the particle. This realization leads to the creation of a complex predicate and is then extended to include non-finite particle verbs as well.

7.2 Acquiring lexical categories

Next to acquiring the complex predicate status of particle verbs, the child will also have to acquire which lexical categories the particle and the verb belong to. The verb, obviously, belongs to category V, but the child will first have learn how to distinguish verbal predicates from other predicates before she can assign the category V to verbs. As for particles, they can either belong to category P, since they can be preposition-like as in (40a), or to category A, since they can be adjective-like as in (40b).

(40) a. opeten, afzeggen, voorlezen
up-eat, off-say, for-read
'to eat up, to cancel, to read to'

b. goedkeuren, zwartrijden, vrijkomen
good-test, black-ride, free-come
'to approve, to evade a fare, to be freed from'

The acquisition of each of the lexical categories will be discussed briefly in the next three subsections. Section 7.2.1 will address the acquisition of category V and section 7.2.2 will address the acquisition of categories A and P. Section 7.2.3 will then discuss how the child acquires the difference between particles and other elements present in categories A and P.

7.2.1 Acquiring V

What does a child need to be able to acquire the lexical category V? In order to be

able to answer this question, one first has to answer another, maybe even more basic question: what sets category V apart from all other lexical categories? Category V contains verbs and verbs are primary predicates. However, V is not the only lexical category that contains primary predicates, as can be seen in (41).

(41) a. De melk is op.
the milk is up
'There is no more milk.'

b. Jan is aardig.
Jan is nice
'Jan is nice.'

The primary predicate *op* 'up' in (41a) belongs to category P and the primary predicate *aardig* 'nice' in (41b) belongs to category A. Thus, being able to form a primary predicate is not unique to verbs and hence does not set V apart from other lexical categories. There is, however, one difference between a verbal predicate such as eat and the predicates in (41). The predicates in (41) denote either an end-state (41a), or a property (41b). Verbs, on the other hand, can denote actions. Perhaps the ability to form a predicate that can denote an action is what sets verbs apart (recall that that is one of the semantic bootstraps that Pinker proposes, cf. section 3.1). A quick look at nouns reveals that that can not be the case either.

(42) De verovering van Constantinopel was geheel verwacht.
the conquest of Constantinople was entirely expected
'The conquest of Constantinople was entirely expected.'

The noun *verovering* 'conquest' forms a predicate and denotes an action. Thus being able to denote an action is not a distinguishing feature either. It seems then that the unique feature of verbs should not be sought in semantics. The ability to form a predicate and the type of predicates verbs can form are not limited to verbs only.

If semantics is not the best place to look for what sets V apart from other lexical categories, then maybe syntax is. In syntax, verbs have at least two features: they can assign case and they can carry finiteness marking. The ability to assign case is clearly not restricted to verbs, since other lexical categories such as P can do so too. The ability to carry finiteness marking does, however, seem to be reserved for verbs only.[8] As such, it is the syntactic property of finiteness that sets category V

8 This statement at the very least holds for Dutch. In order to determine whether it holds for other languages, two questions need to be answered: do auxiliaries form their own lexical class and does the verb indeed carry finiteness marking. If auxiliaries form their own lexical class and can carry finiteness, then finiteness is obviously no the unique feature setting verbs apart in that specific language. The fact that perhaps different language specific cues are needed to acquire a lexical category is neither surprising nor problematic. All lexical categories have a unique distinguishing feature, which may be identical across languages, but do not have to be. The distinguishing feature will guide the child in acquiring the lexical category.

apart from all other lexical categories (van Kampen 1997).

Since finiteness sets category V apart, the answer to the question of what the child needs to acquire category V seems to be: finiteness. Once the child has acquired finiteness, she can acquire the category V. Finiteness in Dutch is expressed by verb-second. In chapter 2, it will be shown that it is the acquisition of verb-second that leads to the acquisition of the category V. The acquisition of verb-second therefore leads to two things: the acquisition of the category V and the acquisition of the complex predicate status of particle verbs.

7.2.2 Acquiring A and P

Once the child has acquired the knowledge that the particle verb consists of a verb and a particle, she has to acquire which category the particle belongs to. Recall that particles can belong to either category A or category P. In chapter 3 it will be argued that acquiring the difference between these two categories is done on the basis of the non-predicative use of adjectives and prepositions. In the predicative use, elements from the categories A and P are non-distinct (cf. 41a and 41b). Both the P-element op 'up' and the adjective *aardig* 'nice' occur in sentence final position and combine with an auxiliary. In the non-predicative use, on the other hand, there is a clear difference between elements from the categories A and P. Adjectives appear after a determiner, whereas prepositions appear in front of a determiner.

(43) a. de aardige man
the nice man
'the nice man'

b. op de tafel
up the table
'on the table'

I will argue that it is this structural difference that allows the child to distinguish between elements belonging to category A and elements belonging to category P.

7.2.3 Distinguishing particles from prepositions and adjectives

Once the child has acquired the distinction between categories A and P she can turn to the internal distinction within each category. Both categories A and P contain particles. However, next to particles, category A also contains adjectives and category P also contains prepositions. There is different behaviour between adjectives and prepositions on the one hand and particles on the other. The difference lies in the non-predicative use, as in (43). Where prepositions and adjectives can be used non-predicatively, particles cannot. The child will therefore

have to acquire the difference between adjectives and adjective-like particles and between prepositions and preposition-like particles. Chapter 3 will focus on the acquisition of the difference between prepositions and preposition-like particles. The acquisition of the difference between adjectives and adjective-like particles will have to remain for future research.

The difference between a preposition and a preposition-like particle seems to be straightforward. Compare (39a), repeated here as (44a), with (43b), repeated here as (44b).

(44) a. Jan moet de appel opeten.
Jan must the apple up-eat
'Jan must eat the whole apple.'

b. op de tafel
up the table
'on the table'

The preposition takes a DP as its complement, whereas the particle appears adjacent to a verb. This clear structural distribution should be sufficient to guide the child in acquiring the difference. In chapter 3 it will be shown that children do indeed make use of this difference, but that preposition stranding as in (45) renders the task more complicated.

(45) [Welke stoel]$_i$ wil Jan [$_{PP}$ op t_i] zitten?
which chair wants Jan on sit
'Which chair does Jan want to sit on?'

8. Set-up of the study

By means of a case study of the acquisition of the syntactic structure of particle verbs, this study will put forward a particular perspective on the acquisition process. In this acquisition process, the child makes use of pragmatic notions to bootstrap her grammar and makes use of syntactic cueing to fine-tune her grammar. This syntactic cueing is dependent on local, binary frames and puts a burden on the lexicon that will eventually lead her to introduce rules. The introduction of rules and the fine-tuning of the grammar leads the child to build grammar upon grammar, where each grammar is increasingly more complex and layered on top of the other. Throughout this process, she makes use of her generalisation skills, which on occasion inevitably leads to overgeneralisations. However, as will be shown, the input contains sufficient positive evidence for the child to retreat from these.

With regard to the acquisition of the syntactic structure of particle verbs, this study deals with the acquisition of the complex predicate status of particle verbs and with the lexical categories V, A and P. The discussion of the acquisition of the

syntactic structure of particle verbs and of the acquisition process is spread across three data-oriented chapters. The three chapters follow the acquisition path of particle verbs and at the same time illustrate the acquisition process. Chapter 2 shows the start of the acquisition process, where children use pragmatic bootstrapping to set aside the predicate-like elements V, A and P from the other lexical elements. It charts the rise of the category V and shows how pressure on the lexicon leads to a movement rule, verb-second, and to the awareness of a particle verb as a complex predicate. Chapter 3 then continues on the acquisition path and shows the use of local binary frames in the acquisition of the lexical categories A and P. Local binary frames are first used to distinguish between the two categories and then between the elements within the categories. The chapter shows this last process for category P, which leads to an overgeneralisation that the child will eventually retreat from. The last data oriented chapter, chapter 4, turns to the adult grammar to discuss the layering of grammar. It shows that the overgeneralisation presented in chapter 3 has a reflex on the adult grammar in that it has not completely disappeared.

The study will end with an overall concluding chapter 5. This chapter provides an in depth discussion of the acquisition process presented in this study and addresses the issues raised throughout this study. It also discusses theories on the lexicon and construction grammar. The lexicon plays an important role in the acquisition process put forward here and the chapter will detail that role. Construction grammar, like the acquisition process proposed in this study, works with frames. Chapter 5 discusses the similarities and differences between construction grammar and rule-based grammar and presents arguments in favour of the latter.

The overall conclusion offered by this study is that the acquisition of lexical categories and of the syntactic notion of displacement is possible with the use of an acquisition system based on input, pragmatic bootstrapping, syntactic cueing and general learning and organisation skills. The account does not make use of innate, specifically linguistic knowledge and as such contributes to the program set out in the Minimalist Program to account for as much of the linguistic system as possible without resorting to innate specifically linguistic knowledge.

Chapter 2

Particle verbs and the acquisition of verb-second

1. Introduction

This chapter shows the first steps children take in the acquisition of the complex predicate status of particle verbs. It will discuss the use of pragmatic bootstrapping, the rise of category V, the acquisition of the verb movement rule in verb-second and the process by which the acquisition of this rule inevitably leads to the realization of the particle verb as a complex predicate. It is this causal relation between the acquisition of verb-second and the acquisition of the complex predicate status of particle verbs that forms the core of this chapter.

In the generative tradition it is generally assumed that the surface structure of a sentence is a derived structure mapped from an underlying structure. Movement rules make constituents appear in places where they are not base-generated. Since the moved constituent is generally only phonologically realized in its moved position, the result is a phonological form that does not directly mirror the syntactic structure. This semi-transparent relation between phonological form and syntactic structure poses a well-known problem for language acquisition. This chapter looks at a specific proposal made by Lightfoot (1991), who addresses the acquisition of verb-second. In verb-second constructions, the finite verb has been moved from a base-generated position to C. By addressing the acquisition of verb-second we thus also address the acquisition of movement. The challenge for the language acquiring child is to deduce the base-generated position of the moved constituent. In the case of verb-second in Dutch, the child encounters the finite verb in the left periphery and has to deduce that the finite verb originates in the clause-final position. The question is what kind of information the child needs to make this deduction. Lightfoot argues that the information the child needs is encoded in the surface structure in the form of a cue. A cue is a small piece of syntactic structure that guides the child in discovering the underlying word order. For the acquisition of verb-second, split finite particle verbs are proposed to provide the relevant information. In adult Dutch a particle verb consists of a verb and a particle to its left (as in the example from the previous chapter: *op-eten* (up-eat "eat-up"). Together they form a semantic unit, but are obligatorily split in verb-second structures. The verbal part of the particle verb moves to the verb-second position. The particle remains in its base-generated position, as in example (1).

(1) Jan eet_i zijn appel op t_i. Dutch
Jan eat his apple prt
'John eats all of his apple.'

Lightfoot argues that the particle op 'up' in (1) functions as a place marker for the entire particle verb, providing the child with (a) the information that the finite verb has moved and (b) information about the position the finite verb has moved from. His proposal raises the following questions:

(2) i. When do children acquire (finite) particle verbs?
ii. How does the acquisition of particle verbs relate to the acquisition of verb-second?

The answer this chapter will provide is that in the Dutch child's language production finite particle verbs appear late in the acquisition of verb-second. This answer will be based on analysis of longitudinal corpus data of four Dutch children. The data will show that the use of verb-second for particle verbs trails the use of verb-second for other lexical verbs. These findings will be explained by showing that the child has yet to acquire a syntactic structure that can accommodate a complex predicate. Crucially, the acquisition of this syntactic structure is based on the acquisition of verb-second. As such, it will be argued that the split finite particle verb cannot, and therefore does not, play a driving role in the acquisition of verb-second.

The chapter is structured as follows. Section 2 will introduce the phenomenon of verb-second. The challenge verb-second poses for acquisition and the solutions proposed by Lightfoot (1991) will be discussed in section 3. The longitudinal data will be presented in section 4 and will be analysed in section 5. Section 6 will provide an overall conclusion to this chapter.

2. Verb-second

In main clauses of Germanic languages like Dutch, German and Swedish the finite verb is positioned in the left periphery.

(3) a. Jan liep gisteren naar huis. Dutch
Jan walked yesterday to home
'John walked home yesterday.'

b. Peter hat dieses Buch gelesen. German
Peter has this book read
'Peter has read this book.'

c. Erik köpte verkligen boken. Swedish
Erik bought really the-book
'Erik really bought the book.'

The placement of the finite verb in the left periphery of the main clause is not random. In a declarative main clause, the finite verb is typically preceded by one

constituent.[9] In (3) the finite verbs are preceded by the subjects *Jan* 'John', *Peter* 'Peter' and *Erik* 'Erik'. Subjects are not the only items that can appear in the left periphery. Constituents with other grammatical relations, like the adverbial gisteren 'yesterday' in (4a) and the direct object *dieses Buch* 'this book' in (4b) can occupy this position as well.

(4) a. [Gisteren] heeft Jan dat boek gekocht. Dutch
Yesterday has Jan that boek bought
'John has bought that book yesterday.'

b. [Dieses Buch] has Peter gelesen. German
This book has Peter read.
'Peter has read this book.'

This leads to a pattern where the first position in the left periphery in the main clause is occupied by a phrasal constituent and the second position by the finite verb.

(5) $[_{\text{main clause}}$ XP $\text{verb}_{[+\text{fin}]}$ …]

This pattern is known as verb-second (V2). The V2 pattern can also be observed in embedded clauses, depending on the language. Swedish, for example, allows for V2 in certain embedded clauses (Platzack 1986, Holmberg & Platzack 1995).

(6) Han sa att Erik hade verkligen blivit fet. Swedish
he said that Erik had really grown fat
'He said that Erik had really grown fat.'

Dutch does not have V2 in the embedded clause and the finite verb appears in clause-final position as in (7).

(7) … dat Jan gisteren naar huis liep. Dutch
… that Jan yesterday to home walked
'John walked home yesterday.'

As a result of the absence of V2 in embedded clauses in Dutch, the surface structures of main and embedded clauses are different, (3a) vs. (7). The standard analysis of this difference in surface structure is to provide one uniform underlying verb-final structure for both embedded and main clauses, with the difference in surface structure being derived by movement. In the traditional analysis the finite verb moves to a functional head in the left periphery (Emonds 1976, Den Besten 1977 and others).[10]

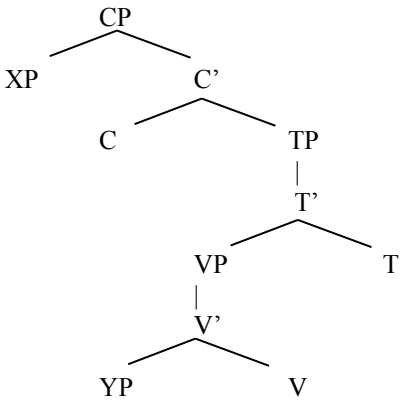
9 See Zwart (1993) for a more detailed analysis.

10 The alternative to the head-movement approach is the remnant movement approach (cf. Nilsen 2002, Müller 2004 and references cited here). It would take us too far afield to discuss the remnant

2.1 Head movement

In the head-movement approach to V2, the underlying structure in main clauses is argued to be the structure found in embedded clauses. The basic structure for a Dutch CP would be as in (8).

(8)



In embedded clauses the finite verb remains in the clause-final position, resulting in an OV pattern. In main clauses, the finite verb moves to the left periphery. The position the finite verb moves to is C, in a head-initial CP. The reason the finite verb does not move to the C position in embedded clauses is the presence of a complementizer (Den Besten 1977). When the C position is filled by a complementizer, it is no longer available for verb-movement. The realization of the complementizer is obligatory in Dutch and therefore V2 simply cannot occur in the embedded clause. The head movement in verb-second configurations is complemented by constituent movement to the specifier position of the CP. The movements are motivated separately and executed together they form the verb-second pattern in (5).

There are different proposals as to the reason and trigger for the movement of the finite verb to C. A standard explanation for why the finite verb moves to C is clause typing (Evers 1982, Weerman 1989, Rizzi 1990, Koeneman 2000, van Kampen 2010) and this explanation will be adopted here. The trigger for V2 is either sought in tense (Evers 1982, Koeneman 2000), agreement (Koopman 1984, Platzack 1986, de Haan & Weerman 1986) or finiteness (Holmberg & Platzack 1995, van Kampen 2010). In the literature on language acquisition it has been shown that children start with the opposition between finite and non-finite forms (de Haan 1987, Klein 2001, Jordens 2002). The finite forms the children use are marked for tense and agreement. However, in this early stage in acquisition it cannot be said that children have full control of tense and agreement marking. The tense children use is

movement approach here, but in my opinion remnant movement renders the underlying structure too opaque for the child to reconstruct. I will therefore adopt the traditional head-movement approach.

almost always present tense, and agreement mistakes are common. Van Kampen 2010 shows an ordering effect for the acquisition of V2 and tense and for the acquisition of V2 and finiteness, where both tense and agreement appear later. During the acquisition of V2, children thus make a distinction between verbs that are finite in that they are somehow marked for tense and agreement and verbs that are non-finite in that they are not marked for tense and agreement. Since children can acquire V2 on the basis of this distinction, I will assume that the trigger for the head-movement in verb-second environments is finiteness.

3. V2 and its cues in acquisition

V2 occurs as the standard in almost all Germanic languages, with English as the exception.[11] A characteristic that divides the Germanic languages into two groups is the base-generated word order of verb and direct object. The difference in word order is relevant to the acquisition of V2. In acquiring V2, the child has to (a) set the correct underlying word order and (b) deduce the verb-movement rule. The ease with which both are acquired varies per word order. In an OV language, the word order in surface structure will often differ from the underlying word order, due to verb-movement. In a VO language, on the other hand, the standard SVO surface word order is identical to the underlying VO word order. If the word order in surface structure is identical to the underlying word order, it becomes easier to detect the correct underlying word order, but harder to detect verb-movement. The reverse holds when the word order in surface structure differs from the underlying word order. In this case it is harder to detect the underlying word order, but once the underlying word order is established, it is easier to detect verb-movement. The different challenges the OV versus VO word orders pose for acquisition raises the question what kind of cues and how many cues are needed to acquire V2. Section 3.1, will first address the problems the OV word orders pose for acquisition and will then discuss particle verbs as a cue for acquisition, as proposed by Lightfoot (1991). Section 3.2 will then look at the behaviour of particle verbs in VO languages with V2 and will arrive at the conclusion that particle verbs cannot form a cue for V2 in all VO languages. VO languages need a different cue, the presence of verbal specifiers (Lebeaux 1988, Lightfoot 1991). And finally in section 3.3, the consequences of the presence of several, language-specific cues for one syntactic phenomenon will be discussed.

3.1 OV languages

The Germanic languages with OV word order and V2 discussed here are Dutch and German. The standard analysis of V2 in both languages is as in section 2.1, exemplified by Dutch, but applicable to German as well (see Thiersch 1978, Clahsen

11 English does exhibit residual verb-second (Rizzi 1990).

& Smolka 1986, Haider & Prinzhorn 1986 for German). As said, the problem OV verb-second languages pose for acquisition is the difference in the surface word order from the underlying word order. Both the underlying OV word order and the V2 rule have to be acquired. The question is whether children acquire them independently or whether there is some ordering effect. Gibson & Wexler (1994) have shown that the latter must be the case. They argue that the child has to acquire the underlying word order before she can acquire V2. If this ordering is not maintained, then the child has the possibility of building a non-adult grammar from which she can never arrive at the adult grammar. This non-adult grammar would be constructed in such a way that there is no input that could direct the child to rectify the grammar. The ordering effect leads to the following two questions for the acquisition of Dutch and German:

(9)
i. How does the child learn that Dutch/German is OV?
ii. Once the child has acquired the underlying word order, how does she acquire the V2 rule?

The OV word order can be found in the embedded clause, since V2 does not apply to the embedded clause in Dutch and German. The embedded clause could therefore offer the child direct evidence for the OV word order. There are, however, two problems with this approach. First of all, Lightfoot (1991) argues that children only have access to a matrix binding domain, which is roughly speaking the main clause, for analysing the syntactic structure (so called "degree-0 learnability"). Structural evidence deeply embedded in a subordinate clause should not play a role in language acquisition. Independently, Evers & van Kampen (2008) have shown that only 2% of the sentences in the input of a child learning Dutch contain an embedded clause. Given these two arguments, it is unlikely that the child makes use of the word order in the embedded clause in order to acquire V2. If the word order in the embedded clause does not provide evidence for the OV word order, then what does?

3.1.1 Split finite particle verbs as cues

Lightfoot (1991) addresses the problem of the acquisition of V2. His account is based on the Principles and Parameters framework and Lightfoot suggests that V2 is subject to a parameter. Children will have to decide during the acquisition process whether or not their language is a verb-second language. Lightfoot states that in order to be able to make this decision, children need evidence of the presence of the verb-second construction. This evidence comes in the form of a cue, which is a small, very specific piece of syntactic structure that unambiguously points towards the non-default setting of a parameter (Lightfoot 1991, Dresher 1999). The non-default setting of the verb-second parameter would be ' V2 is present'. The cue (or cues, since a parameter can be accompanied by more than one) has to be present in the phonological form for the child to be able to detect it. As said before, Lightfoot

proposes that in the case of the acquisition of V2, a cue accompanying the verb-second parameter is the presence of split finite particle verbs. Recall that particle verbs are verbs that consist of two parts: a verb and a particle. In Dutch, the particle verb can form one syntactic unit (10a), or the particle and verb can be separated (10b).

(10) a. Jan zal zijn appel willen opeten. Dutch
Jan shall his apple want up-eat
'John shall want to eat all of his apple.'

b. Jan zou zijn appel op willen eten.
Jan would his apple up want eat
'John would want to eat all of his apple.'

The placement of the particle in Dutch is rigid (Den Dikken 1992). Particles can only occur on the right edge of the clause. They can be part of the non-finite verb as in (10a), occur in a verbal cluster as in (10b) or appear clause-finally. In this last case, the finite verb has moved to the verb-second position, (11a).[12]

(11) a. Jan eet zijn appel op. Dutch
Jan eats his apple up
'John eats all of his apple.'

b. *Jan opeet zijn appel.
Jan up-eat his apple
'John eats all of his apple.'

The particle does not move along with the finite verb to the verb-second position, (11b), even though verb and particle can form a unit, as in (10a). Instead, the particle remains in its base-generated clause-final position. The fact that the particle cannot move along with the finite verb to the verb-second position leads to a split between surface structure and semantic interpretation. A particle verb always forms a unit in semantics. In the verb-second pattern a finite particle verb does not form a unit in surface structure. Lightfoot argues that children detect this difference and use it as a cue for the positive setting of the verb-second parameter. The immobility of the particle allows it to be an audible trace for the movement of the finite verb in verb-second constructions and enables the child to deduce the base-generated position of the finite verb.

The success of Lightfoot's proposal hinges on the availability of innate linguistic knowledge. His cue can only function if children are able to classify words as verbs and particles. Children furthermore need to be able to recognize both a split

12 German is very similar to Dutch. Particle verbs obligatorily split in verb-second structures and the particle in general does not move. Lightfoot's proposal that particle verbs form a cue for the acquisition of verb-second is therefore applicable to German as well.

particle verb and a non-split particle verb as a complex verb, before they are able to use the particle as an audible trace for V2. In section 5 I will address these assumptions on innate linguistic knowledge and show that they are not needed to explain the acquisition of V2.

Next to predictions about the presence of innate linguistic knowledge, Lightfoot also makes a prediction about the order of acquisition. If particle verbs form a cue for the acquisition of V2, then one would expect particle verbs either to be among the first verbs to exhibit V2 or to exhibit V2 at the same time as all other lexical verbs. What would be unexpected under Lightfoot's account is for particle verbs to be among the last verbs to exhibit V2. This prediction will be tested on the basis of a longitudinal corpus study in section 4 and discussed in section 5.

3.2 VO languages

The Germanic languages with VO word order and V2 discussed here are Swedish and Norwegian. In both Swedish and Norwegian, the finite verb occupies the second position in main clauses and the third position in embedded clauses (Platzack 1986, Holmberg & Platzack 1995).

(12) a. Erik köpte verkligen boken. Swedish
Erik bought really the-book
'Erik really bought the book.'

b. Den boken köpte Erik i London.
that book bought Erik in London
'That book, Erik bought in London.'

c. Jag frågade om Erik verkligen hade skrivit boken.
I asked if Erik really had written the-boken
'I asked if Erik had really written the book.'

Norwegian and Swedish both have particle verbs (Ramchand & Svenonius 2002, Svenonius 1996, 2003). However, the syntactic behaviour of the particle verb differs per language. In Swedish, the particle verb behaves similarly to Dutch in that the particle does not move along with the finite verb to the verb-second position.[13]

(13) a. *Johan skrev upp inte numret. Swedish
Johan wrote up not the-number
'Johan didn't write down the number.'

13 The situation is more complicated than presented here, see Svenonius (1996, 2003) for more details.

b. Johan skrev inte upp numret.
Johan wrote not up the-number
'Johan didn't write down the number.'

c. Johan ska inte skriva upp numret.
Johan will not write up the-number
'Johan will not write down the number.'

The fact that the particle does not move along with the finite verb in V2 gives it a fixed position in the syntax: immediately to the left of the direct object. The particle cannot appear to the right of the object.[14]

(14) a. * Johan skrev numret upp. Swedish
Johan wrote the-number up
'Johan wrote down the number.'

b. *Johan skrev den upp.
Johan wrote it up
'Johan wrote it down.'

As such, the particle could function as a place marker for the moved finite verb in Swedish, just like in Dutch. An obvious difference between Dutch and Swedish, however, is the order between the verb and the object. Because Swedish is VO, the fact that the particle does not move to the verb-second position is not always clear in surface structure.

(15) Johan skrev upp numret. Swedish
Johan wrote up the-number
'Johan wrote down the number.'

Only if negation or an adverb is used, as in (13), does it become obvious that the particle does not move. Dutch does not have this complication, since Dutch is OV and the object always intervenes between the moved finite verb and the particle. It could therefore be that, although the particle has a fixed position in Swedish, the surface structure does not contain enough evidence for the child to detect it.

Where Lightfoot's proposal could possibly extend to Swedish, it does not extend to Norwegian. Norwegian has a more liberal positioning of the particle compared to Dutch, German and Swedish. The particle can either precede (16a,c), or follow (16b,d) the direct object.

14 There are some exceptions with the use of the reflexive *sig* 'self', which can appear in front of the particle (Schadler, p.c.).

(16) a. Vi kastet ut hunden. Norwegian
we threw out the-dog
'We threw the dog out.'

b. Vi kastet hunden ut.
we threw the-dog out.
'We threw the dog out.'

c. Mannen har drukket opp vinen.
the-man has drunk up the-wine
'The man drunk up the wine.'

d. Mannen har drukket vinen opp.
the-man has drunk the-wine up
'The man drunk up the wine.'

The liberal positioning of the particle means that the particle does not have a fixed surface position. In addition, the particle occupies the same position whether the verb is finite or non-finite. Lacking a fixed surface position and not offering a distinction between finite and non-finite verbs means that particle verbs cannot form a cue for V2 in Norwegian.

3.2.1 Verbal specifiers as cue

Since particle verbs do not offer a cue to the acquisition of V2 in Norwegian and form a questionable cue in Swedish, a different cue is needed. Lightfoot (1991), following Lebeaux (1988), argues that verbal specifiers form such a cue.[15] Verbal specifiers such as negation and adverbials indicate whether a verb has moved. In Swedish and Norwegian, a finite verb follows the verbal specifier in its base-generated position (17b). When the finite verb has undergone V2, it precedes the verbal specifier (17a).

(17) a. Jon kjøper aldri bøker. Norwegian
Jon buys never books
'Jon never buys books.'

b. Vi vet at Jon aldri kjøper bøker.
we know that Jon never buys books
'We know that Jon never buys books.'

15 Note that all the cues Lightfoot proposes are actually cues for verb-movement rather than V2. For the child to arrive at V2, she also has to acquire the fact that the finite verb can be preceded by a non-subject constituent (Lightfoot 1991, van Kampen 2008).

Verbal specifiers function as a cue similarly to particle verbs. Lightfoot assumes that the verbal specifier has its base-generated position immediately to the left of the verb. So, when the verb moves, the verbal specifier indicates the position the verb originates from. Lightfoot further assumes that a child acquiring a VO language knows that the verbal specifier and the verb are adjacent in the base-generated structure. Just like with split finite particle verbs in Dutch and German, the child then uses the knowledge to (a) deduce that the verb has been moved and (b) deduce the position the verb has been moved from. Like the particle, the verbal specifier *aldri* 'never' in (17) functions as a place marker. The sentence in (17a) offers the child the information that the finite verb *kjøper* 'buys' has moved from a position immediately to the right of the verbal specifier *aldri* 'never' to the verb-second position.

Lightfoot argues that verbal specifiers also form a cue for V2 in OV languages. Like in VO languages, the verbal specifier does not move along with the finite verb in OV languages (18a,b).

(18) a. Jan belt de hoogleraar vaak. Dutch
Jan phones the professor often
'Jan often phones the professor.'

b. *Jan vaak belt de hoogleraar.
Jan often phones the professor
'Jan often phones the professor.'

c. Jan heeft de hoogleraar vaak gebeld.
Jan has the professor often phoned
'Jan has often phoned the professor.'

And like in VO languages, the verbal specifier in OV languages appears adjacent to the non-finite verb (18c). As such, the verbal specifier should be able to form a cue for V2 in OV languages as well. However, there is one major objection to Lightfoot's proposal that the verbal specifier forms a cue in a language like Dutch. The reason the verbal specifier *vaak* 'often' is adjacent to the non-finite verb is due to object scrambling. The base-generated word order is as in (19).

(19) Jan heeft vaak de hoogleraar gebeld. Dutch
Jan has often the professor phoned
'Jan has often phoned the professor.'

The consequence is that, unlike the particle, the verbal specifier does not have a fixed position in surface structure. The situation becomes even more complicated when one considers (20b).

(20) a. Hij zal nooit een boek kopen. Dutch
he shall never a book buy
'He shall never buy a book.'

b. Nooit zal hij een boek kopen.
Never shall he a book buy
'Never shall he buy a book.'

The verbal specifier *nooit* 'never' can be moved to the first position of the sentence. With the verbal specifier clearly not having a fixed surface position, the argument that the child can use it as a place marker for the moved verb no longer holds. The situation is somewhat different in Swedish and Norwegian. Unlike in Dutch, object scrambling is not freely applicable in Swedish and Norwegian. The object can only scramble when it is pronominal (21), when it appears in the main clause (22), or when it is the lexical verb that has undergone V2 (23).

(21) a. Läste studenterna den inte alla? Swedish
read the-students it not all
'Didn't the students all read it?'

b. *Läste studenterna artikeln inte alla?
read the-students the-article not all
'Didn't the students all read the article?'

(22) a. Det är troligt att han inte känner henne.
it is probable that he not knows her
'It is probable that he does not know her.'

b. *Det är troligt att han henne inte känner.
it is probable that he her not knows
'It is probable that he does not know her.'

(23) a. Studenterna läser den inte.
the-students read it not
'The students don't read it.'

b. *Studenterna vill den inte läsa.
the-students want it not read
'The students don't want to read it.'

Because object scrambling is restricted, the verbal specifier has a relatively fixed position in surface structure. However, just as in Dutch, the verbal specifier can move to the first position, as in (24).

(24) a. Han ska aldrig köpa en bok. Swedish
he will never buy a book
'He will never buy a book.'

b. Aldrig ska han köpa en bok.
never will he buy a book
'Never will he buy a book.'

This raises the question whether the position of the verbal specifier in Norwegian and Swedish is fixed enough to function as a cue for the child.[16] I will leave this for further research. Important for the current argument is the fact that in Dutch the verbal specifier has too many surface positions to function as a cue for V2.

3.3 Conclusion

The acquisition process of V2 in OV languages is different from that in VO languages. The different word orders pose different challenges for the child. Lightfoot's (1991) solution to this problem is to propose different cues for the different word orders. The split finite particle verb forms a cue for verb-second in OV languages, but not in all VO languages. The verbal specifier arguably forms a cue for V2 in VO languages, but not in OV languages. Having different cues for different word orders complicates language acquisition. At the start of the acquisition process, the child will have to have access to all the cues. Then during the acquisition process, the child has to determine which of the cues are relevant for her language. The position defended in this study is that it is not only undesirable but also unnecessary to posit innate language-specific cues. Instead, language acquisition takes place on the basis of input reduction and the gradual growth of a generative grammar.

4. The acquisition of V2

4.1 Previous accounts

De Haan (1987) has observed that in the early stages in acquisition (around 26 months) the Dutch child Tim makes a distinction between finite auxiliary verbs and non-finite lexical verbs. Finite auxiliary verbs always occur in the left periphery of the utterance, whereas non-finite lexical verbs always occur utterance-finally.

16 With both the verbal specifier and the particle verbs forming a questionable cue in Swedish, the question what exactly does provide the child with sufficient evidence for V2 arises. In this light, it is interesting to not that Swedish allows V2 in embedded clauses and that this seems to be the more and more preferred option (Holmberg & Platzack 1995, Schadler p.c.). This could indicate that Swedish does indeed lack the cues for the child to deduce the verb-movement and that the moved position is becoming the base-generated position.

(25) a. moet daar in.
must there in
'This must go in there.'

b. dit Ad gooien.
this Ad throw
'This must be thrown to Ad.'

Examples where the finite auxiliary verb is utterance-final or where the non-finite lexical verb occurs in the left periphery are unattested. These findings are confirmed by Blom (2003) and van Kampen (1997, 2010) (for similar findings in German see Clahsen & Smolka 1986 and Poeppel & Wexler 1993).

Both sentences in (25) are ungrammatical in adult Dutch. A subject is missing in (25a) and the utterance in (25b) lacks a finite verb. The absence of a finite verb in early child language is a well-known phenomenon. The stage in acquisition when children use utterances like (25b) is referred to as the Root Infinitive stage. Since the non-finite utterance in (25b) is used alongside the finite utterance in (25a), the root infinitive stage is sometimes also referred to as the Optional Infinitive stage (Wexler 1994). The utterances in (25) raise a variety of questions.

(26) i. Is the finite auxiliary verb in (25a) moved to or base-generated in the left periphery?
ii. What is the cause of the root infinitive stage?
iii. How do children arrive at a verb-second structure?

The question in (26i) can be answered in two different ways, reflecting two radically different views on the acquisition process. Poeppel & Wexler (1993) argue that from the start of the acquisition process onwards children have full access to the adult grammatical structure (Full Competence Hypothesis). Their analysis of (25a) involves the movement of the auxiliary to the verb-second position. An alternative to this analysis is proposed by de Haan (1986) and van Kampen (1997, 2010). They argue that the auxiliary verb in (25a) is base-generated in the left periphery. This chapter follows the latter line of argumentation. The child has a non-adult-like grammar where the finite auxiliary verb in (25a) is base-generated in the left periphery. At this stage in acquisition there is no verb-movement.

There is also a variety of different answers in the literature to the question in (26ii). It would take me too far afield to discuss them here, but I refer to Blom (2003) for an extensive overview. Here I will adopt the view put forward by van Kampen (1997) and Wijnen et al (2001) that selection or reduction of the input by the child plays an important role. The occurrence of non-finite lexical verbs in the clause-final position, due to the frequent use of auxiliaries in adult Dutch, combined with the idea that reduction of the input at first excludes functional projections, leads to the Root Infinitive stage. As will become clear in section 5, I view this stage as a necessary stage in that the child has to position the lexical verb clause-finally. This

could arguably be done by solely using utterances with both an auxiliary and a non-finite lexical verb. However, to my knowledge no child skips using utterances like (25b) and I therefore conclude that the Root Infinitive stage is an essential stage to the acquisition process. The occurrence of the Root Infinitive stage is unproblematic to the account proposed here. As will be argued in section 5, the child has yet to acquire the constraint that every sentence has to be marked for finiteness. Until then, utterances like (25b) can occur freely.

Like (26ii), the question in (26iii) has been discussed in depth as well. De Haan (1987), Blom (2003) and van Kampen (2010) all argue that an overlap between the finite verbal expressions in the left periphery and the non-finite verbal expressions in the clause-final position enables the child to introduce the verb-movement rule. The exact nature of this overlap differs per author. The key argument is that the finite auxiliary verb in (25a) and the non-finite lexical verb in (25b) are not classified as belonging to the same general lexical class in the child's grammar (de Haan 1987, van Kampen 1997, 2010). The overlap between the two positions can therefore only be established on the basis of finite and non-finite lexical verbs. The question that arises is how children recognize a finite lexical verb and a non-finite lexical verb as being instances of the same lexical root. Blom (2003) argues that the recognition can only be based on knowledge of verbal inflections. The child first has to be able to analyse a verb as consisting of a stem and a suffix before she can determine that finite and non-finite forms of a verb belong to the same morphological paradigm. After this, the child can link the verbal position in the left periphery to the clause-final verbal position and introduce the verb-movement rule. Evers & van Kampen (2008) argue that the recognition of the overlap between finite and non-finite verbal elements does not occur on the basis of morphology. Instead, they propose that the dual syntactic position that the finite/non-finite opposition gives rise to the acquisition of V2. The child realizes that two words with identical semantic interpretation but slightly different morphology are used in two different positions in syntax. This leads her to analyse the two words as being part of the same paradigm. The latter analysis will be adopted here and will be further discussed in section 5.

4.2 The acquisition of V2 for particle verbs

Lightfoot (1991) proposes that the relation between the acquisition of V2 and particle verbs is a causal one in that children use knowledge of particle verbs in the acquisition of V2. As was already pointed out in section 3.3, this proposal makes the prediction that split finite particle verbs should appear early and frequently in the acquisition of V2. To test this prediction, longitudinal graphs of the acquisition of V2 will be given for four Dutch children. A longitudinal analysis allows for a unique insight into the development of grammar (van Kampen 1997, Wijnen 2000, Jordens 2002, Blom 2003). By giving a longitudinal analysis of V2, it can be determined whether finite particle verbs do indeed appear early and frequently. The four

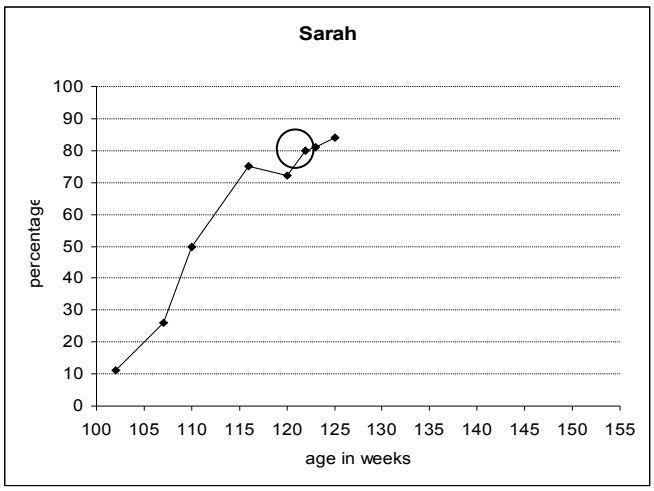
children used in this corpus study are Sarah from the van Kampen corpus (CHILDES MacWhinney 2006, van Kampen 1997) and Abel, Daan and Matthijs from the Groningen corpus (CHILDES MacWhinney 2006, Wijnen 1995). The selection of Sarah, Abel, Daan and Matthijs has been done on the basis of Evers & van Kampen (2001) and Blom (2003).

4.2.1 First use of finite particle verb

4.2.1.1 Sarah

Evers & van Kampen (2001) provide a longitudinal graph for the acquisition of V2 for Sarah. They argue that the point of acquisition is reached when at least 80% of the child's utterances are finite. As can be seen from the graph in figure 1, Sarah arrives at this point in week 125 (2 years and 4 months).[17]

Figure 1: rise of V2 for finite verbs for Sarah.



The entire acquisition process takes Sarah 23 weeks, from week 102 till week 125. To determine the possible role particle verbs play in the acquisition of V2, the first occurrence of what would be a finite particle verb in adult Dutch was pinpointed. For Sarah, the first occurrence of a finite particle verb is in week 122 (highlighted in the graph with a circle). A first occurrence of a particle verb is an occurrence in which the finite verbal part and the particle are separated from each other by at least

17 The graph in figure 1 is an excerpt from the graph in Evers & van Kampen (2001). It only shows the acquisition process of V2 up to the point of acquisition in week 125.

one item, as in (27).

(27) jij zet liedje aan. Sarah, 2;4.02
'you switch song on.'

This is done to exclude potentially memorized chunks as in (28).

(28) kom mee. Abel, 1;11.12
'come with'

For Sarah, the first occurrence of a finite particle verb is 20 weeks after the start of the acquisition process and only 3 weeks before the point of acquisition. It can thus be concluded that particle verbs do not appear early in the acquisition of V2. Similar results can be found for the other three children, Abel, Daan and Matthijs.

4.2.1.2 Abel, Daan and Matthijs

Blom (2003) provides an analysis of the acquisition of finiteness for Abel, Daan and Matthijs. She divides the acquisition process into four stages, the last stage being the stage in which V2 is acquired. Each stage is exemplified by a selection of files from the CHILDES database. In order to be able to determine what role particle verbs play in the acquisition of V2, a very detailed longitudinal analysis is needed. Since Blom does not include all the files from the database in her analysis, it is not detailed enough for the purpose of this chapter. Her study will therefore be used as the basis for a detailed study of the acquisition of V2 for Abel, Daan and Matthijs.

The acquisition process of V2 has several stages (van Kampen 1997, Wijnen 2000, Jordens 2002). In the first stage, children mainly use root infinitives. In the second stage, children make use of finite auxiliary verbs. These finite auxiliary verbs appear in the left periphery of the utterance. In the final stage, children use finite lexical verbs. Finite lexical verbs appear in the same position as the finite auxiliary verbs. All these three verbal types, the root infinitives, finite auxiliary verbs and finite lexical verbs, will have to be extracted from the corpus to plot a longitudinal graph for Abel, Daan and Matthijs. Furthermore, the examples in (29) show that utterances with a finite auxiliary verb co-occur with identical utterances without a finite auxiliary verb. In both (29a) and (29b) the utterances contain a subject-like element (*koekje* 'cookie') and a predicate-like element (*weg* 'gone'). In (29b) the predicate-like element is marked finite by the use of the auxiliary *is* 'is'. In (29a) the marking for finiteness is absent. Utterances that consist of a subject-like element and a predicate-like element like the one in (29a) will have to be included in the opposition as a non-finite expression.

(29) a. koekje weg
cookie gone

b. koekje is weg
cookie is gone

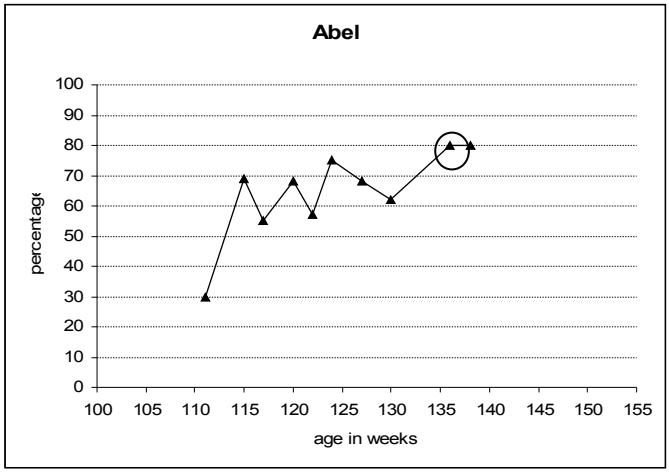
The data that were extracted from the corpus for the acquisition of V2 are thus as follows.

(30) i. non-finite utterances
utterances with a predicate with no verbal expression
utterances with only non-finite lexical verbs

ii. finite utterances
utterances with auxiliaries
utterances with finite lexical verbs

The data were collected from the start of the two-word stage onwards. The point of acquisition was taken to be identical to that of Sarah: when at least 80% of the utterances are finite, the child is considered to have acquired V2. The graph in figure 2 presents the acquisition of V2 for Abel.

Figure 2: rise of V2 for finite verbs for Abel.[18]

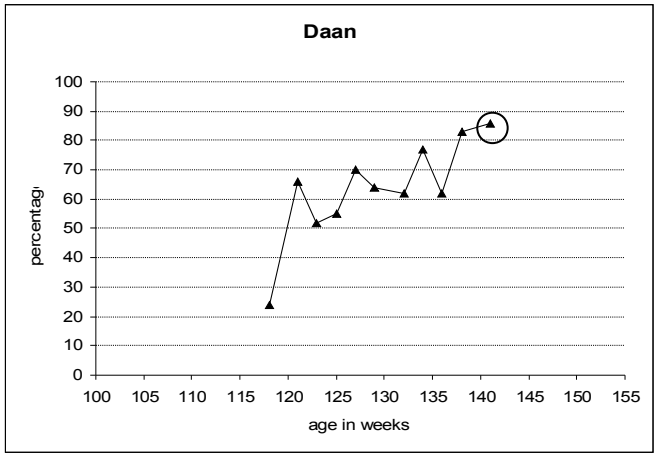


The entire acquisition process takes Abel 25 weeks, from week 111 till week 136, which is the longest of all four children. The first occurrence of a finite particle verb is in week 136 (highlighted in the graph with a circle). This is in the last week of the acquisition process and it is therefore rather late. The same results are found for

18 Detailed data on which this graph and the graphs for Daan and Matthijs are based can be found in appendix A. The first occurrence of a finite particle verb can be found in appendix B.

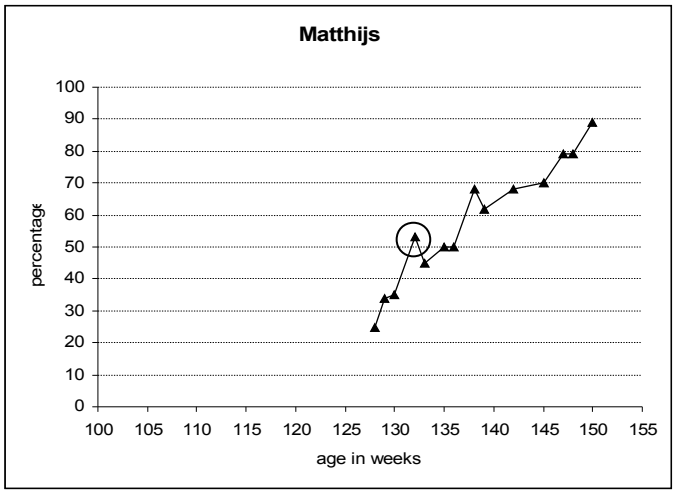
Daan. The graph in figure 3 presents the acquisition of V2 for Daan.

Figure 3: rise of V2 for finite verbs for Daan.



The acquisition of V2 by Daan is very similar to the acquisition of V2 by Abel. Daan reaches the point of acquisition in week 141. The entire acquisition process takes Daan 23 weeks, which is the same amount as for Sarah. Just as for Abel, the first occurrence of a finite particle verb is in the last week, week 141. Finally, the graph in figure 4 presents the acquisition of V2 for Matthijs.

Figure 4: rise of V2 for finite verbs for Matthijs.



The acquisition of V2 by Matthijs is more similar to the acquisition of V2 by Sarah than to the acquisition of V2 by Abel and Daan. Matthijs reaches the point of acquisition in week 150. The entire acquisition process takes Matthijs 22 weeks, from week 128 till week 150, which is the shortest of all four children. The first occurrence of a finite particle verb is in week 132 (once again highlighted in the graph with a circle). This is only three weeks after the start of the acquisition process and can therefore be said to be early.

The results of the four children show that in general, particle verbs appear late in the acquisition process of V2. It is therefore unlikely that they form a cue for the acquisition of V2.

4.2.2 Growing use of finite and non-finite forms per type

In adult Dutch, auxiliaries and lexical verbs belong to the same general lexical category of verb, despite having some different properties with regard to thematic structure and complement selection. In child Dutch, however, auxiliaries and lexical verbs are argued not to belong to the same general lexical category (de Haan 1987, van Kampen 1997, Jordens 2002). In plotting the longitudinal graph for the acquisition of V2 both auxiliaries and lexical verbs were included. The reason to include both is the idea that the acquisition of V2 is based on the opposition between finite and non-finite forms, irrespective of which type of verb is used. It could, however, be argued that children are not able to recognize the overlap between finite and non-finite expressions if the expressions belong to different categories. If this is

indeed the case, then the acquisition of V2 has to be measured within one group of verbs. The most likely group to measure is the group of lexical verbs, since particle verbs form part of that group. It can further be argued that the child can only recognize the overlap between finite and non-finite verbal expressions when the verbal expressions belong to the same verbal paradigm (de Haan 1987, Blom 2003, van Kampen 1997, Evers & van Kampen 2001). Tables 1 to 4 show the use of finite and non-finite forms per type of lexical verbs and particle verbs. The classification of a verb as finite or non-finite has been done on the basis of both morphological markings and syntactic position. Verbs carrying the morpheme *-(e)n* (which is ambiguous between non-finite and plural) that are positioned at the end of an utterance were considered non-finite. Verbs carrying the finite morpheme *-t* were considered finite irrespective of the position in the utterance. And verbs that have the morphological shape of a verb that in the adult grammar would be marked for first person singular were only considered finite if they appeared in the left periphery of the utterance. If the verb did not appear in the left periphery, as in (31), it was excluded from the data collection. This is because the verb in (31) could potentially be a non-finite verb with the non-finite morpheme *-en* dropped.

(31) ikke kijk
'I look'

Thus lexical verbs in utterances such as (32b) and (32c) were considered non-finite and lexical verbs in utterances such as (32a) were considered finite.

(32) a. hoed valt
'hat falls'

b. boek kijken
'book look'

c. kan niet zien
'can not see'

There are two measurements for each child, set apart in two different tables. The tables A show the results of the first measurement, which is the use of finite and non-finite forms per type per file. In the tables, the files are represented by the age of the child in weeks at the moment of recording.

Table 1A: Use of finite and non-finite forms for type per file for Abel.[19]

Abel	Age in weeks										
	115	**117**	**120**	**122**	**124**	**127**	**129**	**131**	**136**	**138**	**140**
L.V.	1	1	1	2	3	2	2	5	4	4	4
P. V.	0	0	0	0	0	0	0	0	0	0	0

The corresponding utterances for the first three files in the table for Abel are the following (the verb is given in italics):[20,21]

(33)

week 115
*CHI: zo *gaat* het wel .
gaat = go+3rd person singular present tense

*CHI: kan niet hierin xx Pleplo *gaan* .
gaan = to go

week 117
*CHI: *doe* op &6 de hand .
doe = do+1st person singular present tense

*CHI: paard *doen* .
doen = to do

week 120
*CHI: nee, ik *ga* niet garage .
ga = go+1st person singular present tense

*CHI: <zal school> [<] toe *gaan*.
gaan = to go

The verb *gaan* ‘to go’ has both a finite form, *gaat*, and a non-finite form, *gaan*, in week 115. In week 115, this is the only verb that has both a finite and a non-finite form. Similarly, in week 117 the only verb that is used in both finite and non-finite form is the verb *doen* ‘to do’. Since table 1A shows the use of finite and non-finite forms per type per file, verbs that have been used in both finite and non-finite forms in previous files are irrelevant. This has two consequences. The first consequence is for week 117. Since the only verbs that count at week 117 are the verbs that are used

19 In this table and in the tables immediately following, L.V. is short hand for 'lexical verb' and P.V. is short hand for 'particle verb'.

20 For Abel, no overlap was found before week 115; the recordings in CHILDES start at week 99.

21 In the utterances in (33) and (34) I focus only on the verb and I therefore do not provide a full gloss and translation of the utterance.

at that moment in time, there is only one verb in week 117 that shows the overlap. The second consequence is for week 120. In week 120 the verb *gaan* 'to go' is the only verb to exhibit both a finite and a non-finite form, just as in week 115. Again, since the only verbs that count are those used at week 120, the fact that the verb *gaan* 'to go' has already been used in week 115 is irrelevant. Week 120 therefore also has one verb showing both finite and non-finite use.

The second measurement, which is shown in tables B, is the cumulative use of finite and non-finite forms per type.

Table 1B: Cumulative use of finite and non-finite forms for type for Abel.

Abel	age in weeks										
	115	**117**	**120**	**122**	**124**	**127**	**129**	**131**	**136**	**138**	**140**
L.V.	1	4	4	5	7	9	14	17	17	18	18
P. V.	0	0	0	0	0	0	1	1	2	2	3

The cumulative use of finite and non-finite forms per type was calculated in the following way. Consider the utterance for Abel in the first three files again. First, we have the use per file, as exemplified in table 1A. However, since we are now interested in cumulative use, verbs that were used in previous files in both finite and non-finite form have now been included. This again has two consequences. The first consequence is for week 117. Since the verb used in week 117 is different from the one used in week 115, in week 117 the child actually has two verbs occurring in both a finite and a non-finite form. The second consequence is for week 120. The verb used in week 120 is identical to the one used in week 115. Therefore, the child did not use a new verb in week 120 and still has two verbs in week 120 in both finite and non-finite form. To exemplify, the cumulative table of the data in (33) would be as follows:

Table 1C: Cumulative use per type based on (33).

Abel	age in weeks		
	115	**117**	**120**
L.V.	1	2	2

Next to looking at the use of finite and non-finite forms per type per file, I also looked at the use of finite and non-finite forms distributed over different files. This was done under the assumption that when a child utters a verb in either a finite or

non-finite form it is stored as such in the lexicon. Once the child encounters the alternative form (finite for non-finite and non-finite for finite) the overlap between the two forms is established. To see what this means, consider the relevant utterances up to week 120 as in (34).[22]

(34)

prior to week 115
*CHI: kerstman **gekomen** .
gekomen = come+past participle

*CHI: deze **hebben** .
hebben = to have

week 115
*CHI: zo *gaat* het wel .
gaat = go+3rd person singular present tense

*CHI: kan niet hierin xx Pleplo *gaan* .
gaan = to go

week 117
*CHI: *doe* op &6 de hand .
doe = do+1st person singular present tense

*CHI: paard *doen* .
doen = to do

*CHI: xx **komt** ie .
komt = come+3rd person singular present tense

*CHI: ik **heb** al .
heb = have+1st person singular present tense

week 120
*CHI: nee, ik *ga* niet garage .
ga = go+1st person singular

*CHI: <zal school> [<] toe *gaan*.
gaan = to go

*CHI: **komt** ie .
komt = come+3rd person singular present tense

22 Verbs that were used in both finite and non-finite form within the same file are given in italics, as in (33). Verbs that were used in both finite and non-finite form across files are given in bold face.

*CHI: he, **heb** je .
heb = have+1st person singular present tense

The overlap within the files is of course identical to that in (33). What we are interested in is the overlap between the files, indicated in bold face. In week 115 there is no verb that is used in the alternative form in a previous file. The only verb that exhibits both finite and non-finite use is *gaan* 'to go' and it shows them within the same file. In week 117 Abel uses the finite form of the verbs *komen* 'to come' and *hebben* 'to have'. He already used the non-finite form of both these verbs prior to week 117 (*komen* 'to come' in week 110 and *hebben* 'to have' in week 101). Thus the verbs *komen* 'to come' and *hebben* 'to have' have been used in both finite and non-finite form in week 117. Since the measurement is cumulative, the verb *gaan* 'to go' that was used in week 115 is added and in week 117 Abel has four verbs (*gaan* 'to go', *komen* 'to come', *doen* 'to do' and *hebben* 'to have') that use both finite and non-finite forms. In week 120 Abel does not use a new verb with both finite and non-finite forms. All the verbs he uses he has already used in either week 115 or week 117. Therefore Abel still has four verbs that are used in both finite and non-finite forms in week 120.
The two measurements (the use of finite and non-finite forms per type per file and the cumulative use of finite and non-finite forms per type) for Daan, Matthijs and Sarah can be found in the tables 2 to 4 below.

Table 2A: Use of finite and non-finite forms for type per file for Daan.

D.	age in weeks												
	111	**113**	**115**	**121**	**123**	**125**	**127**	**129**	**132**	**134**	**136**	**138**	**141**
L.V.	1	0	2	0	2	1	1	7	3	6	7	5	6
P. V.	0	0	0	0	0	0	0	0	0	0	0	1	1

Table 2B: Cumulative use of finite and non-finite forms for type for Daan.

D.	age in weeks												
	111	**113**	**115**	**121**	**123**	**125**	**127**	**129**	**132**	**134**	**136**	**138**	**141**
L.V.	1	2	3	8	10	10	14	17	18	22	25	28	29
P. V.	0	0	0	0	0	0	0	0	0	0	0	1	1

Table 3A: Use of finite and non-finite forms for type per file for Matthijs.

Mat.	age in weeks							
	120	**125**	**126**	**128**	**129**	**130**	**132**	**133**
L. V.	1	0	4	2	2	5	2	0
P. V.	0	0	0	0	0	0	1	0

Mat.	age in weeks								
	135	**136**	**138**	**139**	**142**	**145**	**147**	**148**	**150**
L. V.	5	2	4	2	3	4	1	4	4
P. V.	0	0	0	0	1	0	0	0	0

Table 3B: Cumulative use of finite and non-finite forms for type for Matthijs.

Mat.	age in weeks							
	120	**125**	**126**	**128**	**129**	**130**	**132**	**133**
L. V.	1	2	6	8	12	15	17	18
P. V.	0	0	0	0	0	0	3	3

Mat.	age in weeks								
	135	**136**	**138**	**139**	**142**	**145**	**147**	**148**	**150**
L. V.	19	19	21	22	23	27	28	29	32
P. V.	3	4	5	5	6	6	6	6	7

Table 4A: Use of finite and non-finite forms for type per file for Sarah.

S.	age in weeks									
	97	**100**	**102**	**107**	**110**	**116**	**120**	**122**	**123**	**125**
L. V.	0	0	3	0	1	4	2	3	3	3
P. V.	0	0	0	0	0	0	0	0	0	0

Table 4B: Cumulative use of finite and non-finite forms for type for Sarah.

S.	age in weeks									
	97	**100**	**102**	**107**	**110**	**116**	**120**	**122**	**123**	**125**
L. V.	2	2	5	5	7	9	10	11	11	13
P. V.	0	0	0	0	0	0	0	0	0	0

The tables for all four children show that there is a growing number of lexical verbs that use both finite and non-finite forms (contra de Haan 1987, but in line with Wijnen 2000 and Blom 2003). In comparison to the lexical verbs, the particle verbs show a much later and a much smaller growth in use of both finite and non-finite forms. These findings confirm the earlier results in figures 1 to 4. Particle verbs are used too late in the acquisition process and there are too few particle verbs that use both finite and non-finite forms for such verbs to form a cue for the acquisition of V2. The results clearly show that Lightfoot's (1991) prediction is not borne out. Children do not use knowledge of particle verbs in the acquisition of V2.

5. Alternative analysis

5.1 The acquisition of V2

If particle verbs do not form a cue for V2, then the question remains how V2 is actually acquired. I propose, following Wijnen (2000), Blom (2003) and van Kampen (1997, 2010) that the answer to this question lies in the acquisition stages prior to the acquisition of V2. Evers & van Kampen (2008) and van Kampen (1997, 2010) have developed a framework for acquisition. They suggest that children build consecutive grammars on the basis of input reduction and a general learning strategy. The input reduction is informally formulated in that the child filters the input on expressions she does not yet know. The general idea behind this formulation is that at the start of the acquisition process, the child will focus on content words only. Function words are often not transparent in what they contribute to the utterance. So, the child has to discover the exact function of a function word. Evers & van Kampen (2008) and van Kampen (1997, 2010) suggest that this is done on the basis of comparison. The child compares an utterance with no words with an unknown function to an utterance that is identical except for the addition of one word with an unknown function. Based on this comparison the child then determines the function of the new word and will add it to the grammar. The process can then start again, building more and more complex grammars.

At the start of the acquisition process, the child solely makes use of pragmatic notions in classifying lexical items (see Jordens 2002 for a similar

approach). The pragmatic notions used are topic, operator and comment, with the following definitions (Evers & van Kampen 2008, van Kampen 1997, 2010).

(35) a. topic = referential element
b. operator = small, closed set of illocution elements
c. comment = characterizing element, functions as a pragmatic predicate.

The comment is the essential element that is always present in every utterance.
This automatically renders a single word in a one-word utterance a comment. A comment is combined with either a topic or an operator to form a two-word utterance. The result of this combination is a complex comment.

(36) one-word utterance: comment
two-word utterance: [COMMENT topic comment]
[COMMENT operator comment]

The addition of either a topic or an operator then allows for the formation of a multi-word utterance, as in (37).

(37) multi-word utterance:

operator [COMMENT topic comment]
topic [COMMENT operator comment]

The logically possible combinations that result in the presence of two topics or two operators are excluded from the grammar on the pragmatic grounds that having two topics or two operators in the same utterance is forbidden. Examples of utterances from the two- and multiple-word stage with the accompanying structure are given in (38) and (39).

(38) a.

topic	*comment*	
appel	weg	'apple gone'
koekje	eten	'cookie eat'
papa	lief	'daddy nice'

b.

operator	*comment*	
kwil	weg	'want gone'
moet	eten	'must eat'
is	lief	'is nice'

(39) a.

[operator	*[topic*	*comment]]*	
moet	beertje	slapen	'must bear sleep'
is	koekje	weg	'is cookie gone'

b. *[topic [operator comment]]*
beer moet zwemmen 'bear must swim'
appel is weg 'apple is gone'

Children can add adverbial expressions such as *niet* 'not' and *ook* 'also' to the structures in (39) as exemplified in (40) and (41).[23]

(40) a. *[operator [topic adv comment]]*
moet beertje niet slapen
'must bear not sleep'

b. *[operator [topic adv comment]]*
is koekje ook weg
'is cookie also gone'

(41) a. *[topic [operator adv comment]]*
beer moet ook zwemmen
'bear must also swim'

b. *[topic [operator adv comment]]*
appel is niet weg
'apple is not gone'

The contrast between lexical and auxiliary verbs mentioned before can be seen in the examples above. Lexical verbs appear in non-finite form in the comment position, whereas auxiliary verbs appear in finite form in the operator position. This contrast disappears with the introduction of finite lexical verbs. Like the finite auxiliary verbs, the finite lexical verbs appear in the operator position. This, however, poses a puzzle for the child. Consider the utterance in (42).

(42) zie ik niet.
see I not
'I do not see (it).'

The grammar the child has built up to this point classifies *zie* 'see' as an operator, *ik* 'I' as a topic and *niet* 'not' as an adverb, with the following structure as a result.

23 Neither *niet* 'not' nor *ook* 'also' seem to fit in any of the three categories in (35). They are not referential and can therefore not be topics. They also do not carry the function of pragmatic predicate, thus they cannot be classified as comment either. The only category they might fit in is the category operator. However, as can be seen in (40) and (41), they can co-occur with an operator. Since there can only be one operator in an utterance, *niet* 'not' and *ook* 'also' cannot be an operator either. Therefore, for lack of a better classification, I will refer to them as adverbs.

(43) *operator [topic [adv]]*
zie ik niet
see I not

This structure lacks a comment, which according to the child's grammar should always be present. The only option the child has to remedy the structure is to introduce a phonologically empty comment position, indicated by '_'.

(44) *operator [topic [adv comment]]*
zie ik niet _
see I not _

The introduction of the phonologically empty comment position leads to a new pattern and is the birth of V2 movement.

5.2 Particle verbs

As can be seen from the examples (38)–(41), the lexical items *weg* 'gone', *eten* 'to eat' and *lief* 'nice' are all classified as comments in the child's early grammar, but correspond to particles, verbs and adjectives respectively in adult Dutch. The identification of the separate lexical classes within the group of comments is based on local, binary frames (van Kampen 1997, 2010). The acquisition of V2 presents the child with the first opportunity to draw a distinction between the elements in the group of comments. Comments that undergo V2 form a separate category from all other comments, becoming the category V. This has consequences for particle verbs. As has just been said, prior to the acquisition of V2, the child does not distinguish between lexical items that will later become particles and verbs in the adult grammar. They both appear in utterance-final position and carry the function of pragmatic predicate (cf. 39a, repeated here as 45).

(45) *[operator [topic comment]]*
moet beertje slapen 'must bear sleep'
is koekje weg 'is cookie gone'

(46) *[operator [topic comment]]*
moet appel opeten
must apple up-eat
'must eat the whole apple'

As can be seen in (46), the lexical item that will later become a particle verb in the adult grammar is also placed in the comment position. Since lexical verbs, particles and particle verbs are all occupying the same structural position and are all carrying the same pragmatic function, it is safe to assume that at this stage in the acquisition

process the child is treating them identically. For particle verbs this means that they are treated as idiomatic chunks, rather than a complex unit containing a particle and a verb. The ability to analyse particle verbs as complex units comes with the acquisition of V2. The acquisition of V2 has syntactic consequences. The phonologically empty comment position and the operator position are linked in that the phonologically empty comment position only occurs when there is a finite lexical verb in the operator position. This allows the child to realize that the lexical verb is fulfilling two functions at the same time: it is both the pragmatic predicate as well as the illocution marker of the utterance. The best way to represent this dual function in syntax is to assume that although the comment position appears to be empty, it is actually filled with a non-pronounced version of the finite lexical verb. With the realization that the lexical verb carries out two functions and occupies two positions, the child has to re-analyse all the previous structures she had for utterances with just a lexical verb. In utterances with a finite lexical verb, as in (47a), the child has to add a comment position that contains a phonologically non-realized lexical verb, as in (47b).

(47) a. *[operator [topic adv comment]]*
ligt papa niet _
lie daddy not _ ‘daddy isn’t lying’

b. *[operator [topic adv comment]]*
ligt papa niet ligt
lie daddy not lie ‘daddy isn’t lying’

And in Root Infinitive structures with just a non-finite lexical verb, as in (48a), the child has to (i) add an operator position to place the lexical verb in, (ii) phonologically delete the lexical verb in the comment position and (c) change the morphology of the verb from non-finite to finite, as in (48b).

(48) a. *[topic adv comment]*
pop ook zitten
doll also sit ‘doll sits as well’

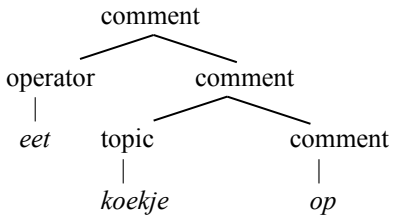
b. *[operator [topic adv comment]]*
zit pop ook zit
sit doll also sit ‘doll sits as well’

The syntactic reanalysis in (47) and (48) involves comment positions that are only filled by a phonologically non-realized copy of the lexical verb. This is, however, not the case for finite particle verbs. With finite particle verbs, the finite verbal part occupies the operator position and the particle occupies the comment position, as in (49).

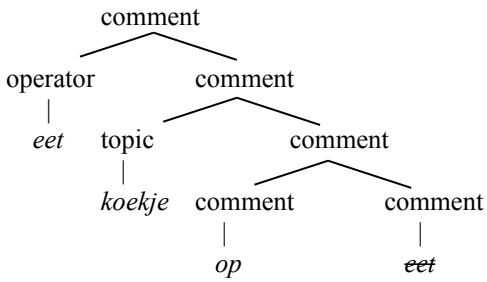
(49) *[operator [topic comment]]*
eet koekje op
eat cookie up
'eat the whole cookie'

In order to be consistent, the child has to posit a phonologically empty copy of the finite lexical verb eet 'eat' in the comment position. However, the comment position is already filled with the particle op 'up'. The solution is to form a complex comment that contains both the lexical verb and the particle.[24] The form of the structure in (49) is as in (50a). The child has to add the phonologically empty copy of the verb to the comment position and can either add it to the lower comment position, as in (50b), or to the higher comment position, as in (50c).

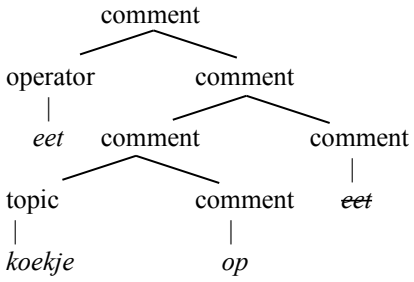
(50) a.



b.



c.



24 Note that the complex comment here is different from the general complex comment as in (36).

In both (50b) and (50c) there is a comment that consists of two comments. The complex comment in (50b) forms a complex head and the structure in (50c) essentially introduces a small clause. Both structures are compatible with existing analyses of particle verbs (cf. Neeleman (1994) for the complex head and Den Dikken (1992) for the small clause approach). At this point in the acquisition process there is no evidence to choose between (50b) and (50c), but I will come back to this in chapter 5.

With the formation of the complex comment in (50), the child has to analyse the particle verb as a complex predicate. And it is this final step, where the child has to find a way to encode a complex predicate in her syntax, that is the cause for the delay in V2 for particle verbs. Up till the point of the acquisition of V2, the child has no reason to analyse particle verbs as complex predicates. The child only uses non-finite particle verbs, which appear in the comment position. In this position, the child can easily analyse them as one lexical item rather than as a complex syntactic unit. Since analysing particle verbs as one lexical item is simpler than treating them as a complex syntactic unit, the child uses the former option. Only with the acquisition of V2 is the child forced to provide a complex syntactic structure for the particle verb.

The proposal has two desired outcomes. First, it can straightforwardly explain the data presented in section 4.2. Particle verbs appear late in the acquisition of V2, because the child first has to introduce a syntactic structure that can accommodate a complex predicate.[25] The second desired outcome is that V2 can be acquired without the need for particle verbs to form an innate cue. Instead, the realization of particle verbs as a complex unit is the result of the following two steps taken in the acquisition process:

(51) Step 1: particles and verbs are classified as comments
Step 2: acquisition of V2

The proposal now provides a simple, elegant answer to the question in (2b). It also argues that although there is a relation between the acquisition of V2 and particle verbs, it is the opposite of the relation proposed by Lightfoot (1991). On the analysis proposed here, children simply cannot have the knowledge that particle verbs form complex predicates in syntax. If children were capable of providing a syntactic structure for a complex predicate, there would be no reason why particle verbs

25 There is some additional evidence that the formation of complex predicates can be complicated for children. Children with SLI sometimes delete the particle of a particle verb, as in (i) (Zwitserlood, 2010):

(i) De man gooit patatje (weg). Dutch
the man throws fries (away)
'The man throws (away) the fries.'

It is unclear whether the reason for the deletion is syntactic or semantic in nature, but is it interesting to note that SLI children also have difficulties with V2. Hence, it could be that they do not yet have a compelling reason to form a complex predicate in their syntax and therefore cannot accommodate both the lexical verb and the particle.

appear late in the acquisition of V2. The fact that particle verbs form a complex predicate is the only thing that sets them aside from the other lexical verbs. Therefore, the different behaviour of particle verbs to the other lexical verbs with respect to the acquisition of V2 can only be due to this distinctive feature.

6. Conclusion

This chapter has looked at the acquisition of V2 and its relation to particle verbs. Based on a discussion of longitudinal acquisition data of four Dutch children, it was argued that particle verbs do not play a driving role in the acquisition of V2, contra Lightfoot (1991). It was proposed that the reason particle verbs do not form a cue for V2 is that children first have to acquire the syntactic structure that can accommodate a complex predicate. At the start of the acquisition process, the child does not analyse a particle verb as a complex unit. The realization of a particle verb as a complex unit is the result of the acquisition of V2. This analysis was supported by the results of a corpus study. These show that the use of V2 for particle verbs trails the use of V2 for other lexical verbs.

Chapter 3

Preposition stranding and particle verbs

1. Introduction

With the acquisition of V2, the child can now provide a complex predicate structure for a particle verb. At this point, the structure consists of a verb and a comment (abstracting away from the precise internal structure):

(1) opeten: [[COMMENT op] [VERB eten]] 'up-eat'

The next step the child has to take is to identify the categorial status of the comment, the particle in the adult grammar. In adult Dutch, the particle can either belong to category A, as in (2a), or to category P, as in (2b).[26]

(2) a. liefhebben, mooipraten, rechtzetten
dear-have, beautiful-talk, straight-put
'to love, to smooth talk, to set right'

b. opeten, overschrijven, uitgeven
up-eat, over-write, out-give
'to eat up, to copy, to spend'

In this chapter I will briefly address the question of how the child learns to distinguish category A from category P. The main focus of the chapter is on the acquisition of category P. Category P contains both particles, (3a) and prepositions (3b).

(3) a. opdrinken, uitlezen, inzetten
up-drink, out-read, in-put
'to drink up, to finish reading, to bet'

b. op de kast, uit de tas, in het bad
on the cupboard, out the bag, in the bath
'on the cupboard, out of the bag, in the bath'

It will be shown that at the start of the acquisition process, children do not distinguish between particles and prepositions. The distinction is acquired on the

26 Adverbials are possible as well: *weggooien* 'away-throw', *terugbrengen* 'return-bring'. I will leave them out of the discussion.

basis of local, binary frames. These local binary frames, however, cause a wrong analysis in constructions where, in the adult language, the preposition is adjacent to the verb. In these constructions, the child has no choice but to analyse the preposition as a particle. I will argue that wrongly analysing preposition+V as particle+V leads to an overgeneralisation of preposition stranding. The retreat from this overgeneralisation is based on the presence of so-called "r-pronouns". The analysis provided in this chapter is based on longitudinal data of four Dutch children and aims to provide an explanation for the typological observation that preposition stranding only occurs in languages that have particle verbs (Stowell 1981, 1982).

The structure of this chapter is as follows: section 2 briefly discusses the acquisition of the categories A and P. In section 3, several theoretical accounts of preposition stranding will be presented. Section 4 will focus on an account proposed by Snyder (2001) and Snyder & Sugisaki (2002). Existing accounts of the acquisition of preposition stranding and a longitudinal corpus study will be presented in section 5, followed by a discussion and an analysis of the data in section 6. Section 7 concludes the chapter.

2. Acquiring the distinction between A and P

As shown in (2), the particle in adult Dutch can either belong to the group of adjectives (*lief* 'dear', *mooi* 'beautiful', *recht* 'straight') or to the group of prepositions (*op* 'up', *over* 'over', *uit* 'out'). At some point in the acquisition process, the child will have to acquire this difference. The question is what could provide the child with the information needed to make the distinction. Both the A and P elements in (2) can be used as a particle (4a), a primary predicate (4b), and as an adjective or preposition (4c).

(4) a. opeten, liefhebben
up-eat, dear-have

b. de melk is op / de dochter is lief
the milk is up / the daughter is dear
'the milk is gone / the daughter is kind'

c. de lieve dochter / de melk staat op de tafel
the dear daughter / the milk stands on the table
'the kind daughter / the milk stands on the table'

In both (4a) and (4b), the A and P element behave identically. They both combine with a lexical verb to form a particle verb and they both combine with an auxiliary or light verb to form a primary predicate. There is no difference in the structure visible in the phonological string that will enable the child to distinguish between the P and A elements on the basis of (4a) and (4b). The only construction in which the A

and P elements diverge is (4c), where they are used in a non-predicative manner. The crucial difference is the placement with regards to the determiner. Adjectives follow the determiner, whereas prepositions precede the determiner. Since this is the only difference in the structure that is visible in the phonological string, the difference between the categories A and P will have to be acquired on the basis of the placement of the determiner. Van Kampen (2004) shows that the determiner is only systematically used once the category D is acquired. Therefore, the acquisition of the category D is a prerequisite for the acquisition of the distinction between the categories A and P. Note that the placement of the determiner is not the only surface difference between adjectives and prepositions in Dutch. Adjectives show agreement with the noun with respect to number, gender and definiteness of the determiner phrase, prepositions do not show any agreement. Example with an indefinite and a definite determiner are given in (5).

(5) a. [[$_{D<-def>}$ een] mooi huis], [[$_{D<+def>}$ het] mooie huis]
'a beautiful house, the beautiful house'

b. op [[$_{D<-def>}$ een] tafel], op [[$_{D<+def>}$ de] tafel]
'on a table, on the table'

This difference could potentially provide the child with the relevant information needed to distinguish between the categories A and P. However, the difference disappears in the child's production:

(6) a. mooie huis 'beautiful house'
b. oppe tafel 'on table'

The *-e* ending in (6a) could be adult-like agreement, but without the presence of the determiner it cannot be decided whether this is truly the case. The *-e* ending in (6b) is unlikely to be adult-like agreement, since there is no agreement on the preposition in adult Dutch. A possible explanation for the presence of the *-e* ending in (6b) is that it is indicating the presence of a determiner. It could be that the child has detected the presence of the functional category D and is using the -e ending as a place holder. The *-e* ending in (6a) cannot be a place holder for a determiner, since there is no determiner in between the noun and the adjective in adult Dutch. The reason for the presence of the *-e* ending in (6a) and (6b) therefore has to be different. However, the surface form of both the adjective and the preposition is identical. Since one cannot be certain as to the precise underlying structure the child attributes to (6a) and (6b), I propose to remain on the conservative side and will assume that the child has to first fully acquire the category D before she can use the placement of determiners to acquire the difference between the categories A and P.

3. Preposition stranding

With the acquisition of the difference between the category A and P, the child has one last step to take. As stated in the introduction of this chapter, the category P contains both particles and prepositions. The child still has to acquire the distinction between these two. As will be argued in section 6, the acquisition of this distinction will lead to an overgeneralisation of preposition stranding. Therefore, a discussion of preposition stranding in adult grammar is in order. In some languages, the complement of a preposition can be moved out of the prepositional phrase, as shown in (7).

(7) a. What$_i$ did you talk [$_{PP}$ about t$_i$]?

b. Waar$_i$ heb je [$_{PP}$ over t$_i$] gepraat? Dutch
where have you about talked

c. Vad$_i$ talade du [$_{PP}$ om t$_i$]? Swedish
what talked you about

Since this movement leaves the preposition behind in its base-generated position, it is known as preposition stranding. Preposition stranding limits itself to a small group of languages. Romance languages, for example, do not allow it (see Sugisaki & Snyder 2002 for a cross-linguistic survey).

(8) a. *Qu$_i$' as-tu parlé [$_{PP}$ de t$_i$]? French
b. *Che$_i$ hai parlato [$_{PP}$ di t$_i$]? Italian

Preposition stranding can either be the result of A-movement or of A'-movement. A-movement leads to pseudo-passives as in (9a) and A'-movement can, amongst other things, lead to the wh-construction in (9b).

(9) a. [This bed]$_i$ has been slept [$_{PP}$ in t$_i$].
b. Who$_i$ did John believe [$_{PP}$ in t$_i$]?

Although the pseudo-passive (9a) and wh-question (9b) involve the movement of a complement out of a prepositional phrase, they behave differently. Pseudo-passives form a subset of preposition stranding constructions. They do not occur in all languages that allow the A'-movement of the complement of a preposition. And where they do occur, pseudo-passives are more restricted than other cases of preposition stranding (van Riemsdijk 1978).

3.1 Theoretical accounts

The presence or absence of preposition stranding in a certain language has been explained in several ways. In this section I will discuss the three main approaches to preposition stranding. In the first approach, the absence or presence of preposition stranding in a language is considered to be the result of the properties of the PP. In certain languages PPs allow extraction, in other languages they do not. In the second approach, the presence of preposition stranding is caused by the fact that the verb and the preposition can form a syntactic unit. The formation of this syntactic unit allows for the complement of the preposition to move. And in the third approach, the absence of preposition stranding is the result of a close relationship between the preposition and the determiner. This close relationship prohibits the complement of the preposition from moving. I consider preposition stranding to be a combination of the first and the second approach. The properties of the preposition itself allow or disallow preposition stranding, but a close relationship with the verb can overrule certain properties. I will explore this idea further in section 6 and in the next chapter.

3.1.1 The impenetrability of the prepositional phrase

The traditional analysis of preposition stranding in Germanic languages stems from van Riemsdijk (1978).[27] The proposal is based on the observation that preposition stranding is a rare phenomenon in the world's languages. The lack of preposition stranding in most languages is explained by the head constraint in (10).

(10) The head constraint
No rule may involve X_i/X_k and Y_i/Y_k in the structure
… X_i … $[_{H^n}$ … $[_{H'}$ … Y_i … H … Y_k …$]_{H'}$ …$]_{H^n}$ … X_k …
(where H is the phonologically specified (i.e. non-null) head and H^n is the maximal projection of H)

The head constraint in (10) turns the prepositional phrase into an island for movement, making preposition stranding impossible. However, despite the proposed impenetrability of the prepositional phrase, some languages do allow the complement of the preposition to move. In order to account for this movement, the prepositional phrases in these languages are argued to have an escape hatch. This escape hatch is positioned outside of H' and inside of Hn. The complement of the preposition first moves to the escape hatch position. In this position it is no longer subject to the head constraint and the complement can freely move to a position outside of the prepositional phrase.

Dutch is a language that allows for preposition stranding, but in a restricted form. Only certain pronouns can be extracted out of a prepositional phrase, as in (11e).

27 See Abels (2002) for a reformulation of van Riemsdijk's proposal in the minimalist framework.

(11) a. Jan heeft gister [$_{PP}$ over taalkunde] gesproken.
Jan has yesterday about linguistics talked
'Jan talked about linguistics yesterday.'

b. *Jan heeft taalkunde$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has linguistics yesterday about talked
'Jan talked about linguistics yesterday.'

c. Jan heeft gister [$_{PP}$ over dat] gesproken.
Jan has yesterday about that talked
'Jan talked about that yesterday.'

d. *Jan heeft dat$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has that yesterday about talked
'Jan talked about that yesterday.'

e. Jan heeft daar$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has there yesterday about talked
'Jan talked about that yesterday.'

Extraction of a full noun phrase, as in (11b), or a regular pronoun, as in (11d), leads to ungrammaticality. The pronouns that can strand a preposition, like the pronoun *daar* 'there' in (11e), are labelled r-pronouns, due to the fact that almost all of them contain an 'r'. In order to allow only r-pronouns to be extracted from prepositional phrases, van Riemsdijk proposed that both r-pronouns and the escape hatch position are assigned a [+R] feature. He then argued that only those elements that carry the [+R] feature can make use of the escape hatch. Since only r-pronouns are assigned the [+R] feature, only they can circumvent the head constraint and strand the preposition.

3.1.2 The case related syntactic reanalysis account

Hornstein & Weinberg (1981) note that there is a difference between argument prepositional phrases and adjunct prepositional phrases (PP) with respect to preposition stranding. Generally speaking, complements of the head of an argument PP can move out of the prepositional phrase, as in (12b), whereas complements of the head of an adjunct PP cannot, as in (12a).

(12) a. *[What time]$_i$ did John arrive [$_{PP}$ at t_i]?
b. What$_i$ did John decide [$_{PP}$ on t_i]?

The difference between (12a) and (12b) led Hornstein & Weinberg to propose a syntactic reanalysis rule to account for preposition stranding.

(13) V → V* (where V c-commands all elements in V*)

"… a V and any set of contiguous elements to its right can form a complex V."

This syntactic reanalysis rule in (13) allows for the preposition to be incorporated into the verb as long as the preposition and the verb are adjacent. Hornstein & Weinberg argue that in English, the prepositional head of a complement PP is structurally adjacent to the verb, whereas the prepositional head of an adjunct PP is not.

(14) complement: $[_{VP}\ [_{V'}\ V\ [_{PP}\ P\ DP]]]$
adjunct: $[_{VP}\ [_{VP}\ [_{V'}\ V]][_{PP}\ P\ DP]]$

The reanalysis rule on its own does not explain the difference between (12a) and (12b). The motivation for the reanalysis of the preposition with the verb as a prerequisite for preposition stranding lies in the realm of case. Hornstein & Weinberg propose that there are three cases: nominative, accusative and oblique. The distribution of these cases is as follows: nominative case is assigned to subjects, accusative case is assigned to the complement of a verb and oblique case is assigned to the complement of a preposition. Hornstein & Weinberg then introduce the universal filter in (15), which explains the general absence of preposition stranding in most languages (following van Riemsdijk 1978).

(15) $*[_{NP}\ e_{oblique}]$

The filter in (15) is a general ban on NP traces in an oblique case position. When the complement of a preposition moves out of its base-generated position, it leaves behind a trace in an oblique case position. This violates the filter in (15) and hence leads to ungrammaticality. The syntactic reanalysis rule in (13) enables languages to circumvent the filter in (15). Once the preposition is re-analysed with the verb, the complement of the preposition becomes the complement of the complex verb V*. As a result, the complement receives accusative case and is free to move without violating the filter in (15). Since preposition stranding is rare in most languages, Hornstein & Weinberg argue that the syntactic reanalysis rule in (13) is only available in those languages that allow preposition stranding.

3.1.3 The relationship between prepositions and determiners

The two proposals discussed so far argue that restrictions on preposition stranding are either due to the properties of the PP itself or due to the inability of the P to form a compound with the verb. Law (1998) argues that the relation between the preposition and the determiner of the DP complement of the preposition plays a role

as well. His account is based on the existence of suppletive forms in languages like French and German.

(16) a. Jean a parlé du sujet. French
Jean has talked about-the subject
'Jean talked about the subject.'

b. Hans war am Schalter. German
Hans was by-the counter
'Hans was by the counter.'

The French *du* 'about-the' and German *am* 'by-the' are the results of incorporation of the determiner into the preposition (*du* = *de* 'about' + *le* 'the', *am* = *an* 'by' + *dem* 'the'). Law argues that with the incorporation of the determiner into the preposition, the DP complement no longer forms a constituent, as in (17b). Once the DP no longer forms a constituent, it cannot be targeted by movement, as is exemplified by the ungrammaticality of (17a).

(17) a. *[Le sujet]$_i$ a été parlé [$_{PP}$ de t_i] French
the subject has been talked about
'The subject was talked about.'

b. … [$_{PP}$ [[de+le$_i$] [$_{DP}$ t_i [$_{NP}$ sujet]]]

This explains the ungrammaticality of preposition stranding in most languages. In those languages that do not have preposition stranding, the determiner is incorporated into the preposition. The determiner is not incorporated into the preposition in the languages that allow preposition stranding. Law argues that since preposition stranding is restricted in Dutch and German, the determiner must be incorporated into the preposition in both languages. The presence of suppletive forms in German supports this analysis. Dutch lacks suppletive forms, but Law reasons that this can be due to the general lack of morphological markings in Dutch. While the account can explain the general absence of preposition stranding in Dutch, it does not explain why r-pronouns can strand a preposition. Van Riemsdijk (1978) notes that r-pronouns can only occur in the specifier position of the prepositional phrase. The full paradigm is as in (18).

(18) a. [$_{PP}$ [$_{P'}$ over dat]] Dutch
b. *[$_{PP}$ [$_{P'}$ over daar]]
c. [$_{PP}$ daar [$_{P'}$ over]]
d. *[$_{PP}$ dat [$_{P'}$ over]]
'about that'

Given this observation, Law argues that since r-pronouns do not appear in the

complement position of the preposition they cannot be incorporated into the preposition. Therefore, r-pronouns are free to move to a position outside of the PP.

3.2 Summary

There are different analyses in the literature as to the nature of preposition stranding and the absence of it in most languages. The cause is either sought in the nature of the prepositional phrase, in the relation it has with the verb or in the relation the preposition has with its DP complement. In the remainder of this chapter, and this study, I will mainly follow van Riemsdijk (1978) in assuming that the prepositional phrase forms an island for movement. I will, however, argue that there is a relation between the preposition and the verb, as proposed by Hornstein & Weinberg, and that this relation allows both children and adult speakers to violate the r-pronoun restriction on preposition stranding.

4. Preposition stranding and the compounding parameter

Stowell (1981, 1982) observes that there is a typological dependency between particle verbs and preposition stranding in that all languages that allow preposition stranding also have particle verbs. He argues that this observation can be explained if the syntactic reanalysis needed for preposition stranding (Hornstein & Weinberg 1981) can only occur when it does not violate the morphological rules of the language in question. As discussed in section 3.1.2, the syntactic reanalysis rule forms a complex verb in syntax. Forming a complex verb in syntax, Stowell proposes, is only possible in those languages that independently allow the formation of a complex verb in morphology. Particle verbs form such complex verbs in morphology (Neeleman 1994, cf. chapter 1 for a discussion of his proposal). Therefore, languages that have particle verbs have a morphological rule that allows the creation of a complex verb. These languages will then also allow the formation of a complex verb in syntax. Based on Stowell's observation and analysis we can thus conclude that the presence of particle verbs forms a necessary requirement for the presence of preposition stranding.

There is another, related, typological dependency observed by Snyder (2001). He states that languages can only have complex predicates such as resultatives (19a), and particle verbs (19b), if they independently allow endocentric root compounding. Although Snyder does not give specifics on which type of endocentric root compounding would be involved, he focuses on noun-noun compounds in his typology (and acquisition) study (19c).

(19) a. John painted the house red.
b. Mary picked the book up.
c. frog-man, air-port, wall-clock, water-bottle

Not all languages exhibit the use of complex predicates. Romance languages, for example, lack constructions such as in (19a) and (19b). Snyder notes that Romance languages do not have productive noun-noun compounding either. Given this typology, Snyder argues that the presence of complex predicates in a language is subject to a parameter. The origin of the parameter lies in the analysis of complex predicates in Dutch and Afrikaans. In Dutch (20) and Afrikaans (21), complex predicates show signs of morphological incorporation.

(20) a. … dat Jan de deur (vaak) groen (*vaak) verfde.
… that Jan the door (often) green (*often) painted
'… that Jan often painted the door green.'

b. … dat Jan het meisje (vaak) op (*vaak) merkte.
… that Jan the girl (often) up (*often) noticed
'… that Jan often noticed the girl.'

(21) a. Hy sal nie die antwoorde by my kan afkyk nie.
he will not the answers from me can off+look not
'He will not be able to crib from me.'

b. *Hy sal nie die antwoorde by my af kan kijk nie.
he will not the answers from me off can look not
'He will not be able to crib from me.'

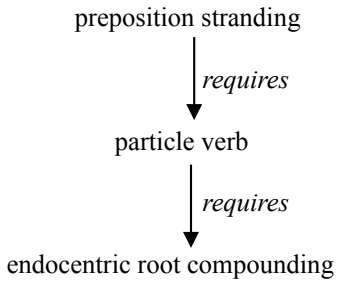
In Dutch, the adverb *vaak* 'often' cannot intervene between the verb and its result predicate. In Afrikaans, the particle verb behaves as one unit in verbal complexes. Because the complex predicates in Dutch and Afrikaans show signs of morphological incorporation, it is proposed that they form morphologically complex words. And in turn, morphologically complex words are formed by endocentric root compounding. Since complex predicates are morphologically complex words and morphologically complex words are formed by endocentric root compounding, Snyder reasons that a language needs endocentric root compounding to be able to form complex predicates. This raises the question why the formation of complex predicates should depend on endocentric root compounding. Snyder states that complex predicates all contribute a single semantic interpretation in the form of an accomplishment. He then argues that this unified contribution to the semantic interpretation is only possible because complex predicates form a unit. This is captured in the formulation of his Complex Predicate Constraint:

(22) The Complex Predicate Constraint
Two syntactically independent expressions can jointly characterize the event-type of a single event-argument, only if they constitute a single word (endocentric compound) at the point of semantic interpretation.

He then argues that two syntactically independent expressions can only form a single word at the point of semantic interpretation if the language allows endocentric root compounding. As a consequence, only languages that have endocentric root compounding can have complex predicates.

Particle verbs are complex predicates. Based on Snyder's typology and analysis we can thus conclude that the presence of endocentric root compounding forms a necessary requirement for the presence of particle verbs. If the two typological observations made by Stowell (1981, 1982) and Snyder (2001) are combined, they will lead to the dependencies in (23).

(23)

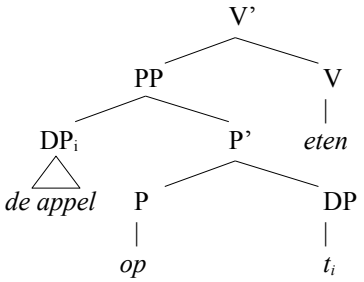


The prediction made by the typological dependencies in (23) is that preposition stranding is related to endocentric root compounding. Any language that has preposition stranding has particle verbs and any language that has particle verbs has endocentric root compounding. Therefore, any language that allows for preposition stranding will also allow endocentric root compounding.

4.1 Discussion

Both Stowell's and Snyder's explanation for their typological findings rely on the proposal that particle verbs form morphologically complex words. If particle verbs are not morphologically complex words, then they are not formed by endocentric root compounding and they do not form a prerequisite for the syntactic incorporation of the preposition in the verb needed for preposition stranding. As such, the proposal does not sit well with the small clause analysis of particle verbs (Den Dikken 1992, cf. chapter 1 for a discussion of his proposal). Recall that in this analysis, the particle forms the head of a small clause which is the complement of the verb, as in (24).

(24)



In chapter 5 I will argue that the data presented in this study provides evidence in favour of the complex head theory and thus indirectly supports the proposal put forward by Stowell and Snyder. However, in this section I would like to show that the typological findings of Stowell and Snyder could also be explained in the small clause analysis of particle verbs. I will come back to the typological relation between particle verbs and preposition stranding in section 6.

As argued in chapter 2, when a child acquires her first particle verb, she has to introduce a new syntactic structure that allows for a complex predicate. It was left open what the precise structure would be, offering a choice between a complex word and a small clause structure. Now suppose that children start with a complex word structure. It could be argued that children are more prone to this structure due to ample examples of endocentric root compounding already present in the input and the child's speech. Dutch most certainly is a compound friendly language and the child will encounter plenty of examples of root compounding. Children acquiring Dutch are also known to form novel compounds, suggesting that they are aware of the compounding rule. Endocentric root compounding, then, could be a prerequisite for the formation of particle verbs.

If one would like to argue in favour of the small clause analysis of particle verbs and children first provide a complex word structure for particle verbs, then the question arises how and why children would change the structure to a small clause structure. To make this change, children would need evidence in favour of the small clause structure. This evidence could be found in the obligatory realization of the object of a particle verb. Transitive particle verbs in Dutch differ from transitive verbs in that the direct object cannot be omitted. Consider the examples in (25).

(25) a. Jan wil deze appel eten.
Jan wants this apple eat
'Jan wants to eat this appel.'

b. Jan wil eten.
Jan wants eat
'Jan wants to eat.'

c. Jan wil deze appel opeten.
Jan wants this apple up-eat
'Jan wants to eat this whole apple.'

d. *Jan wil opeten.
Jan wants up-eat
'Jan wants to eat up.'

The direct object *de appel* 'the apple' can be omitted with the transitive verb *eten* 'to eat' in (25b), but cannot be omitted with the transitive particle verb *opeten* 'to up-eat' in (25d). This difference can be explained if the particle verb has a small clause structure. In the small clause structure, the direct object of the particle verb has a different position in the structure as opposed to the direct object of a regular verb. It could therefore be subject to different requirements, like the obligation to be realized overtly.[28]

Another piece of evidence in favour of the small clause structure for particle verbs could come from the use of particles as primary predicates. Such use is shown in (26).

(26) a. De melk is op.
the milk is up
'The milk is gone (as in: we are out of milk).'

b. Het boek is uit.
the book is out
'The book is finished (as in: we are done reading the book).'

Arguably, the particles *op* 'up' and *uit* 'out' head their own projections with the DPs *de melk* 'the milk' and *het boek* 'the book' as their respective arguments. If the particle projects when it is used as a primary predicate, then it could be argued that the particle keeps projecting when it is combined with a verb to form a particle verb. In this line of argumentation, the child will never be tempted to opt for the complex head structure, but instantly opt for the small clause structure, maintaining the particle's ability to project.

It seems, then, that one could argue that the child can arrive at a small clause structure for particle verbs. It could also be argued that the evidence needed to arrive at this structure is of a more complex nature and is only accessible at a later stage in the acquisition process. Children could therefore start with a structure resembling a complex word, based on their exposure to other complex words, and

28 The difference in object realization can also be explained under the complex word analysis if one assumes that particle verbs have different requirements on the realization of their thematic arguments than regular transitive verbs. Considering that particle verbs are complex predicates where the exact contribution of the particle remains unknown, this assumption seems very reasonable.

then arrive at a small clause structure. The typological relation between endocentric root compounding and particle verbs, as proposed by Stowell and Snyder, could thus be accounted for in both the small clause and the complex head analyses for particle verbs. This strengthens their observation and warrants an acquisitional study to confirm their proposal.

5. The acquisition of preposition stranding

5.1 Previous accounts

The typological dependencies brought forward in the previous section make several predictions for language acquisition. If particle verbs are a prerequisite for preposition stranding, then the prediction would be that children acquire particle verbs and preposition stranding either simultaneously or in that exact order. A similar prediction can be made concerning the typological dependency between particle verbs and endocentric root compounding. If endocentric root compounding is a prerequisite for the presence of particle verbs, then children should acquire endocentric root compounding and particle verbs either simultaneously or in that exact order. The two predictions combined lead to a predicted ordering effect in acquisition. Children acquiring a language containing endocentric root compounding, particle verbs and preposition stranding should acquire them either simultaneously or in that exact order.

Sugisaki & Snyder (2002) test the first prediction concerning the ordering effect between the acquisition of particle verbs and preposition stranding.[29] For ten English children they pinpoint the first use of a particle verb, where the verb and the particle are adjacent, and the first use of preposition stranding. The first use of preposition stranding is based on wh-movement. The results of this study show that children do indeed first use particle verbs before they strand a preposition. Considering the very early use of particle-verb combinations in Dutch as shown in chapter 2, this finding is not too surprising.

Van Kampen (1996) provides an analysis for the relation between particle verbs and preposition stranding in the acquisition of Dutch. She points out that where preposition stranding is restricted in adult Dutch, it is free in child Dutch. Children strand prepositions without the obligatory use of r-pronouns. The utterance in (27a) is an utterance by Sarah at 3;11, the utterance in (27b) is the grammatical adult version.

(27) a. Weet je wat$_i$ ik [$_{PP}$ over t$_i$] heb gedroomd?
know you what I about have dreamt
'Do you know what I dreamt of?'

29 See Sugisaki (2008) for similar findings.

b. Weet je waar$_i$ ik [$_{PP}$ over t_i] gedroomd heb?
know you where I about dreamt have
'Do you know what I dreamt of?'

The free preposition stranding in child Dutch is argued to be due to the fact that children can analyse the preposition as being identical to a particle. In an analysis similar to that of Law's (1998), discussed earlier, van Kampen (1996) argues that a P element can either be part of the extended D projection or not. A P element that is part of the extended D projection is a noun variant of P with a <+D> feature, whereas a P that is not part of the extended D projection is a predicative variant of P with a <-D> feature. Examples are in given in (28).

(28) a. de boterham [$_{P<-D>}$ op]eten / het boek [$_{P<-D>}$ uit]lezen
the sandwich up-eat / the book out-read

b. [$_{P<+D>}$ op] de kast / [$_{P<+D>}$ uit] het bed
on the cupboard / out the bed

Particles are P elements with a <-D> feature, (28a), and all non-predicative prepositions are P element with a <+D> feature, (28b). Van Kampen argues that since the noun variant P is part of the extended D projection it blocks the wh-movement of its complement. Van Kampen does not go into details, but the proposal roughly runs as follows. Consider the PP structure in (29).

(29) [$_{PP}$ [$_{P<+D>}$ naar] [$_{DP}$ [$_{D<+wh>}$ welke] man]]
'to which man'

The D *welke* 'which' carries the <+wh> feature that will be targeted by the wh-movement operation. Arguably, this <+wh> feature percolates up to the maximal projection of the DP. Recall that the P *naar* 'to' is argued to be part of the extended projection of D. I take 'being part of the extended projection of D' to mean that all the features carried by the D percolate up to the PP. Thus for the PP in (29) the wh-feature carried by the D *welke* 'which' percolates up to the PP. This inevitably has an effect on wh-movement. Van Kampen states that wh-movement targets a D element carrying a <+wh> feature. In the extended D projection there are two such elements: the D *welke* 'which' and the P *naar* 'to', because the P carries a <+D> feature. The P c-commands the D and is therefore closer to C, which attracts the wh-element. As such, under relativized minimality the wh-movement will attract the PP rather than the DP.

(30) [$_{CP}$ [$_{C}$ WH-operator] … [$_{PP}$ [$_{P<+D,+wh>}$ naar] [$_{DP}$ [$_{D<+wh>}$ welke] man]]]

The result is that preposition stranding is impossible with the noun variant P, i.e. with non-predicative prepositions.[30] Preposition stranding is possible with the predicative variant P, since this P is not part of the extended projection of D and therefore does not carry the wh-feature. Thus the complement of a particle can be targeted by wh-movement.

(31) $[_{CP}\ [_{C}$ WH-operator] … $[_{VP}\ [_{PP}\ [_{DP}\ [_{D<+wh>}$ welke] appel] $[_{P<-D>}$ op] eten]]]
'which apple up-eat'

Van Kampen proposes that it is the presence of P-elements that carry a <-D> feature, such as particles, that enable the child to generalise and create a grammar where other P-elements, such as prepositions, also carry a <-D> feature. This leads to a grammar that allows for free preposition stranding, as exemplified in (27). She then argues that the free preposition stranding disappears in the adult grammar, because adult speakers prefer the P<+D> over the P<-D> when the P is not predicative.[31] I will come back to this in the next chapter, where I will argue that the restriction on preposition stranding might not be as strong as assumed. For the topic discussed in this chapter I will follow the main line of reasoning set out by van Kampen. Children have difficulty distinguishing certain prepositions from particles and as a result overgeneralise preposition stranding. The detailed line of argumentation will be given in section 6.

5.2 Corpus study

Stowell (1981, 1982), van Kampen (1996) and Sugisaki & Snyder (2002) all argue that preposition stranding is related to particle verbs. The particle verb is either a prerequisite for the ability of the preposition and the verb to form a complex unit in syntax, freeing up the complement of the preposition for movement (Stowell and Sugisaki & Snyder). Or the particle in particle verbs causes confusion, leading the child to wrongly analyse a preposition as a particle, which results in free preposition stranding (van Kampen). This raises the following three questions:

(32)
i. do children use particle verbs?
ii. does the compound preposition-verb occur in child language?
iii. do children distinguish between particles and prepositions?

30 Note that r-pronouns have been left out of the discussion. Although general stranding of a P<+D> is impossible, r-pronouns can be targeted by wh-movement. This is easily accounted for in van Kampen's proposal. R-pronouns are D's that are obligatorily placed in the specifier of PP (either by base-generation or by movement). Therefore, the moment an r-pronoun carries a wh-feature, it is the highest c-commanding D with a <+wh> feature in the PP. As such, it will be targeted by wh-movement and it can strand a preposition.

31 Arguably, to maintain a clear distinction between the noun variant P and the predicative variant P.

As has been shown in chapter 2, the answer to the first question is affirmative. Children acquiring Dutch use particle verbs from an early age onwards. The answers to the other two questions will be given in this chapter on the basis of a longitudinal corpus study, using the same four children from chapter 2: Sarah, Abel, Daan and Matthijs.

As said before, prepositions and particles both belong to the category P. Therefore, in order to determine whether children do or do not distinguish between the two, all P elements were extracted from the corpus. The results were then filtered for combinations of P elements and non-finite lexical verbs. The reason for this is that, due to verb-second, particle-verb combinations only occur as one adjacent unit when the verb is non-finite, as in (33b).

(33) a. Ik eet$_i$ de appel [op t$_i$].
I eat the apple up
'I eat the whole apple.'

b. Ik zal de appel opeten.
I shall the apple up-eat
'I shall eat the whole apple.'

If particle verbs do indeed form a requirement for the formation of a preposition-verb compound, then the relevant constructions to look at are the constructions in which the P element is directly adjacent to a non-finite verb. For particle verbs, this is the case when the verb is non-finite, as in (33b). In adult Dutch, prepositions only appear directly adjacent to a non-finite verb as a result of preposition stranding. Consider (34a). Although the PP is directly adjacent to the verb, the preposition is separated from the verb by its complement. The wh-movement of the complement of the preposition as in (34b) renders the preposition and the non-finite verb adjacent, at least in the phonological string.

(34) a. Marie wil [$_{PP}$ op hem] wachten.
Marie wants on him wait
'Marie wants to wait for him.'

b. Waar$_i$ wil Marie [$_{PP}$ op t$_i$] wachten?
Where wants Marie on wait
'What does Marie want to wait for?'

In child Dutch, prepositions can appear directly adjacent to the non-finite verb either because of preposition stranding or because of object omission. In the latter case, the object of the preposition is omitted, leaving the preposition directly adjacent to the non-finite verb. Omission of the object is common in child language and is therefore a likely source for the formation of the preposition-verb construction. If object omission is indeed the reason why children produce constructions in which the

preposition is directly adjacent to the non-finite verb, then it is important to determine two things. First of all, it has to be determined how often children omit the object of the preposition. This can be done by comparing the frequency of occurrence of the construction in which the object is omitted to the frequency of occurrence of the construction in which the object is not omitted. And secondly, it has to be determined whether the object omission is specific to prepositions or also occurs with particles. If children omit the objects of prepositions but do not omit the objects of particles, then one could argue that children have already acquired the distinction between prepositions and particles. However, if children omit the objects of prepositions and particles alike, then one could argue that they have not yet acquired the distinction. This results in the following four constructions, and these were extracted from the corpus.

(35) a. [$_{PP}$ Prep Obj] V
b. [$_{PP}$ Prep] V
c. Obj Prt-V
d. Prt-V

The constructions in (35b) and (35d) are the relevant constructions for the formation of the P-V compound.[32] The constructions in (35a) and (35c) offer the controls for the rate of object omission. If children do not make a distinction between particles and prepositions, then one would expect the constructions (35b) and (35d) to occur equally frequently.

The collection of the data was started at the two-word stage and stopped at the first clear sign of the use of a P element as a preposition. With the use of a P element as a preposition, it can be assumed that the child distinguishes particles from prepositions. Since the aim of the corpus study is to determine whether there is a stage in which the child does not distinguish particles from prepositions, the first clear use of a P element as a preposition is chosen as the end point of that potential stage. A P element is used as a preposition when it unmistakably takes a DP as a complement. Children use the sequence P-NP/DP from an early age onwards, but often these sequences resemble memorized chunks. The question then is how to determine when a child no longer treats a PP as a memorized chunk but as a constituent with internal structure. One diagnostic would be to look for cases of preposition stranding that could not possibly be anything but preposition stranding in the child's grammar. If one can find a case in which the child has clearly moved the complement of a preposition, then one knows with certainty that the child is no longer treating all PPs as memorized chunks. But how does one find such a case of preposition stranding? Recall that preposition stranding in adult Dutch can only occur with the use of r-pronouns. These r-pronouns often have a locative

32 The classification of the constructions in (b) and (d) was done on the basis of the adult grammar. If a P-V compound forms a particle verb in adult Dutch, it was classified as (d). If it does not form a particle verb in adult Dutch, it was classified as (b). The fact that it is difficult to classify these constructions already indicates that there is a fine line between particles and stranded prepositions.

interpretation (36a), but not always (36b).

(36) a. Daar moet je dat in doen.
there must you that in do
'You must put that in there.'

b. Daar had ik niet aan gedacht.
there had I not on thought
'I had not thought of that.'

Where the *daar* 'there' in (36a) indicates a location of where something must be put, the *daar* 'there' in (36b) does not indication a location of where something was thought, but rather refers to the object of thinking. As such, it is not used locatively.

Children use r-pronouns frequently to indicate location.

(37) die daar, moet hier.
'that there, must here'

This means that the co-occurrence of an r-pronoun with a preposition is not necessarily analysed as a case of preposition stranding. Consider the utterance in (38a).

(38) a. Dit hier op zetten.
this here on put

b. Dit hier$_i$ [$_{PP}$ op t$_i$] zetten.
c. Dit hier [$_{PP}$ op *object*] zetten.

This utterance can have two possible analyses. Either the r-pronoun *hier* 'here' is the object of the preposition *op* 'on' and has been displaced, as in (38b). Alternatively, the object of the preposition is omitted and the r-pronoun *hier* 'here' simply indicates a location, as in (38c). The full utterance could have been as in (39).

(39) Dit hier [$_{PP}$ op tafel] zetten.
this here on table put
'Put this here on the table.'

This ambiguity between a stranded preposition and object omission does not occur when the displaced r-pronoun does not carry a locative interpretation, as in (36b). In that case the only possible analysis is the one of preposition stranding. It was therefore decided that the first clear use of a preposition is when it co-occurs with a non-locative r-pronoun.

5.2.1 Results

The start of the data collection for Abel was at 1;10.30. The first clear use of a preposition is the utterance in (40) at 3;01.07. In order to determine whether the r-pronoun is locative or not, the context in which the utterance occurred was considered. The full contexts of the first use of preposition for Abel, Daan, Matthijs and Sarah can be found in appendix C.

(40) daar kan je mee in de tuin werken . Abel 3;01.07
there can you with in the garden work
'That you can work in the garden with.'

From 1;10.30 till 3;01.07, Abel uses a total of 52 particle constructions and a total of 67 preposition constructions. In both particle and preposition constructions, the object is sometimes omitted, as can be seen in table 1.

Table 1: Percentage of object-drop for Abel.

Abel	
particle constructions	48% (25/52)
preposition constructions	30% (20/67)

The table shows a slight difference in object-drop between particle and preposition constructions. Abel appears to drop the object more often in the particle construction than in the preposition construction. The difference is, however, too small to argue that Abel distinguishes particles from prepositions. The data from the other children show an even clearer support for the conclusion that there is a stage at which they do not distinguish particles from prepositions. The table in 2 shows the results for Daan.

Table 2: Percentage of object-drop for Daan.

Daan	
particle constructions	54% (44/82)
preposition constructions	52% (50/97)

For Daan, the start of the data collection was at 2;01.21. The first clear use of a preposition is the utterance in (41), at 3;01.00.

(41) hee mag ik hier mee dansen ? Daan 3;01.00
hey may I here with dance
'Hey, may I dance with this?'

From 2;01.21 till 3;01.00, Daan uses a total of 82 particle constructions and a total of 97 preposition constructions. As can be seen in the table, Daan omits the object equally frequently for both particle and preposition constructions. The same picture emerges for Matthijs. The start of the data collection for Matthijs was at 2;02.09. The first clear use of a preposition is the utterance in (42) at 3;0.09.

(42) hij moet # die moet hier op wachten . Matthijs 3;0.09
he must # that must here on wait
'He must # that must wait for this.'

From 2;02.09 till 3;0.09, Matthijs uses a total of 105 particle constructions and a total of 93 preposition constructions. Like Daan, he omits the object in about half of the cases for both the particle and the preposition constructions.

Table 3: Percentage of object-drop for Matthijs.

Matthijs	
particle constructions	53% (56/105)
preposition constructions	54% (50/93)

The results for Sarah are more similar to those of Abel. She appears to omit the object more often in particle constructions than in preposition constructions, as can be seen in table 4.

Table 4: Percentage of object-drop for Sarah.

Sarah	
particle constructions	58% (46/79)
preposition constructions	49% (30/61)

The difference between the two constructions is even smaller for Sarah than for Abel. It can therefore be said that the difference is too small to be able to state that Sarah distinguishes between particles and prepositions. The start of the data collection for Sarah was at 1;08.28 .The first clear use of a preposition is the utterance in (43) at 2;09.07.

(43) (waar) moet dat nou [!] toe ? Sarah 2;09.07
where must that now to
'Where must this go to?'

From 1;08.28 till 2;09.07, Sarah uses a total of 79 particle constructions and a total of 61 preposition constructions and omits the object in both constructions.
The results uniformly show that children drop the object in both the particle and the preposition constructions at a comparable rate. This can be seen most clearly for Daan and Matthijs, for whom the rate of object drop in the two constructions is almost identical. Sarah and Abel show a slight difference between the particle constructions and the preposition constructions. For both children the difference, however, is small enough that it can be said that they do not distinguish between the particle and the preposition constructions.

6. Analysis and discussion

6.1 Overgeneralisation of preposition stranding

The data clearly show that children do not distinguish between particles and prepositions and form P-V compounds, in support of the predictions made by Stowell (1981, 1982), van Kampen (1996) and Sugisaki & Snyder (2002). The question is why children do not distinguish between particles and prepositions. The answer proposed here is related to the acquisition of lexical categories. I will follow van Kampen (1997) in assuming that children use local, binary frames when they classify words as belonging to a certain lexical category. The lexical category P is divided into two subgroups in Dutch. A P element can either be a preposition or a particle. Children decide which subgroup a P element belongs to on the basis of a local frame. Adult Dutch offers the following two frames:

(44) a. P + DP op de plank, achter de deur, in het water
'on the shelf, behind the door, in the water'

b. P + V opeten, achterlaten, inslaan
'to eat up, to leave behind, to stock up'

On the basis of the frame in (44a) the child decides that a P element belongs to the group of prepositions and on the basis of the frame in (44b) the child decides that a P element belongs to the group of particles. Both frames are clearly different and can therefore easily be distinguished. If the two frames in (44) constitute all that is available in adult Dutch, then children should have no problem distinguishing prepositions from particles. However, adult Dutch also contains the construction in (45).

(45) a. Hier wil ik op zitten.
here want I on sit
'I want to sit on this.'

b. Waar zal ik het in stoppen?
where shall I it in put
'What shall I put it in?'

The construction in (45) is the result of preposition stranding. The complement of the preposition is moved to the front of the sentence, either by topicalisation (45a), or by wh-movement (45b). Movement of the complement leaves the prepositions op 'op' and in 'in' adjacent to the non-finite verb. Remember that the child has to decide which subgroup a P element belongs to on the basis of a local frame. The local frame in (45) gives the child a P element adjacent to a verb. This makes the construction in (45) identical to the frame in (44b) and drives the child to analyse the P elements in (45) as particles.

Analysing the P elements in (45) as particles is not without consequences. Recall that Dutch has restricted preposition stranding in that only r-pronouns can move out of the prepositional phrase. This means that the complement of a preposition is limited in its movement. The internal argument of a particle verb does not share this restriction. Particle verbs take accusative objects, which can be freely targeted for movement. In analysing the adult Prep+V as a Prt+V, the object of the preposition becomes accusative and available for movement. This leads to an overgeneralisation of preposition stranding by children (van Kampen 1996, Schippers 2007). The overgeneralisation of preposition stranding in the child's grammar is visible in two ways. First, children strand prepositions using elements other than the r-pronoun, as in (46).

(46) a. Die kan thee op. Abel 2;04.09
that can tea on
'The tea can go on that one.'

b. Nee oh dat kan ik niet mee dansen. Daan 3;01.00
no oh that can I not with dance
'No, I cannot dance with that.'

c. Deze molentjes water door doen. Matthijs 3;03.05
these mills water through do
'Put water through these mills.'

The utterances in (46) show that children can strand a preposition with an accusative pronoun (46a,b), and a full DP (46c). The adult equivalent of the utterances in (46) would either involve an r-pronoun (47a,b) or pied-piping (47c).

(47) a. Daar kan thee op.
there can tea on
'The tea can go on there.'

b. Nee, daar kan ik niet mee dansen.
no, there can I not with dance
'No, I cannot dance with that.'

c. Door deze molentjes moet je water doen.
through these mills must you water do
'Through these mills you must put water.'

Children use neither of the adult strategies. The near absence of pied-piping in the child's grammar is the second way in which the overgeneralisation of preposition stranding is visible. Table 5 shows the use of preposition stranding and pied-piping in topicalisation and wh-movement constructions.

Table 5: the number of preposition stranding and pied-piping constructions

	Preposition stranding	**Pied-piping**
Sarah	24	1
Abel	41	8
Daan	29	4
Matthijs	54	15

As can be seen, children strongly favour preposition stranding over pied-piping. It seems then that children have a grammar that allows instances of preposition stranding that are considered ungrammatical in the adult language.

6.2 A note on postpositions

Next to prepositions, Dutch also has postpositions. So far I have left the postpositions out of the discussion, but they need to be addressed here. As said, prepositions can only be stranded with the use of r-pronouns (as was shown in (11), repeated here as (48)).

(48) a. Jan heeft gister [$_{PP}$ over taalkunde] gesproken.
Jan has yesterday about linguistics talked
'Jan talked about linguistics yesterday.'

b. *Jan heeft taalkunde$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has linguistics yesterday about talked
'Jan talked about linguistics yesterday.'

c. Jan heeft gister [$_{PP}$ over dat] gesproken.
Jan has yesterday about that talked
'Jan talked about that yesterday.'

d. *Jan heeft dat$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has that yesterday about talked
'Jan talked about that yesterday.'

e. Jan heeft daar$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has there yesterday about talked
'Jan talked about that yesterday.'

Postpositions are not subject to this restriction. The DP complement of a postposition can be moved freely, as can be seen in (49b).

(49) a. Jan klimt [$_{PP}$ de boom in].
Jan climbs the tree in
'Jan climbs the tree.'

b. [Welke boom]$_i$ klimt Jan [$_{PP}$ t_i in]?
Which tree climbs Jan in
'Which tree does Jan climb?'

The fact that postpositions are not subject to the restriction on stranding raises the question whether the cases of stranding we see in child Dutch could be cases of postposition stranding. Up till this point I have been assuming that the cases of stranding in child Dutch are cases of non-adult-like preposition stranding. The child has an non-adult-like grammar that does not (yet) contain the restriction on preposition stranding. However, since postposition stranding is not subject to this restriction, it could be that the stranding cases are cases of adult-like postposition stranding.

In order to answer this question, an analysis of the maternal input is needed. The child builds her grammar on the basis of the input she gets. Analysing the input should therefore tell us whether the child's grammar could possibly contain postpositions. There are two ways to distinguish postpositions from prepositions. First, postpositions differ from prepositions in their syntactic structure. Naturally, prepositions precede their complement (50a), whereas postpositions follow their complement (50b).

(50) a. [$_{PP}$ [$_{P'}$ [$_{P}$ op] [$_{DP}$ de tafel]]]
on the table

b. [$_{PP}$ [$_{P'}$ [$_{DP}$ de boom] [$_{P}$ in]]]
the tree in

This structural difference is clearly visible in the phonological string and corresponds to two different local binary frames. The preposition corresponds to the local binary frame of P+DP and the postposition corresponds to the local binary frame of DP+P. The second way to distinguish postpositions from prepositions is on the basis of interpretation. A preposition can carry both a locative and a directional interpretation, as in (51a). A postposition can only carry a directional interpretation, as in (51b).

(51) a. Jan loopt door het park.
Jan walks through the park

Locative: Jan walks a route inside the park.

Directional: Jan walks from point A outside of the park to point B outside of the park and this route takes him through the park.

b. Jan loopt het park door.
Jan walks the park through

*Locative: Jan walks a route inside the park.

Directional: Jan walks from point A outside of the park to point B outside of the park and this route takes him through the park.

The interpretative difference between postpositions and prepositions does not directly lead to a tangible acquisition cue. I would therefore like to argue that, at least in the early stages of acquisition, the language acquisition device is only sensitive to the difference in syntactic structure. A close examination of the syntactic environments that elements from the category P appear in renders the following result.

Table 6: P in different syntactic environments in the input

Local frame	**N**
[P DP]	191
[P V]	45
[pro P]	41
[DP P]	32
P utterance final	77
total	386

The first column gives the local binary frame the element from the category P appears in. There are five options: P is directly followed by a DP, P is directly followed by a verb, P is directly preceded by a pronoun, P is directly preceded by a DP, and P appears utterance-finally. Examples of each are given in (52).

(52)

a. [$_{P}$ op] [$_{DP}$ de kast]
on the cupboard

b. [$_{P}$ op][$_{V}$ eten] *particle verb*
up eat

Waar$_{i}$ wil ik [$_{P}$ op] t$_{i}$ [$_{V}$ zitten]? *P-stranding*
Where want I on sit
'What do I want to sit on?

c. [$_{PRONOUN}$ daar][$_{P}$ op]
there on

d. [$_{DP}$ de boom] [$_{P}$ in]
the tree in

e. De melk is [$_{P}$ op]. *P as predicate*
the milk is up
'There is no more milk'

Waar$_{i}$ zit jij [$_{P}$ op] t$_{i}$? *P-stranding*
Where sit you on
'What are you sitting on?'

The pattern that emerges from table 6 is quite clear. The frame P+DP occurs almost

half of the time. The alternative frame DP+P occurs significantly less frequently.[33] The child cannot use both frames, since using both frames will leave the child with no information regarding the position of the DP with respect to the P. She will therefore have to choose one and considering that the P+DP frame occurs significantly more frequently than the DP+P frame, she will opt for the P+DP frame. Since the P+DP frame corresponds to prepositions, the result is that the child's grammar only has prepositions. Postpositions correspond to the DP+P frame and because the child does not use this frame, postpositions do not yet exist in the child's grammar. The cases of stranding in child Dutch then are indeed cases of non-adult-like preposition stranding.

With the choice of the P+DP frame, the data in favour of the DP+P frame will be (temporarily) ignored. Data that falls in the 'P in utterance final position' group does not present the child with a local binary frame either, since the P in this group can be preceded by any category. However, it does provide the child with the information that P can occur in the comment position. That leaves the categories P+V and Pronoun+P. Both could provide the child with a local binary frame. I propose that both do, but that the Pronoun+P only forms a frame at a later stage. The Pronoun+P frame is different from the other frames in that in adult Dutch it is considered to form one word. The order Pronoun+P is created when the r-pronoun moves from the complement position in the PP to the specifier position in the PP.

(53) a. Ik heb daarop gewacht.
I have there-on waited
'I was waiting for that.'

b. [$_{PP}$ daar$_i$ [$_{P'}$ op t$_i$]]

The result is considered to form one word, as can be seen in (53a). Since Pronoun+P forms one word, I would like to argue that the child perceives it as one and is unaware of its internal structure in (53b). The Pronoun+P therefore initially does not provide the child with a local binary frame. This leaves the child with two frames: P+DP and P+V, as proposed in (44). Once these two frames are established, the Pronoun+P frame enables the child to introduce preposition stranding, as will be detailed in the next section.

6.3 Recovering from the overgeneralisation

Children clearly analyse the adult Prep+V in (46) as Prt+V, resulting in an overgeneralisation of preposition stranding. They do, however, at some point have to arrive at the adult interpretation of (46) and the question is what can provide them

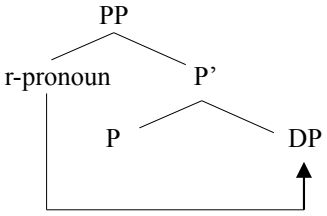
33 Even the assumption that pronouns belong to the category D and children are aware of this does not alter this observation. The P+DP frame occurs half of the time, whereas the DP+P and the Pronoun+P frames together occur in roughly 20% of all the utterances with a P.

with the necessary information. Since children use local frames in deciding which group a P element belongs to, the information needed has to be a local frame. I propose that this is where the Pronoun+P frame is playing a role. The Pronoun+P frame is in complementary distribution with the P+DP frame in adult Dutch. A preposition can either have a DP in its complement position or it can have an r-pronoun in its specifier position. There are doubling constructions of the kind in (54) that indicate that children at the start of the acquisition process do not analyse *hierop* 'here-on' and *daarin* 'there-in' as consisting of an r-pronoun and a preposition. Rather, they seem to treat them as a unit with a prepositional function.

(54) dat is een huis **waar** je **erin** kan wonen Abel, 3;03.08
that is a house where you there-in can live
'That is a house in which you can live.'

In (54) Abel uses both the r-pronoun *waar* 'where' and the combination of an r-pronoun and a preposition *erin* 'there-in'. This doubling suggests that children might not be analysing the *er* 'there' in *erin* 'there-in' as a separate item. At one point the child will realize that the Pronoun+P is in complementary distribution with the P+DP. Rather than having two sets of P elements in her lexicon (one set for those that are only preceded by an r-pronoun and one set for those that are only followed by a DP), the child tries to generalise over the two frames. Theoretically, there are two options. Either the child can start with a completely new frame and try to derive both the Pronoun+P frame and the P+DP frame from it. Or, alternatively, she can take one of the two frames as the starting point and try to derive the other frame from it. The second option clearly has the preference, since it does not involve adding frames that are not directly related to the input. Using one of the two frames as a starting point still leaves the child with two options. Either the Pronoun+P frame is the starting point or the P+DP frame is. With the Pronoun+P as base frame, the child has to posit a movement rule from the specifier position to the complement position, which obligatorily turns the r-pronoun into a DP.

(55)

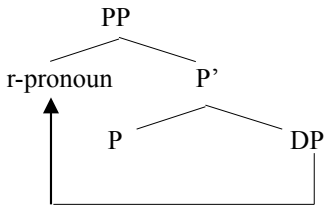


This has several undesired results, one of which is that it involves a case of lowering, which clearly violates c-command and arguably also minimality.[34] The

34 Minimality would be violated if the lowering is followed by extraction in the form of preposition stranding. The two movement paths would partly follow the same route, but in opposite direction, see (57).

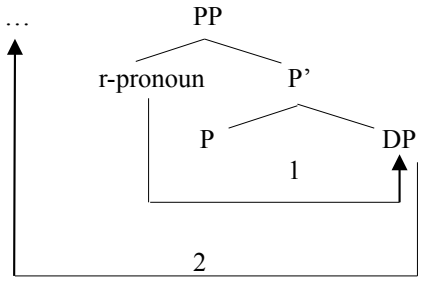
alternative route is more promising. With the P+DP as base frame, the child has to introduce a movement rule from the complement position to the specifier position, which obligatorily turns the DP into an r-pronoun.

(56)



Although it is not ideal to turn a DP into a pronoun, it is the preferred option. This option also readily allows the child's grammar to expand to preposition stranding. With the Pronoun+P as base frame, preposition stranding would involve first moving from the specifier position to the complement position and then from the complement position to a higher position in the structure. This movement is spelled out in (57) and is clearly undesirable from a minimalistic point of view.

(57)



The child will therefore opt for the P+DP frame as a base plus an additional movement rule to include the Pronoun+P frame. Once this is established, the child can start to provide a more complex structure for the preposition stranding cases. As a result, the constructions in (46), repeated here as (58), no longer fit the P+V frame.

(58) a. Hier wil ik op zitten.
here want I on sit
'I want to sit on this.'

b. Waar zal ik het in stoppen?
where shall I it in put
'What shall I put it in?'

The prepositions *op* 'on' and *in* 'in' are no longer directly adjacent to the verb structurally. Instead, they are separated from the verb by a trace of the moved r-

pronoun.

(59) a. $Hier_i$ wil ik [$_{PP}$ op t_i] zitten.
b. $Waar_i$ zal ik het [$_{PP}$ in t_i] stoppen?

The constructions in (59) now fit the extended P+DP frame and therefore, the P elements are re-analysed as prepositions. The reanalysis from the child Prt+V to the adult Prep+V is slow. For every combination of a P element and a verb stored in the lexicon, the child has to assess whether this combination can stay Prt+V or has to be re-analysed as Prep+V. It has been attested that up to the age of 5 the child's grammar allows for preposition stranding without the use of r-pronouns (Coopmans & Schippers 2008).

7. Conclusion

The presence of the overgeneralisation of preposition stranding can be used to argue that the acquisition of preposition stranding is related to the acquisition of particle verbs. It is the presence of particle verbs in the adult language that causes the wrong analysis of prepositions appearing adjacent to a verb as a particle. In a language without particle verbs, this confusion would never arise, since there would be no viable P+V frame in the input. The wrong analysis in turn leads to preposition stranding. This chapter, then, has provided an explanation for the typological observation that preposition stranding and particle verbs co-occur together. It is the presence of particle verbs that leads to the acquisition of preposition stranding.

On the basis of longitudinal data of four Dutch children it was shown that children have to acquire the distinction between particles and prepositions and that they make use of local, binary frames to do so. During this acquisition process, children are led to analyse prepositions as particles when they appear adjacent to the verb. It was argued that this inevitably results in an overgeneralisation of preposition stranding. This process clearly shows that children are not conservative in the forming of their grammars, but instead have generalizing minds and actively use the tools at their disposal to create their grammars. It was then shown that the retreat from the overgeneralisation was based on the presence of r-pronouns in the specifier position of the prepositional phrase. Although this retreat was argued to be slow, it is a clear example of how children can overcome the subset problem.

Chapter 4

Preposition stranding in adult Dutch

1. Introduction

In the previous chapter we saw that children overgeneralise preposition stranding, because they analyse a preposition which has been stranded adjacent to a verb as a particle. Children eventually retreat from this overgeneralisation and learn the proper r-pronoun restriction on preposition stranding. Recall that the standard analysis of preposition stranding in Dutch is that it is only possible with r-pronouns.

(1) Jan heeft daar$_i$/*dat$_i$/*taalkunde$_i$ gisteren [over t$_i$] gesproken.
Jan has there/that/linguistics yesterday about talked
'Jan talked about linguistics yesterday.'

Extraction of a regular pronoun (*dat* 'that' in 1) or of a full DP leads to ungrammaticality. This chapter discusses preposition stranding in adult Dutch. Observation of spontaneous speech shows that although preposition stranding in adult Dutch is generally restricted to r-pronouns, native speakers will occasionally strand a preposition with either a regular pronoun, as in (2a), or with a full DP, as in (2b).

(2) a. #Ik weet niet wie$_i$ ik [$_{PP}$ naar t$_i$] moet kijken
I know not who I to must look

tegenwoordig.
nowadays
'I don't know who to look at nowadays.'

b. #Mark$_i$ hebben we [$_{PP}$ voor t$_i$] gekozen.
Mark have we for voted
'Mark we have voted for.'

This observation raises several questions. First, it has to be determined whether the utterances in (2) represent a general acceptance of preposition stranding that violates the r-pronoun restriction. If it is generally accepted, it will then have to be determined how speakers of Dutch can violate the r-pronoun restriction and under which conditions. This chapter seeks to provide an answer to these questions. It will be shown that native speakers of Dutch do indeed sometimes allow preposition stranding without r-pronouns and that this type of stranding is facilitated by

discourse linking. It will be argued that adult speakers can violate the r-pronoun restriction on preposition stranding because of the stage in acquisition at which children overgeneralise preposition stranding. The existence of this stage in acquisition means that preposition stranding without r-pronouns was once part of the grammar and provides the adult speaker with a repair mechanism to fix the otherwise ungrammatical cases of preposition stranding that violate the r-pronoun restriction.

The structure of this chapter is as follows: section 2 briefly introduces preposition stranding without the use of r-pronouns. Section 3 then presents an informal version of the repair strategy. Alternative analyses to preposition stranding will be discussed in section 4. A first experiment will be presented and discussed in section 5. The results will lead to a discussion of resumptive pronouns, which will be laid out in section 6. Section 7 contains the discussion of a second experiment. Section 8 provides a general discussion and section 9 concludes the chapter.

2. Preposition stranding without r-pronouns

As has been said before, the standard theory on Dutch (van Riemsdijk 1978) states that a preposition can only be stranded with the use of an r-pronoun, as in (3e).

(3)

a. Jan heeft gister [$_{PP}$ over taalkunde] gesproken.
Jan has yesterday about linguistics talked
'Jan talked about linguistics yesterday.'

b. *Jan heeft taalkunde$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has linguistics yesterday about talked
'Linguistics, Jan talked about yesterday.'

c. Jan heeft gister [$_{PP}$ over dat] gesproken.
Jan has yesterday about that talked
'Jan talked about that yesterday'

d. *Jan heeft dat$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has that yesterday about talked
'That, Jan talked about yesterday.'

e. Jan heeft daar$_i$ gister [$_{PP}$ over t_i] gesproken.
Jan has there yesterday about talked
'That, Jan talked about yesterday.'

Preposition stranding with full DPs, as in (3b), or preposition stranding with a regular pronoun, as in (3d), is generally argued to be ungrammatical. However, cases of both can be found in spontaneous speech. Consider the following examples in (4).

(4) a. #Ik weet niet wie$_i$ ik [$_{PP}$ naar t$_i$] moet kijken
I know not who I to must look

tegenwoordig.
nowadays
'I don't know who to look at nowadays.'

b. #Mark$_i$ hebben we [$_{PP}$ voor t$_i$] gekozen.
Mark have we for voted
'Mark we have voted for.'

c. #… welke$_i$ moet nog [$_{PP}$ om t$_i$] geloot worden.
… which must still for drawn-lots become
'… which one, we still have to draw lots for.'

Each of the examples in (4) appears to involve a case of preposition stranding without the use of an r-pronoun. In (4a) it appears as if the wh-pronoun *wie* 'who' rather than the r-pronoun wh-variant *waar* 'where' has moved out of the PP. Similarly, in both (4b) and (4c) it appears as if a full DP has moved out of the PP. It will be argued in this chapter that the cases in (4) do actually involve preposition stranding without the use of an r-pronoun. However, if all of the constructions in (4) violate the r-pronoun restriction on preposition stranding, they should be ungrammatical. This raises the question of how they can occur in natural speech.

There is a striking resemblance between the sentences in (4) and the cases of free preposition stranding in acquisition discussed in the previous chapter. It was shown that children temporarily violate the r-pronoun restriction on preposition stranding, because they analyse certain prepositions as particles. The sentences in (4) indicate that adult speakers of Dutch can also violate the r-pronoun restriction. This opens up the possibility that the grammar that the child has at the stage at which she violates the r-pronoun restriction is somehow still accessible to the adult. However, this conclusion cannot be solely based on the utterances in (4). These are incidental cases and could very well be slips of the tongue. It therefore has to be established whether adult native speakers of Dutch do indeed allow preposition stranding without the use of r-pronouns. This will be done on the basis of a questionnaire, which will be discussed in section 5. With the help of the questionnaire I will try to answer the question whether the incidental cases of spontaneous speech in (4) represent a more commonly accepted pattern. But before I turn to the actual experiment, I will first present a theory on how adult speakers of Dutch can violate the r-pronoun restriction and explore alternative analyses to the apparent cases of preposition stranding without r-pronouns.

3. A repair strategy

Suppose that the results of the questionnaire show that native speakers of Dutch do indeed allow preposition stranding that violates the r-pronoun restriction. These findings would clearly need to be explained, considering that they are not predicted by the current theory on preposition stranding in Dutch. The question is what could be a possible explanation. At this point, it is important to note that although preposition stranding without the use of an r-pronoun is sometimes attested, it is not considered to be fully grammatical. Adult speakers of Dutch have a strong preference not to violate the r-pronoun restriction. However, when they do, the result tends to be a fully comprehensible sentence. I therefore would like to propose that we are dealing with a repair strategy. Consider the sentence in (5).

(5) #Wie$_i$ heb je altijd [$_{PP}$ van t_i] gehouden?
who have you always of loved
'Who have you always loved?'

The wh-element *wie* 'who' is not an r-pronoun, but seems to have moved out of the PP. Theoretically, there are now two options. The first option is that the derivation of the structure in (5) crashes because the r-pronoun restriction is violated. On this view, (5) is fully ungrammatical. This is unlikely to be correct, given the incidental cases of preposition stranding without r-pronouns in (4) and the fact that these sentences are still comprehensible. The second, alternative, option is that the derivation of the structure in (5) is somehow saved. On this view, the sentence in (5) is not fully ungrammatical, but arguably also not fully grammatical. This outcome matches the intuition that preposition stranding that violates the r-pronoun restriction is possible, but not fully grammatical. What would save the derivation in (5) is reparation of the violation of the r-pronoun restriction. Whatever the precise nature of this repair strategy, it ideally would be related to the stage in acquisition at which children freely strand prepositions without the use of r-pronouns. Recall that this free preposition stranding is the result of the child wrongly analysing a stranded preposition adjacent to a non-finite verb as a particle. A possible formalization of the repair strategy in adult Dutch, then, could be that there is some mechanism that re-analyses the preposition as being part of the verbal projection. Once this reanalysis has occurred, the complement of the preposition becomes freely available for movement, just as if the preposition had been analysed as a particle.

3.1 Acquisition influencing adult grammar or vice versa?

Before we can explore the potential ramifications of a repair strategy, one issue has to be addressed. The proposed repair strategy hinges on the assumption that adult Dutch is influenced by acquisition: adult speakers of Dutch can violate the r-pronoun restriction on preposition stranding, because there is a certain stage in

acquisition at which children do the same. It could, however, be argued that the relation between adult Dutch and child Dutch is the reverse. If adult speakers of Dutch violate the r-pronoun restriction, then surely this must have an effect on acquisition. Children hear the adult speakers violate the r-pronoun restriction and as a result, they are left with the impression that preposition stranding in Dutch is not restricted at all. As a consequence, children could go through a stage of overgeneralisation, exactly like we saw in the previous chapter. In order to settle this argument, I examined the parental input in CHILDES. In the first four files of Sarah (MacWhinney 2006, van Kampen 1997), the mother utters 60 instances of preposition stranding. Of these 60 instances, 17 involve movement of the r-pronoun across some distance, as in (6a), and 43 involve cases like (6b), where the r-pronoun moves to the immediate left of the preposition.

(6) a. Daar$_i$ kan je [$_{PP}$ op t_i] zitten.
there can you on sit
'You can sit on that.'

b. Wat wil je daar$_i$ [$_{PP}$ mee t_i]?
what want you there with
'What do you want with that?'

None of the 60 instances involve preposition stranding without an r-pronoun. Basing ourselves on this sample, we can conclude that preposition stranding without r-pronouns either does not occur in the parental input at all, or perhaps only occurs at a very small rate. The fact that cases of preposition stranding without r-pronouns are (nearly) absent from the input indicates that the stage of overgeneralisation in acquisition is not influenced by the adult grammar. As such, the relation between preposition stranding without r-pronouns in child and adult Dutch really is the one proposed in this chapter: because children go through a stage in acquisition at which they overgeneralise preposition stranding, adult speakers of Dutch can sometimes violate the r-pronoun restriction on preposition stranding.

3.2 Potential consequences

If the acceptability of preposition stranding without r-pronouns is indeed due to a repair strategy that re-analyses the preposition as part of the verbal projection, then the question arises whether this has any consequences elsewhere in the grammar. Here I will briefly introduce two potential consequences, both of which will be further discussed in section 5.

3.2.1 Prepositions in verbal cluster

In Dutch embedded clauses all the verbs cluster at the end.[35]

(7) a. … dat Jan graag [$_V$ wil fietsen].
… that Jan gladly want cycle
'… that Jan really wants to cycle.'

b. … dat Jan graag [$_V$ had willen fietsen].
… that Jan gladly had want cycle
'… that Jan really would want to cycle.'

c. … dat Jan graag [$_V$ had willen kunnen fietsen].
… that Jan gladly had want can cycle
'… that Jan really would want to be able to cycle.'

These verbal clusters do not only contain verbs, but can also contain the particle that is part of a particle verb (cf. Evers 2003).

(8) a. … dat Jan de boterham [$_V$ *op* zou moeten eten].
… that Jan the sandwich up shall must eat

b. … dat Jan de boterham [$_V$ zou moeten *op*eten].
… that Jan the sandwich shall must up-eat

c. … dat Jan de boterham [$_V$ zou *op* moeten eten].
… that Jan the sandwich shall up must eat
'… that Jan should eat up the sandwich.'

In contrast to a particle, the preposition does not appear in the verbal cluster in Dutch (9b), although it can appear in the verbal cluster in other Germanic languages, such as Flemish (9a) (Vanacker 1970).

(9) a. We zullen der [$_V$ moeten *voor* zorgen]. Flemish
We shall there must for care
'We will have to take care of that.'

b. *Die man had daar [$_V$ moeten *aan* denken]. Dutch
that man had there must to think
'That man should have thought of that.'

If the repair strategy re-analyses the preposition as part of the verbal projection, then

35 The bracktes and subscipted labels are purely for indicating the verbal cluster and should not be interpreted as a claim about the precise syntactic structure of the verbal cluster.

one could expect the preposition to appear in the verbal cluster. An incidental case from spontaneous speech shows this might indeed be true.

(10) #… en daar zal ook [$_V$ geluisterd *naar* moeten worden].
… and there shall also listened to must become
'… and that should be listened to as well.'

3.2.2 Pseudo-passives

In a language like English it is possible to form pseudo-passives of the type in (11b).

(11) a. John slept [$_{PP}$ in this bed].
b. [This bed]$_i$ was slept [$_{PP}$ in t_i].

The standard analysis for (11b) is that the passive morpheme on the verb absorbs the case of the preposition (Law 1998). As a result, the complement of the preposition does not receive case and has to move to the subject position. Pseudo-passives have been argued not to exist in Dutch (Law 1998). However, if the repair strategy allows the preposition to be part of the verbal projection, then the formation of a pseudo-passive might be possible. With the preposition as part of the verbal projection, the complement of the preposition could become the complement of the verb-preposition compound. And as such, the verb-preposition compound could form a passive and the complement would be free to move to the subject position. Again, some incidental cases indicate that Dutch might indeed allow pseudo-passives.[36]

(12) a. #[Alleen serieuze biedingen]$_i$ worden [$_{PP}$ op t_i] in gegaan.
only serious bids become up in gone
'Only serious bids will be responded to.'

b. #[Alleen bovengenoemde regels]$_i$ werden [$_{PP}$ naar t_i]
only above-mentioned rules became to

gekeken.
looked
'Only the above-mentioned rules were looked at.'

4. Alternative analyses to preposition stranding

So far I have been assuming that the cases of stranding without r-pronouns are cases of preposition stranding. However, there might be alternative analyses. It could be that instead of looking at preposition stranding, we are rather looking at postposition

36 Examples are due to van Kampen (p.c.).

stranding. Or it could be that we are not looking at overt stranding at all, but at an instance of empty operator movement as can be found in left dislocation. I will discuss these alternative analyses in this section.

4.1 Postposition stranding

Recall that next to prepositions, Dutch also has postpositions (see chapter 3, section 6.2). And recall further that the r-pronoun restriction does not hold for postposition stranding. Extraction of a full DP, as in (13b), is fully grammatical.

(13) a. Jan klimt [$_{PP}$ de boom in].
Jan climbs the tree in
'Jan climbs the tree.'

b. [Welke boom]$_i$ klimt Jan [$_{PP}$ t_i in]?
Which tree climbs Jan in
'Which tree does Jan climb?'

As discussed for child Dutch in the previous chapter, the cases of stranding in adult Dutch could be cases of postposition stranding. Many prepositions and postpositions in Dutch are homophonous. For example, in in (13) is a postposition, whereas in (14) it is a preposition.

(14) Het boek is [$_{PP}$ in de slaapkamer].
the book is in the bedroom
'The book is in the bedroom.'

Hence, it can be hard to determine whether the stranded adposition is a preposition or a postposition. There are, however, some prepositions that do not have a homophonous postposition. If a case of adposition stranding without an r-pronoun occurs with such a preposition, it would be clear evidence that we are indeed dealing with preposition stranding. The incidental case of (4a), repeated here, is such a case.

(15) #Ik weet niet wie$_i$ ik [$_{PP}$ naar t_i] moet kijken tegenwoordig.
I know not who I to must look nowadays
'I don't know who to look at nowadays.'

The adposition *naar* 'to' only occurs as a preposition. So the stranding in (15) can only be preposition stranding. Since the adposition stranding in (15) is a case of preposition stranding without the use of an r-pronoun, the strongest hypothesis would be that all the cases of stranding without the use of r-pronouns are cases of preposition stranding. I will pursue this hypothesis throughout the remainder of this chapter.

4.2 Silent r-pronouns

Next to postposition stranding, another alternative analysis is possible: the DP has not moved out of the PP at all. Consider the fully grammatical sentence in (16).

(16) Bananen houd ik van.
bananas love I of
'Bananas I love.'

In (16) it appears as if the bare plural *bananen* 'bananas' has been moved out of the PP headed by *van* 'of'. This would be a clear violation of the restriction on preposition stranding, since *bananen* 'bananas' is not an r-pronoun. Now consider the sentence in (17).

(17) Bananen, daar houd ik van.
bananas, there love I of
'Bananas I love.'

The sentence in (17) has the same interpretation as the sentence in (16), but can be argued to involve regular preposition stranding. The sentence in (17) is an instance of left dislocation (Koster 1978, van Riemsdijk & Zwarts 1997, Boeckx & Grohmann 2005). The bare plural *bananen* 'bananas' is base-generated in the left periphery and then co-indexed with the r-pronoun *daar* 'there'. It is thus the r-pronoun *daar* 'there' that has stranded the preposition *van* 'of', exactly according to the r-pronoun restriction on preposition stranding.

(18) bananen_i daar_i houd ik [$_{PP}$ van _]

Because of (17) it has been argued (Koster 1978, Fleischer 2002) that (16) actually contains a silent r-pronoun, as in (19).

(19) Bananen, daar houd ik van.
bananas, there love I of
'Bananas I love.'

The sentence in (16) is therefore an instance of left dislocation, with bananen co-indexed with a silent r-pronoun, and as such it does not violate the r-pronoun restriction on preposition stranding. On the surface structure, left dislocation appears identical to topicalisation. However, there is a difference in the nature of the complement of the preposition. In topicalisation constructions, the DP originates in the complement position of P and then moves to the topic position, as in (20a). In left dislocation, the complement position of P is filled with an r-pronoun. This r-pronoun moves to the topic position and is coindexed there with the DP in the so-

called left dislocation position, as in (20b).

(20) a. $[_{\text{TOPIC}}\ \text{DP}_i\ [\ldots\ [_{\text{PP}}\ \text{P}\ t_i]]]$
b. $[\text{DP}_i\ [_{\text{TOPIC}}\ \text{r-pro}_i\ [\ldots\ [_{\text{PP}}\ \text{P}\ t_{\text{r-pro}}]]]]$

The topicalisation in (20a) violates the r-pronoun restriction on preposition stranding, the left dislocation in (20b) does not.

If the sentence in (16) contains a silent r-pronoun, the question arises whether other cases of apparent preposition stranding without r-pronouns can also contain a silent r-pronoun. This strategy seems very feasible for the incidental cases in (4b) and (4c), repeated here in (21).

(21) a. #Mark hebben we voor gekozen.
Mark have we for voted
'Mark we have voted for.'

b. #… welke moet nog om geloot worden.
… which must still for drawn-lots become
'… which one, we still have to draw lots for.'

Both (21a) and (21b) would be compatible with an r-pronoun.

(22) a. Mark, daar hebben we voor gekozen.
Mark, there have we for voted
'Mark we have voted for.'

b. … welke, daar moet nog om geloot worden.
… which, there must still for draw-lots become
'… which one, we still have to draw lots for.'

Thus both (21a) and (21b) could very well involve a silent r-pronoun. There are, however, limitations to this analysis. If the prediction that Dutch allows pseudo-passives is borne out, then this cannot be explained by the use of a silent r-pronoun as in left dislocation. To see why, consider the pseudo-passive in (12a) again, repeated here.

(23) #Alleen serieuze biedingen worden op in gegaan.
only serious bids become up in gone
'Only serious bids will be responded to.'

In (23), both the subject *alleen serieuze biedingen* 'only serious bids' and the finite verb *worden* 'become' are plural. Now suppose that the pseudo-passive in (23) contains a silent r-pronoun. Thus it is not the DP *alleen serieuze biedingen* 'only serious bids' that has moved out of the PP, as exemplified in (12a), but a silent r-

pronoun instead. If that were the case, then one would expect agreement between the silent r-pronoun in subject position and the finite verb. This agreement is not found.

(24) a. Alleen serieuze biedingen, daar wordt op in gegaan.
only serious bids there becomes up in gone
'Only serious bids will be responded to.'

b. *Alleen serieuze biedingen, daar worden op in gegaan.
only serious bids there become up in gone
'Only serious bids will be responded to.'

Unlike the DP *alleen serieuze biedingen* 'only serious bids', which is plural, the r-pronoun is singular. The fact that the finite verb agrees with the plural DP rather than with the singular r-pronoun must mean that the DP is the real subject and that there is no silent r-pronoun in (23).

The silent r-pronoun strategy is not available in embedded clauses either. In Dutch, left dislocation is restricted to the main clause (Koster 1978, van Riemsdijk 1997).

(25) *Jan weet [$_{CP}$ bananen daar ik van houd].
Jan knows bananas there I of love
'Jan knows that I love bananas.'

Therefore, if stranding without the use of r-pronouns can be found in embedded clauses, the silent r-pronoun strategy used in left dislocation could not be used to explain these cases. The example in (4a), repeated in (26), is such a case. The wh-element *wie* 'who' has moved to the specifier position of the embedded CP.

(26) #Ik weet niet [$_{CP}$ wie$_i$ [$_{TP}$ ik [$_{PP}$ naar t$_i$] moet kijken tegenwoordig]].
I know not who I to must look nowaways
'I don't know who to look at nowadays.'

Of course, the construction in (26) involves wh-movement rather than topicalisation. Hence (26) cannot be a case of left dislocation. But perhaps the silent r-pronoun movement used in left dislocation can also be used in wh-movement constructions. A sentence such as (27) could arguably involve an r-pronoun.

(27) Welke man, waar heb je op gestemd?
which man, where have you on voted
'Which man, who did you vote for?'

(17) Bananen, daar houd ik van.
bananas, there love I of
'Bananas I love.'

Here, as with the cases of left dislocation, the DP is base-generated in the left periphery and the r-pronoun is moved out of the PP. There is, however, at least one difference between use of a silent r-pronoun in the left dislocation case in (17), repeated here, and in the wh-construction in (27). The sentence in (27) is odd in that the r-pronoun, if present at all, should always be silent. This contrasts clearly with (17), where the r-pronoun can be phonologically realised. The difference is unexpected if the wh-construction in (27) and the left dislocation construction in (17) involve the same silent r-pronoun strategy.

The conclusion must be then that the existence of pseudo-passives and of preposition stranding within an embedded clause reveals that not all cases of preposition stranding without r-pronouns can be due to a silent r-pronoun strategy like the one used in left dislocation. The alternative proposal of a repair mechanism can explain both the existence of pseudo-passives and of preposition stranding within an embedded clause. As such, the repair mechanism is the most likely explanation for the use of preposition stranding without r-pronouns.

5. Experiment 1

5.1 Test set-up

The discussion in the previous sections raises the following questions:

(28)
i. Do speakers of Dutch allow preposition stranding without the use of r-pronouns?
ii. If they do, does it occur within an embedded clause?
iii. Do speakers of Dutch allow stranded prepositions to occur in the verbal cluster?
iv. Do speakers of Dutch allow pseudo-passives?

These questions will be answered by an experimental study of adult native speakers of Dutch. This study involved a questionnaire, in which subjects were asked to rank a sentence on a 7-point scale.

Some of the questions in (28) are very general and need further specification. Let us first take a closer look at the question in (28i).

(28)
i. Do speakers of Dutch allow preposition stranding without the use of r-pronouns?

Preposition stranding can be the result of either wh-movement (29a), or of topicalisation (29b).

(29) a. Waar$_i$ heb je [$_{PP}$ van t_i] gehouden?
where have you of loved
'What did you love?'

b. Daar$_i$ heb je [$_{PP}$ van t_i] gehouden.
there have you of loved
'That, you did love.'

It could be the case that speakers of Dutch allow preposition stranding without the use of r-pronouns in one construction, but not in the other. This might particularly be expected if a silent r-pronoun strategy as in left dislocation plays a role. Recall that in left dislocation a silent r-pronoun moves out of the PP to the topic position and is coindexed with the left dislocated DP. Left dislocation was argued to be able to provide an explanation for preposition stranding without r-pronouns under topicalisation, as in (17) above and (30) below.[37] However, it was also noted that although preposition stranding under wh-movement without r-pronouns, as in (27), could also involve a silent r-pronoun strategy, the strategy would have to be different from the one used in left dislocation constructions (due to inability to phonologically realise the r-pronoun in wh-constructions). As such, there could be a difference in acceptance between preposition stranding under topicalisation and preposition stranding under wh-movement. Therefore both constructions were included in the questionnaire. There is another distinction that could be relevant to the question in (28i) and that is the distinction between full DPs and regular pronouns.

(30) a. #[Deze bloemen]$_i$ heb je [$_{PP}$ van t_i] gehouden.
these flowers have you of loved
'You loved these flowers.'

b. #Dat$_i$ heb je [$_{PP}$ van t_i] gehouden.
that have you of loved
'You loved that.'

A preposition could theoretically be stranded by either a full DP, as in (30a), or by a regular pronoun, as in (30b). Both instances of preposition stranding violate the r-pronoun restriction on preposition stranding. However, just as with the distinction between wh-movement and topicalisation, it could be that native speakers of Dutch do allow preposition stranding with full DPs, but not with regular pronouns, or vice versa. Therefore, both constructions were included in the questionnaire.

Pronouns also introduce yet another distinction: animate, or more precisely, [+human] versus inanimate. Pronouns in Dutch can either be inanimate, as the

37 In the remainder of this chapter I will refer to constructions as in (30a), where the DP appears at the start of the sentence and the preposition lacks a phonologically realised complement, as topicalisation. Whether these constructions are forms of topicalisation in the strict sense of the term, i.e. the DP is moved out of the PP to the topic position, or whether they involve left dislocation, i.e. a silent r-pronoun is moved out of the PP to the topic position, has to be determined by the experiment.

demonstrative *dat* 'that' in (30b), or [+human], as the wh *wie* 'who' in (26). R-pronouns are all underspecified for animacy (see chapter 5, section 6.2 for a discussion) and as such lack the ability to refer specifically to a [+human] referent. The absence of a specific animate r-pronoun could lead to a difference in grammaticality judgement of preposition stranding with regular pronouns. Theoretically, it could be that the inanimate regular pronouns are in competition with the r-pronouns, since both can refer to inanimate objects. On the other hand, the [+human] regular pronouns are not in competition with the r-pronouns, since there are no animate r-pronouns to compete with. As such, it could be that native speakers of Dutch do allow the [+human] regular pronouns to strand a preposition, but do not allow the inanimate regular pronouns to strand a preposition. Therefore, both animate and inanimate regular pronouns were included in the questionnaire as well.

When all these distinctions are combined, one will get the following ordering needed to answer the question in (28i).

(31) preposition stranding with:

- Full DP
  - under wh-movement
  - under topicalization
- Pronoun
  - under wh-movement
    - as an animate pronoun
    - as an inanimate pronoun
  - under topicalization
    - as an animate pronoun
    - as an inanimate pronoun

All of these distinctions were included in the questionnaire. Let us now turn to the question in (28ii).

(28) ii. If speakers of Dutch do allow preposition stranding without the use of r-pronouns, does it occur within an embedded clause?

The question in (28ii) requires preposition stranding to be tested in both main clauses and embedded clauses. Under wh-movement or topicalisation, the two types of movement investigated in the questionnaire, preposition stranding in embedded clauses comes in two versions. The XP that moves out of the PP can either move to the intermediate Spec-CP, as in (32a), or to the Spec-CP of the main clause, as in (32b).

(32) a. $[_{CP} \ldots [_{CP} XP_i [_{C'} \ldots [_{PP} P\ t_i] \ldots]]$
b. $[_{CP} XP_i [_{C'} \ldots [_{CP} \ldots [_{PP} P\ t_i] \ldots]]$

The XP movement in (32b) can be the result of either wh-movement or topicalisation. The XP movement in (32a), on the other hand, can only be the result of wh-movement (Dutch does not allow topicalisation in embedded clauses). Thus, to keep the constructions in (32) as identical as possible, only wh-movement was used. Any difference in judgement between (32a) and (32b) should be due to whether the XP was moved to the Spec-CP in the main clause or to the Spec-CP of the embedded clause.

The question in (28iii), whether the stranded preposition can occur in the verbal cluster, also requires a further subdivision. Since a verbal cluster can consist of several verbs, the stranded preposition can potentially occur in different places. This could affect the judgement. With three verbal expressions in the cluster, the potential placement of the stranded preposition is as follows:

(33) a. P V V V
b. V P V V
c. V V P V

The order in (33a) is the standard word order after preposition stranding, as in (34).

(34) Waar$_i$ denkt Jan dat Piet haar [$_{PP}$ in t$_i$] [$_V$ heeft zien klimmen]?
where thinks Jan that Piet her in has see climb
'What does Jan think that Piet saw her climb?'

The orders in (33b) and (33c) involve incorporation of the stranded preposition into the verbal cluster. Both the order in (33b) and the order in (33c) were included in the questionnaire.

Next to the proper subdivisions of the questions in (28), there are two more considerations. First, it could be the case that preposition stranding without the use of r-pronouns is restricted to a small group of prepositions. Preposition stranding that violates the r-pronoun restriction could be a lexically restricted phenomenon, in that only a small group of prepositions allow it. In order to determine whether this is the case, or whether preposition stranding without r-pronouns applies to all prepositions across the board, a range of prepositions was included in the questionnaire.

The second consideration concerns a silent r-pronoun strategy as used in left dislocation. Recall that this strategy cannot explain pseudo-passives or preposition stranding within embedded clauses, but does offer a potential explanation for other cases of preposition stranding. Since we do not yet know whether speakers of Dutch allow pseudo-passives or preposition stranding within embedded clauses, the silent r-pronoun strategy needs to be tested for in the questionnaire. Note that on the surface, one cannot tell the difference between topicalisation or left dislocation with a silent r-pronoun. Therefore, two sets of test sentences were included that should help decide whether the cases of preposition stranding are cases of topicalisation or of left dislocation. The first type of

construction contains sentences that are argued to be left dislocation structures in the literature, such as (35b). If a silent r-pronoun strategy as used in left dislocation does indeed underlie the cases of preposition stranding without the use of r-pronouns, then one would expect a causal link between left dislocation and preposition stranding without r-pronouns.[38] Subjects who approve of preposition stranding without r-pronouns, as in (35a), should also approve of left dislocation structures, as in (35b), but not necessarily the other way around. People who approve of left dislocation do not have to approve of preposition stranding without r-pronouns.

(35) a. #[Die jongen]$_i$ heb ik gisteren [$_{PP}$ aan $_i$] gedacht.
that boy have I yesterday to thought
'I was thinking of that boy yesterday.'

b. Bananen$_i$ ~~daar~~$_i$ houd ik [$_{PP}$ van t_{daar}].
bananas love I of
'Bananas I love.'

Cases of left dislocation with the r-pronoun spelled out (as in 17) were included in the set of control items.

The second type of construction contains preposition stranding with quantifiers. Quantifiers cannot undergo left dislocation (van Craenenbroeck 2010).

(36) a. [Die jongens]$_i$, die$_i$ ken ik niet t_{die}.
those boys those know I not
'Those boys, I don't know.'

b. *Iedereen$_i$, die$_i$ ken ik niet t_{die}.
everybody, those know I not
'Everybody, I don't know.'

c. #Iedereen ken ik niet.
everybody know I not
'Everybody, I don't know.'

Thus if our subjects were to accept a preposition that appeared to have been stranded by a quantifier, as in (36c), then this case of (apparent) preposition stranding would present an argument against a silent r-pronoun strategy as used in left dislocation.

All of the considerations and constructions discussed so far led to a total of

38 Note that the only difference between (35a) and (35b) is that (35b) is known to be accepted by speakers, whereas (35a) is not. Since (35a) appears to be a case of topicalisation, it could very well be a case of left dislocation, just as has been argued for (35b). The attempt of the questionnaire is to determine whether known left dislocation cases are considered to be just as acceptable as unknown cases of preposition stranding with a full DP. If they are acceptable, then the unknown cases are most likely cases of left dislocation.

36 test sentences, distributed over the following conditions.[39]

(37) *topicalisation (i) vs. wh-movement (ii)*

(i) Dat goede doel heeft zij het geld aan gegeven.
that good cause has she the money to given
'That is the good cause she gave the money to.'

(ii) Welk resultaat had zij dan op gerekend?
which result has she then on counted
'Which result did she count on?'

full DP (iii) vs. pronoun (iv)

(iii) Dat goede doel heeft zij het geld aan gegeven.
that good cause has she the money to given
'That is the good cause she gave the money to.'

(iv) Wie zal Marie voor kiezen?
who shall Marie for choose
'Who shall Marie choose?'

animate (v) vs. inanimate pronouns (vi)

(v) Wie zal Marie voor kiezen?
who shall Marie for choose
'Who shall Marie choose?'

(vi) Dat had zij geen rekening mee gehouden.
That had she no account with held
'That, she had no taken into consideration.'

main clause (vii) vs. embedded clause (viii)

(iv) Wie zal Marie voor kiezen?
who shall Marie for choose
'Who shall Marie choose?'

(viii) Wie zegt Jan dat Marie voor zal kiezen?
who says Jan that Marie for will choose?
'Who does Jan say that Marie will choose?'

39 The full set of sentences can be found in appendix D.

verbal cluster (ix)

(ix) Welke boom zegt Jan dat hij Marie heeft in zien
which tree says Jan that he Marie has in see

klimmen?
climb
'Which tree does Jan say he has seen saw Marie climb?'

pseudo-passives (x)

(x) Alleen serieuze biedingen worden op in gegaan.
only serious bids become up in gone
'Only serious bids will be responded to.'

stranding with quantifiers (xi)

(xi) Iedereen hebben wij goed naar geluisterd.
everyone have we good to listened
'Everyone, we have listened to well.'

left dislocation (xii)

(xii) Aardbeien houd ik van.
strawberries love I of
'Strawberries I love.'

To balance the questionnaire, filler and control items were added. This led to a long list of test items, which I considered to be too long to present to a test subject. I therefore decided to split the list of test sentences in half, resulting in 18 test sentences per list (the two lists can be found in appendix D). The test sentences were first grouped in the categories represented in (37) and then divided in such a way that each category contained at least two sentences in each list. This way, the test subject was confronted with all the possible cases of preposition stranding in one test and at the same time the distribution across the two lists allowed for an exhaustive list of cases of preposition stranding. Both lists contained the same six control items and the same six filler items. The control items represented fully grammatical versions (as determined by grammatical theory) of preposition stranding under wh-movement and under topicalisation and fully grammatical versions of left dislocation (i.e. left dislocation structures including the r-pronoun as in 17). The filler items represented fully ungrammatical versions of wh-movement and of topicalisation (again as determined by grammatical theory). The function of the control and filler items was twofold. On the one hand, it provided a control to check whether subjects were answering as expected. On the other hand, since there

were six fully grammatical control items and six fully ungrammatical filler items, it also provided a control for a yes- or no-bias.

With 18 test sentences, six control items and six filler items, each list contained 30 sentences. In these lists, two more aspects were controlled for. First, in order to exclude order effects, each list was semi-randomized in two different, controlled orders. And secondly, test sentences that contained a (interrogative) pronoun (as in 'Who is John waiting for') were preceded by a small context to introduce a referent for the pronoun, as in (38).

(38) Jan wijst naar het klimrek aan de overkant van de straat.
'Jan points to the climbing frame across the street.'

Daar zegt Jan dat hij Marie heeft zien in klimmen.
there says Jan that he Marie has seen in climb

Each questionnaire started with a simple instruction, which asked people to rank the sentences on a scale of 1 to 7. People were also encouraged to speak the test sentences out loud, to help them judge the sentence as spoken language, rather than as written language. An example such as in (38) was given to teach people they just had to rate the bold-faced test sentence and not the entire text.

5.2 Results

The questionnaire was presented to 65 adult native speakers of Dutch, of whom 56 were university students. Out of the 65 subjects, 33 filled out the first list of 18 test sentences and 32 filled out the second. I will refer to the two lists with List1 for the first list and List2 for the second list of test sentences. For each test item three averages (the mean, median and mode) were calculated. The results for the control items and the filler items are presented in tables 1 and 2.

Table 1A: the averages for the six control sentences of List1

	C1	**C2**	**C3**	**C4**	**C5**	**C6**
Mean	6.8	6.8	6.2	6.4	6.7	6.5
Median	7	7	7	7	7	7
Mode	7	7	7	7	7	7

Table 1B: the averages for the six control sentences of List2

	C1	**C2**	**C3**	**C4**	**C5**	**C6**
Mean	6.9	6.5	6.4	6.3	6.5	6.2
Median	7	7	7	7	7	7
Mode	7	7	7	7	7	7

Table 2A: the averages for the six filler sentences of List1

	F1	**F2**	**F3**	**F4**	**F5**	**F6**
Mean	1.1	1.4	1.1	1.3	1.5	1.8
Median	1	1	1	1	1	1
Mode	1	1	1	1	1	1

Table 2B: the averages for the six filler sentences of List2

	F1	**F2**	**F3**	**F4**	**F5**	**F6**
Mean	1.3	1.3	1.1	1.3	1.3	1.8
Median	1	1	1	1	1	1
Mode	1	1	1	1	1	1

Recall that the subjects were asked to rank the sentences on a 7-point scale, where 1 represents fully unacceptable and 7 represents fully acceptable. Since subjects may have a central tendency bias (i.e. shy away from scoring something on the extremes of the scale), I consider a score of either 6 or 7 to represent fully acceptable and a score of either 1 or 2 to represent fully unacceptable. As can be seen in tables 1 and 2, the control and filler items score as expected. The control items score between 6 and 7, which means that they are considered to be fully acceptable. The filler items score between 1 and 2, which means that they are considered to be fully unacceptable. Since the control items were intended to be fully acceptable and the filler items were intended to be fully unacceptable, these results are exactly as expected. The results in the tables 1 and 2 also show that there is hardly any variety among the subjects on the acceptability judgement. The three averages, the mean, median and mode, all have an almost identical outcome. This identity in outcome can only be the result of uniformity in judgement amongst the subjects.

The control and filler items were included to test the validity of the questionnaire. With the very clear results in tables 1 and 2, the conclusion has to be that the questionnaire is indeed validated. We can now turn to the results of the test items, which are shown in tables 3 to 6.

Tables 3A and 3B present the results of the difference between preposition stranding with full DPs, as in (39a), and pronouns, as in (39b), for both List1 and List2.

(39) a. Dat goede doel heeft zij het geld aan gegeven.
that good cause has she the money to given
'That is the good cause she gave the money to.'

b. Wie zal Marie voor kiezen?
who shall Marie for choose
'Who shall Marie choose?'

Table 3A: the averages for preposition stranding in the main clause of List1

	DP[40]		**Pronoun**	
	T1	**T2**	**T3**	**T4**
Mean	3.5	2.8	2.1	1.9
Median	3	2	1	1
Mode	2	1	1	1

Table 3B: the averages for preposition stranding in the main clause of List2

	DP		**Pronoun**	
	T1	**T2**	**T3**	**T4**
Mean	3.4	3.9	2.2	2.5
Median	3	4	2	2
Mode	2	4 and 5	1	1 and 2

Tables 4A and 4B present the results of the difference between preposition stranding within the main clause, as in (40a), and across a clause boundary, as in (40b), for

40 A t-test shows that the difference between T1 and T2 is significant (p=0.029, t=2.281). I will come back to this in section 5.3.3, where I will discuss the difference between wh-movement (T1) and topicalisation (T2).

both List1 and List2.

(40) a. [$_{CP}$ Wie zal Marie voor kiezen]?
who shall Marie for choose
'Who shall Marie choose?'

b. [$_{CP}$ Wie zegt Jan [dat Marie voor zal kiezen]]?
who says Jan that Marie for will choose?
'Who does Jan say that Marie will choose?'

Table 4A: the averages for preposition stranding in embedded clauses of List1

	XP in main clause		**XP in embedded clause**[41]	
	T5	**T6**	**T7**	**T8**
Mean	3.2	2.8	2.9	2.1
Median	3	2.5	2	2
Mode	3	1	2	1

Table 4B: the averages for preposition stranding in embedded clauses of List2

	XP in main clause		**XP in embedded clause**	
	T5	**T6**	**T7**	**T8**
Mean	3.8	3.4	2.7	2.5
Median	3	3.5	2.5	2
Mode	3	1	3	1

Tables 5A and 5B present the results of a stranded preposition in the verbal cluster, as in (41), for both List1 and List2.

(41) Welke boom zegt Jan dat hij Marie [$_{V}$ heeft in zien klimmen]?
which tree says Jan that he Marie has in see climb
'Which tree does Jan say he has seen saw Marie climb?'

41 A t-test shows that the difference between T7 and T8 is significant (p=0.01, t=2.742). This means that people considered preposition stranding with a full DP within an embedded clause (T7) significantly more acceptable than preposition stranding with a regular pronoun within an embedded clause (T8). This result is in line with the results for preposition stranding within main clauses, where stranding with a full DP is also scored more acceptable.

Table 5A: the averages for a stranded preposition in the verbal cluster of List1

	T9	**T10**	**T11**	**T12**
Mean	2.9	2	2.6	1.9
Median	2	2	2.5	2
Mode	2	1	1	1

Table 5B: the averages for a stranded preposition in the verbal cluster of List2

	T9	**T10**	**T11**	**T12**
Mean	2.8	2.9	2.8	2.4
Median	2	2	2	2
Mode	1	1	1	1

And finally, tables 6A and 6B present the results of pseudo-passives, as in (42a), of preposition stranding with a quantifier[42], as in (42b), and for left dislocation, as in (42c), for both List1 and List2.

(42) a. Alleen serieuze biedingen worden op in gegaan.
only serious bids become up in gone
'Only serious bids will be responded to.'

b. Iedereen hebben wij goed naar geluisterd.
everyone have we good to listened
'Everyone, we have listened to well.'

c. Aardbeien houd ik van.
strawberries love I of
'Strawberries I love.'

42 Results of a t-test shows that there is no significant difference between the two lists for the quantifier *alles* 'everything' (T15 in List1 and T16 in List2, p=0.107, t=-1.659), but there is a significant difference between the two lists for the quantifier *iedereen* 'everyone' (T16 in List1 and T15 in List 2, p=0.02, t=-3.464). However, since T15 in List 2 still scores close to fully unacceptable, I will consider the significant difference irrelevant.

Table 6A: the averages for pseudo-passives, for preposition stranding with quantifiers and for left dislocation of List1

	Pseudo-passive		**Quantifier**		**Left dislocation**	
	T13	**T14**	**T15**	**T16**	**T17**	**T18**
Mean	2.9	3.1	1.7	1.1	4.1	3.9
Median	2	3	1	1	3.5	3.5
Mode	2	3 and 1	1	1	5	3

Table 6B: the averages for pseudo-passives, for preposition stranding with quantifiers and for left dislocation of List2

	Pseudo-passive		**Quantifier**		**Left dislocation**	
	T13	**T14**	**T15**	**T16**	**T17**	**T18**
Mean	2.7	2.7	2.2	2.4	3.3	2.4
Median	2	2	2	2	2.5	2
Mode	2	1	1	2	2	1

As can be seen, the results for the test sentences are less uniform than the results for the control and filler items. At first glance, the test sentences seem to fall into two groups. One construction is considered to be (fully) unacceptable: preposition stranding with quantifiers (cf. tables 6). All other constructions, preposition stranding with pronouns, preposition stranding with DPs, pseudo-passives, left dislocation, and the occurrence of the stranded preposition within the verbal cluster were rated as neither fully unacceptable nor fully acceptable.

Even though almost all constructions received scores within the (marginally) acceptable range, there appear to be some differences among them. For example, preposition stranding with full DPs is judged more acceptable than preposition stranding with pronouns. Another notable difference is the difference between movement within an embedded clause (see 44 below) and movement across a clause boundary, (as in 43). This difference is particularly visible in List2, which shows that movement across a clause boundary (T5 and T6) is considered to be the more acceptable construction. I will come back to this effect and to the (potential) role played by distance in section 5.3.

(43) #Wie$_i$ zegt Claartje [$_{CP}$ dat Piet [$_{PP}$ naar t_i] heeft gekeken]?
who says Claartje that Piet to has looked
'Who does Claartje say that Piet has looked at?'

None of the test items were considered to be fully acceptable by the entire group of test subjects. Most of these results were as expected. The finding that most constructions were scored as neither fully unacceptable nor fully acceptable supports the suggestion that a repair mechanism is involved. A repair mechanism should render a fully unacceptable utterance somewhat acceptable, but does not necessarily need to render it completely acceptable. This is exactly what we find for most of the test items. The finding that is unexpected under the current hypothesis is the apparent difference in acceptability of the test items. All of the test items are thought to be the result of the same repair mechanism. As such, they are all expected to score similarly. The fact that they do not warrants a closer examination. But before I turn to a detailed discussion of the test items, there are two aspects of the results that need to be discussed before any conclusions can be drawn.

5.3 Discussion

5.3.1 Distance and resumptivity

The first aspect that needs to be discussed involves the distinction between preposition stranding in main clauses and preposition stranding in embedded clauses. The repair strategy as formulated in section 3 predicts that there should be no difference between the two types of stranding. If the repair strategy involves reanalysis between the preposition and the verb in order to free up the complement of the preposition, then the position which the complement subsequently moves to should be irrelevant. The results in tables 4, however, show that the two constructions do not give identical scores.

Recall that there are two possible constructions for preposition stranding in the embedded clause. The first is the construction where the wh-element moves to specifier of the embedded CP, as in (44).

(44) #Claartje vraagt zich af [$_{CP}$ wie$_i$ Piet [$_{PP}$ naar t_i] heeft gekeken].
Claartje asks zich off who Piet to has looked
'Claartje wonders who Piet has looked at.'

The second is the construction where the wh-element moves to the specifier of the main clause, as in (43). As can be seen in tables 4, there appears to be a difference between the two. Wh-movement within the embedded clause appears to score significantly worse than wh-movement across a clause boundary.[43]

43 Results from a t-test show that the effect is not uniform. For List1, the difference between movement within the embedded clause and across a clause boundary is significant for pronouns (p=0.025,

The results in tables 4 become even more interesting when they are compared to the results for preposition stranding within main clauses. In both preposition stranding within the main clause and preposition stranding across a clause boundary, the wh-element moves to the Spec-CP of the main clause. As such, one would not expect to find a difference between the two constructions. This difference does, however, appear with preposition stranding with regular pronouns. As can be seen in tables 3, preposition stranding within the main clause is generally considered to be unacceptable with regular pronouns. However, preposition stranding with regular pronouns across a clause boundary is marginally acceptable, as can be seen in tables 7A and 7B.

Table 7A: the averages for preposition stranding with pronouns of List1

	Main clause	**Across clause boundary**
	T3	**T6**
Mean	2.1	2.8
Median	1	2.5
Mode	1	1

Table 7B: the averages for preposition stranding with pronouns of List2

	Main clause	**Across clause boundary**
	T3	**T6**
Mean	2.5	3.4
Median	2	3.5
Mode	1 and 2	1

The two tables compare the movement of the animate wh-pronoun *wie* 'who' within a main clause, as in (45), and across a clause boundary, as in (43). Results of a t-test show that the difference between the two movements is significant for List1 (p=0.033, t= -2.225) and relatively close to significant for List2 (p=0.081, t=-0.152). It appears then as if there is indeed a difference between preposition stranding as in (43) and preposition stranding as in (45), where the former is (marginally) acceptable but the latter is not.

t=2.350), but not for full DPs (p=0.51, t=-0.666). For List2, on the other hand, the difference is significant for full DPs (p=0.001, t=3.557) and close to significant for pronouns (p=0.07, t=-1.877). This indicates that distance might play a role, but that the precise influence still needs to be further investigated. I will do so in a second experiment, which I will discuss in section 7.

(45) #Wie$_i$ heeft Piet [$_{PP}$ naar t_i] gekeken?
who has Piet to looked
'Who has Piet looked at?'

The question is what distinguishes (43) from (45). In both cases an animate, regular wh-pronoun moves out of the PP to the Spec-CP of the main clause CP. The only noticeable difference between (43) and (45) is the distance the pronoun has to cover in order to move to the Spec-CP of the main clause. In (45) the pronoun moves within one clause, whereas in (43) it crosses a clause boundary. It thus appears as if the length of the movement affects the acceptability of preposition stranding. The longer movement appears to be more acceptable.

This result is unexpected under both the repair mechanism strategy and a silent r-pronoun approach, since distance should not affect either. However, it does point towards an alternative analysis. Up till now I have been assuming that the repair strategy involves some sort of reanalysis between the stranded preposition and the verb. The results for preposition stranding with regular wh-pronouns suggest an alternative repair strategy: the use of an empty resumptive pronoun. Resumptive pronouns are known to be used to repair otherwise ungrammatical movement, particularly when the movement is long (Ross 1967, Dickey 1996). It could be the case then that the repair strategy we are dealing with is not a case of reanalysis, but involves a resumptive pronoun instead. This alternative will be discussed in section 6.

5.3.2 Within-subject analysis

The second aspect of the results that deserves some attention concerns the variance in the results for the test items. Where the three averages render almost identical results for the filler and control items, they do not do so for the test items. For most of the test items, the differences between the three averages are small. However, for some of the test items the difference can be quite extreme. This diversity indicates that there is variety amongst the speakers. A look at the individual results shows that this is indeed the case. The test subjects can be divided into roughly three groups. There is one group of 15 subjects who reject most or all of the test sentences. Another four subjects accept most or all of the test sentences. The majority of the test subjects (46) consider the test sentences to be neither fully unacceptable nor fully acceptable. Within this last group, there is a clear order of acceptability for the test sentences. Although all test sentences are placed in the grey area between neither fully acceptable nor fully unacceptable, they do not give rise to identical scores. One can find a pattern in which certain test sentences are consistently considered to be more acceptable than others. The pattern is as follows.

(46) (i) stranding in embedded clause with XP in main clause
(ii) left dislocation + (i)

(iii) stranding in main clause with a full DP + (ii)

The first instance of preposition stranding that is considered marginally acceptable is the construction in which the preposition is stranded in the embedded clause while the XP wh-moves to the main clause (as in 38). The next test item that is considered to be somewhat acceptable is an instance of left dislocation (as in 16, repeated here as 47).

(47) Bananen houd ik van.
bananas love I of
'Bananas I love.'

The test item that follows left dislocation in acceptability is preposition stranding in the main clause with a full DP.[44] Thus most speakers who accept preposition stranding in the main clause with a full DP also accept both left dislocation and preposition stranding across a clause boundary, but do not necessarily accept any other instance of preposition stranding (i.e. 46iii). Similarly, most speakers who accept left dislocation also accept preposition stranding across a clause boundary, but do not necessarily accept any other instance of preposition stranding (i.e. 46ii). And some speakers only accept preposition stranding across a clause boundary and do not accept any of the other test sentences (i.e. 46i).

This pattern is interesting for two reasons. First, it confirms the impression that distance plays a role in preposition stranding without an r-pronoun. Where the between-subjects analysis shows that there is an improvement in the acceptability of preposition stranding when the movement crosses a clause boundary, the within-subjects analysis shows that it is this same movement that was the first acceptable form of preposition stranding without r-pronouns. As was already pointed out, this apparent influence of distance could indicate the involvement of an empty resumptive pronoun (cf. section 6 for a discussion). Secondly, the pattern provides evidence that preposition stranding without r-pronouns is not due to a silent r-pronoun strategy as used in left dislocation. Recall that left dislocation was included in the questionnaire to determine whether the silent r-pronoun strategy it involves also plays a role in preposition stranding without r-pronouns. As noted, left dislocation (as in 19 repeated here as 48), is considered to be fully grammatical by some speakers of adult Dutch.

(48) Bananen$_i$, daar$_i$ houd ik [$_{PP}$ van t_{daar}].
bananas, there love I of
'Bananas I love.'

The reasoning is now as follows. If preposition stranding without r-pronouns involves the same silent r-pronoun strategy as left dislocation, then we should expect

44 It is important to note that pattern in (46) is the dominant pattern. Most subjects in this group exhibit this pattern. Some individuals, however, exhibit a different pattern.

the two constructions to give rise to identical scores. Thus, speakers who accept a case of preposition stranding without an r-pronoun, as in (49), should also accept a case of left dislocation as in (48).

(49) #Wie$_i$ zegt Claartje [$_{CP}$ dat Piet [$_{PP}$ naar t_i] heeft gekeken]?
who says Claartje that Piet to has looked
'Who does Claartje say that Piet has looked at?'

The pattern in (46) shows that this is not the case. There is at least one case of preposition stranding without r-pronouns that test subjects are willing to accept without accepting left dislocation.[45] The fact that test subjects are willing to accept this case of preposition stranding without accepting left dislocation indicates that the silent r-pronoun strategy used in left dislocation cannot be the underlying analysis. A silent r-pronoun strategy will therefore have to be excluded as a possible explanation.

5.3.3 Remaining test variables

To sum up of the results so far: native speakers of Dutch allow most cases of preposition stranding without the use of an r-pronoun (i.e. they score them higher than 1 or 2, which is the completely unacceptable range), but do not allow all. In the cases that they do allow, there is a clear pattern of acceptability. This pattern shows that a silent r-pronoun strategy as used in left dislocation does not play a role and it suggests that preposition stranding without r-pronouns is affected by distance. This effect of distance in turn hints at the use of resumptive pronouns and I will turn to a discussion of resumptive pronouns in section 6. First, I will discuss the other variables present in the questionnaire. In section 5.1, the following variables were introduced.

(50)
(i) topicalisation vs. wh-movement
(ii) full DP vs. pronoun
(iii) animate vs. inanimate pronouns
(iv) main clause vs. embedded clause
(v) verbal cluster
(vi) pseudo-passives
(vii) left dislocation

The variables in (50ii), (50iv) and (50vii) have been discussed; the four remaining variables have not. Two of these four remaining variables have already been presented in a table. The results for the appearance of the stranded preposition in the

45 The construction in (41i), shown in (49), is not the only case of preposition stranding; there are individuals who accept other cases of preposition stranding, such stranding within the main clause, without accepting left dislocation.

verbal cluster, variable (50v), can be found in tables 5. And the results for the pseudo-passives, variable (50vi), can be found in tables 6. All four tables are repeated here.

Table 5A: the averages for a stranded preposition in the verbal cluster of List1

	T9	**T10**	**T11**	**T12**
Mean	2.9	2	2.6	1.9
Median	2	2	2.5	2
Mode	2	1	1	1

Table 5B: the averages for a stranded preposition in the verbal cluster of List2

	T9	**T10**	**T11**	**T12**
Mean	2.8	2.9	2.8	2.4
Median	2	2	2	2
Mode	1	1	1	1

Table 6A: the averages for pseudo-passives, for preposition stranding with quantifiers and for left dislocation of List1

	Pseudo-passive		**Quantifier**		**Left dislocation**	
	T13	**T14**	**T15**	**T16**	**T17**	**T18**
Mean	2.9	3.1	1.7	1.1	4.1	3.9
Median	2	3	1	1	3.5	3.5
Mode	2	3 and 1	1	1	5	3

Table 6B: the averages for pseudo-passives, for preposition stranding with quantifiers and for left dislocation of List2

	Pseudo-passive		**Quantifier**		**Left dislocation**	
	T13	**T14**	**T15**	**T16**	**T17**	**T18**
Mean	2.7	2.7	2.2	2.4	3.3	2.4
Median	2	2	2	2	2.5	2
Mode	2	1	1	2	2	1

As can be seen, the presence of a stranded preposition within a verbal cluster is considered to be marginally acceptable. It thus appears that speakers of Dutch do indeed allow the stranded preposition to be part of the verbal domain, which presents evidence in favour of the repair strategy.

From tables 6 it becomes clear that pseudo-passives are also considered to be marginally acceptable. It was already pointed out that the existence of pseudo-passives cannot be explained by a silent r-pronoun strategy as used in left dislocation. The fact that the test subjects consider pseudo-passives marginally acceptable thus provides further support to reject the silent r-pronoun strategy as a possible analysis. The remaining two variables in (50), variables (iii) and (i), are given in tables 8.

Table 8A: the averages for animate (T3) and inanimate (T4) pronouns and for wh-movement (T1) and topicalisation (T2) of List1

	Pronouns		**Movement**	
	animate	**inanimate**	**wh**	**topic**
Mean	2.1	1.9	3.5	2.8
Median	1	1	3	2
Mode	1	1	2	1

Table 8B: the averages for animate (T4) and inanimate (T3) pronouns and for wh-movement (T1) and topicalisation (T2) of List2

	Pronouns		**Movement**	
	animate	**inanimate**	**wh**	**topic**
Mean	2.5	2.2	3.4	3.9
Median	2	2	3	4
Mode	1 and 2	1	2	4 and 5

There is clearly no difference between animate and inanimate pronouns for either list. However, there appears to be a difference between wh-movement and topicalisation. As was already pointed out in footnote 40, this difference is significant for List1 (p=0.029, t=2.281). The difference between wh-movement and topicalisation is unexpected under the repair mechanism. The repair mechanism should be blind to the type of movement involved. It is also unexpected under the silent r-pronoun approach, since that would expect topicalisation to be more acceptable than wh-movement. Strangely, the difference only seems to exist in List1. In List2 there is no significant difference between the two types of construction and topicalization even appears to score slightly better. This could be due to the fact that the topicalisation in List2 contains the adposition *mee* 'with'.

(51) #Deze vraag had zij geen rekening mee gehouden.
this question had she none account with held
'She had not taken this question in consideration.'

The Dutch preposition *met* 'with' undergoes a phonological transformation when it is stranded.

(52) a. Jan loopt met een stok.
Jan walks with a stick
'Jan walks with a stick.'

b. Waar loopt Jan mee?
where walks Jan with
'What does Jan use to walk with?'

The adposition *mee* 'with' only appears as either a stranded preposition or as a postposition. It could be that because *mee* 'with' never appears as a preposition with a complement, speakers of Dutch are more forgiving when it appears in a construction that violates the r-pronoun restriction. It could potentially even be the case that in (51) the subjects have actually analysed *mee* 'with' as a postposition and

consequently analysed the movement as postposition stranding (which, recall, does not have to abide by the r-pronoun restriction). Since almost all prepositions in Dutch do not undergo any phonological transformation when stranded, *met* 'with' holds a unique position. This could have affected the acceptability of the topicalisation in List2.[46]

An alternative explanation for the difference in the acceptability of topicalisation between the two lists could be that something is affecting the topicalisation in List1. The sentence is given in (53).

(53) #Dat goede doel heeft zij het geld aan gegeven.
that good cause has she the money to given
'That is the good cause she gave the money to.'

What could have affected the acceptability of (53) is that the sentence was presented in isolation. No preceding context was given to present the speaker with a discourse referent for the topic. The same holds for the topicalisation in (51), so the absence of the context cannot be an explanation by itself for the difference between the two.[47] However, the combination of the absence of a discourse referent for the topic plus the use of the adposition mee in List2 could have led to the topicalization in List2 being scored better than the topicalization in List1.

6. Empty resumptive pronoun strategy

It is well known that apparent ungrammatical movement can be repaired with the use of an empty resumptive pronoun. Cinque (1990) provides examples from Italian, where NPs appear to move out of island constructions.

(54) a. Anna, che$_i$ me ne sono andato via [senza neanche salutare t$_i$].
'Anna, who I went away without even saying goodbye to.'

b. Gianni, che$_i$ pure abbiamo escluso [la possibilità di ammettere t$_i$ nel nostro club], è multo bravo.
'Gianni, who we excluded the possibility of admitting to our club is very clever.'

The sentence in (54a) contains an adjunct island and the one in (54b) contains a complex NP island. In both (54a) and (54b), the wh-element che 'who' appears to have moved out of the respective islands. Next to the fact that such wh-movements seem to violate island conditions, Cinque further shows that only NPs can undergo

46 It is worthwhile to note that T4 in List1 also contains the adposition *mee* and in this case the use of *mee* does not seem to have affected the acceptability of the sentence.

47 I will turn to the potential role played by the discourse, more precisely discourse linking, in section 6.1.

this apparent movement. Similar constructions containing a PP, for example, are fully ungrammatical.

(55) a. *Anna, [$_{PP}$ con la quale]$_i$ me ne sono andato via [senza parlare t_i].
'Anna, with whom I went away without even speaking.'

b. *Gianni, [$_{PP}$ di cui]$_i$ abbiamo escluso [la possibilità di ammettere t_i nel nostro club], è multo bravo.
'Gianni, about whom we excluded the possibility of admitting to our club, is very clever.'

This difference in grammaticality between apparent movement of an NP and apparent movement of a PP is explained once it is assumed that the constructions in (54) do not involve movement at all, but rather reflect an empty resumptive pronoun strategy. Neither the NPs in (54) nor the PPs in (55) move. Instead, both try to bind an empty resumptive pronoun that is situated in the position of the trace. Cinque argues that since only NPs are [+pronominal], only NPs can bind a resumptive pronoun. As a result, the NPs in (54) successfully bind the empty resumptive pronoun, rendering the constructions grammatical. The PPs in (55) cannot bind the empty resumptive pronoun and the constructions are ungrammatical. Cinque observes that not every NP can equally bind an empty resumptive pronoun. There is a distinction between the NPs in (54) and an NP like the one in (56).

(56) *[Quanto settimane]$_i$ trascorrerai t_i a Londra prima di passare t_i a Parigi?
'How many weeks will you spend in London before spending in Paris?'

The difference, Cinque argues, is explained by referentiality. The NPs in (54) are referential, whereas the NP in (56) is not. Cinque proposes that in order to be able to bind a resumptive pronoun, an NP has to be able to corefer. Non-referential NPs cannot corefer and therefore cannot bind a resumptive pronoun. He provides evidence for this argument by showing that insertion of an overt resumptive pronoun in (56), as is shown in (57), does not improve the sentence.

(57) *[Quanto settimane]$_i$ trascorrerai t_i a Londra prima di passar*le* a Parigi?
'How many weeks will you spend in London before spending them in Paris?'

Cinque also shows that non-referential NPs can only undergo successive cyclic movement, i.e. can only bind their trace through c-command and government. A non-referential NP such as every museum cannot be topicalised in the same construction where a referential NP such as all the museums can.

(58) a. *[Ogni museo]$_i$, non vuole visitare t_i .
'Every museum, he does not want to visit.'

b. [Tutti musei]$_i$, non ha visitato t_i .
'All the museums, he has not visited.'

The movements in (58) cross a weak (negative) island, which is argued to block government relations. Since the non-referential NP in (58a) can only be related to its trace through c-command and government, the sentence is ungrammatical. The referential NP in (58b), on the other hand, can freely corefer and is not dependent on binding through government. The conclusion is that only referential NPs can corefer, which allows them to bind an empty resumptive pronoun and consequently gives them the ability to appear to violate island restrictions. Non-referential NPs cannot corefer and are dependent on c-command and government to bind their trace. Therefore, non-referential NPs cannot bind a resumptive pronoun and cannot escape from island constructions. The difference in grammaticality between (56) and (54) is thus due to the fact that referential NPs are able to corefer, whereas non-referential NPs are not.

6.1 Discourse linking

The idea that referentiality affects movement was originally proposed by Pesetsky (1987, 2000). He showed that the moment a wh-element is properly linked to the discourse, it can violate socalled "superiority".

(59) a. Who$_i$ t_i bought what?
b. *What$_i$ did who t_i buy?

(60) a. [Which person]$_i$ t_i bought which book?
b. [Which book]$_i$ did which person t_i buy?

A general restriction on movement, and hence on wh-movement, is that the closest eligible element should move. For wh-movement this means that the closest wh-element should move. To exemplify: in a sentence where both the subject and the object are wh-elements, the subject is closer to the specifier of the CP and hence the subject should move. This explains the difference in grammaticality in (59). In (59a) the closer wh-element, the subject, has moved and the result is grammatical. In (59b) the object, which is not the closer wh-element, has moved and the result is ungrammatical. This phenomenon is known as superiority (Chomsky 1973). While superiority explains the ungrammaticality of (59b), the grammaticality of (60b) is unexpected. Like in (59b), the direct object in (60), which is not the closer wh-element, undergoes movement. Both movements violate superiority, but only (59b) is ungrammatical. Pesetsky argues that this is due to discourse linking (D-linking).

He defines D-linking as follows (Pesetsky 2000, p.23/24):

(61) D-linking
Context sets previously mentioned in the discourse qualify a phrase as D-linked, but so do sets that are merely salient (e.g. *which book*, in a context where speaker and hearer both know that reference is being made to a reading list for a course), and sets whose salience is culturally determined (e.g. *what day of the week*, *which sign of the zodiac*).

The wh-element *what* in (59) is not D-linked, whereas the wh-element *which book* in (60) is D-linked. Therefore, only which book can violate superiority.

The idea that D-linked elements can violate superiority resembles the idea put forward by Cinque that only referential NPs can undergo apparent island violations. In fact, Cinque argues that his definition of referentiality subsumes Pesetsky's D-linking. An element is referential if it can "refer to specific members of a set in the mind of the speaker or pre-established in discourse" (Cinque 1990, p. 16). Hence, it can be argued that D-linking plays a role in the empty resumptive pronoun strategy.

6.1.1 D-linking and the repair strategy

If the repair strategy involves empty resumptive pronouns, then we would expect D-linking to have an effect. D-linking could explain the difference found between preposition stranding with regular pronouns and with full DPs. Recall that the results of the questionnaire show that preposition stranding with regular pronouns is generally considered fully unacceptable, whereas preposition stranding with full DPs is considered marginally acceptable. An examination of the test sentences used in the questionnaire reveals the potential role played by D-linking.

The questionnaire contained four cases of preposition stranding with a regular pronoun, divided over the two lists. Two of the four cases involved wh-movement. As such, the difference between the acceptability of wh-movement of the regular pronoun (62a), and that of the full DP (62b), should be similar to the difference between (59a) and (60a).

(62) a. #Wie$_i$ zal Marie [$_{PP}$ voor t_i] kiezen?
who will Marie for choose
'Who will Marie choose?'

b. #[Welke jongen]$_i$ zal Marie [$_{PP}$ voor t_i] kiezen?
which boy shall Marie for choose
'Which boy shall Marie choose?'

The other two cases involved topicalisation. Both of the topicalised sentences in (63) were preceded by a small piece of context. The contexts are given in (64).

(63) a. #[Dat]$_i$ had zij echter geen rekening [$_{PP}$ mee t_i]
that had she however no account with

gehouden.
held
'That, she however had not taken into consideration.'

b. #[Hem]$_i$ heeft zij geld [$_{PP}$ aan t_i] gegeven.
him has she money to given
'Him, she gave money.'

(64) a. #Claartje was echt op alles voorbereid.
Claartje was really on everything prepared
'Claartje was really prepared for everything.'

b. #Marie loopt over straat en ziet een zielige zwerver.
Marie walks across street and sees a pathetic tramp
'Marie walks across the street and sees a pathetic tramp.'

The context in (64a) preceded the test sentence in (63a). As can be seen, the *dat* 'that' in (63a) is not directly introduced in the context and as a consequence it is not D-linked. The corresponding topicalisation with a full DP is as in (65).

(65) #[Deze vraag]$_i$ had zij geen rekening [$_{PP}$ mee t_i] gehouden.
this question had she not account with held
'This question, she had not taken into consideration.'

The topicalised DP *deze vraag* 'this question' resembles Pesetsky's *which X* in that it refers to a pre-existing set. It is therefore not surprising that it behaves similarly to the wh-moved DP in (62b) and could be argued to be D-linked.

The context in (64b) preceded the test sentence in (63b). In this case the *hem* 'him' in (63b) is properly introduced in the context (*een zielige zwerver* 'a pathetic tramp'). The topicalised pronoun refers to someone mentioned in the context and is thus D-linked. The corresponding topicalisation with a full DP behaves similarly to (66) in that the DP selects a member from a (not specifically mentioned) group.

(66) #[Dat goede doel]$_i$ heeft zij geld [$_{PP}$ aan t_i] gegeven.
that good cause has she money to given
'That good cause, she gave money to.'

Closer examination of all the cases of preposition stranding with regular pronouns and full DPs reveals that out of the four cases with pronouns only one can be argued to be D-linked, whereas all four cases with full DPs can be argued to be D-linked. It seems then that D-linking could have had an effect on preposition stranding, indicating that the repair strategy might involve an empty resumptive pronoun strategy.

6.2 Resumptive pronouns and distance

So far, we have seen that resumptive pronouns can be used to repair an island violation and that resumptive pronouns are sensitive to discourse linking. Both these findings are relevant to preposition stranding without r-pronouns. Recall van Riemsdijk's (1978) proposal that the PP forms an island in Dutch. According to this theory, preposition stranding without an r-pronoun is an island violation. Resumptive pronouns could be used to repair this violation. The relevance of discourse linking has already been pointed out. Rephrasing the repair strategy as one that involves an empty resumptive pronoun seems feasible then. The results of the experiment, however, also indicate that distance might play a role. This raises the question whether the use of resumptive pronouns is affected by distance. The answer appears to be yes. Dickey (1996 and references cited there) shows that the larger the distance between the resumptive pronoun and its antecedent, the more acceptable the resumptive pronoun becomes. He argues that this is the result of distance ensuring that the resumptive pronoun and its antecedent are not in memory at the same time. A resumptive pronoun competes with a regular gap, where a gap is preferred over a resumptive pronoun (which, according to Dickey, is possibly due to Chomsky's 1981 Avoid Pronoun Principle). Dickey proposes that the gap can be linked to the antecedent, as long as the antecedent and the gap are in memory at the same time. The moment the distance between the gap and the antecedent becomes too large for both to be in memory at the same time, the gap can no longer be linked to the antecedent and a resumptive pronoun is inserted to resolve the derivation. Dickey shows that the amount of distance needed to separate the gap from the antecedent in memory is provided by structures with two embeddings. Results of an on-line self-paced reading task show that subjects read a structure with a resumptive pronoun (67b), faster than a structure with a gap (67a).

(67) a. Who$_i$ did Bill say that Mike pretended that Al adopted t$_i$?
b. Who did Bill say that Mike pretended that Al adopted her?

The distance that Dickey argues is needed to render a resumptive pronoun preferable to a gap is larger than the distance used in the stranding experiment under discussion, which involved only one embedding. However, Dickey deals with grammatical movement, whereas the stranding experiment tests an ungrammatical

island violation. It could be that the addition of movement out of an island leads to a shorter distance needed to render a resumptive pronoun preferable. The fact remains that the use of resumptive pronouns is sensitive to distance. This fact combined with the result that preposition stranding without r-pronouns appears to improve with distance suggests that the repair strategy could indeed involve an empty resumptive pronoun.

6.3 Preposition stranding and resumptive pronouns

The idea that apparent cases of preposition stranding could involve empty resumptive pronouns has already been proposed by Hoekstra (1995). Hoekstra notes that in Frisian it appears to be possible to move a full DP out of a prepositional phrase.

(68) [Dy beam]$_i$ falle in protte blêden [$_{PP}$ ôf t_i]. Frisian
that tree fall a lot-of leaves off
'A lot of leaves fall from that tree.'

He suggests, however, that although it appears to be a case of movement, the structure in (68) actually contains an empty resumptive pronoun, as in (69).

(69) [Dy beam]$_i$ falle in protte blêden [$_{PP}$ pro$_i$ ôf]. Frisian
that tree fall a lot-of leaves off
'A lot of leaves fall from that tree.'

Hoekstra argues that Frisian has a general resumptive pronoun strategy that allows it to circumvent the PP island condition. To support this hypothesis, he provides an apparent violation of the wh-island condition, which can be resolved by either an overt or an empty resumptive pronoun.

(70) Wa$_i$ fregest dy of, hokker boeken oft er$_i$/pro$_i$ fan dy
who ask yourself off which books whether he/pro from you

liend hat?
borrowed has
'Who do you wonder has borrowed which books from you?'

Hoekstra reasons that since resumptive pronouns are available in the wh-island construction in (70), they should also be available in the PP island construction in (68). Hence the construction in (68) does not violate the r-pronoun restriction on preposition stranding, which also holds for Frisian, but involves an empty resumptive pronoun instead. Hoekstra then argues that the empty resumptive pronoun strategy is not available in Dutch. He points out that the Dutch equivalents

of (68) and (70), (71b) and (71a) respectively, are ungrammatical.

(71) a. *Wie$_i$ vraag je je af, welke boeken ie$_i$/pro$_i$ van je
who ask you you off, which books he/pro from you
geleend heeft?
borrowed has
'Who do you wonder has borrowed which books from you?'

b. *[Het meisje]$_i$ wordt niet [$_{PP}$ naar t$_i$/pro$_i$] geluisterd.
the girl becomes not to listened
'The girl is not being listened to.'

I agree with the judgement of (71a), but as the results of my experiment 1 clearly show, native speakers of Dutch do not consider (71b) to be fully ungrammatical. So, it can still be argued that a resumptive pronoun can be used to resolve a PP island violation. The question that this reasoning raises is why if native speakers of Dutch allow a resumptive pronoun in (71b), they would not allow a resumptive pronoun in (71a). The answer put forward in this chapter is straightforward. The use of a resumptive pronoun in (71b) is a repair strategy that is the result of a certain stage in acquisition. There is no stage in the acquisition of Dutch at which (71a) is grammatical and as such there is no corresponding repair strategy in the adult language. Dutch then crucially differs from Frisian in that in Dutch the use of a resumptive pronoun is a repair mechanism, whereas in Frisian it is not.

7. Experiment 2

The results of the first experiment show that native speakers of Dutch allow preposition stranding without the use of r-pronouns under certain circumstances. These circumstances seem to involve D-linking and distance. The more D-linked DPs were considered to be more acceptable than the less D-linked pronouns, and movement across a clause boundary resulted in an improvement in acceptability for regular pronouns. Neither D-linking nor distance was directly tested for in the first experiment. The goal of a second experiment was to determine whether and to what extent D-linking and distance truly play a role in preposition stranding without the use of r-pronouns.

7.1 Test set-up

The experiment contained two variables: D-linking and distance. In order to test D-linking, I included three categories:

(72) i. inherently D-linked
ii. structurally D-linked
iii. non D-linked

Pesetsky (1987, 2000) states that both wh-elements such as which person and sets whose salience are culturally determined are inherently D-linked (cf. 61). The inherently D-linked items used in this experiment were a combination of these. They were all *welke* 'which' wh-XPs with a culturally salient DP, such as *member of the royal family*. Next to inherently D-linked items I decided to include cases of topicalisation. Topicalisation could provide an intermediate level of D-linking in that the item that is topicalised does not necessarily have to be inherently D-linked, but does occupy a syntactic position that renders it linked to the discourse. For example: that tree can be a topic, but is not culturally salient and hence not inherently D-linked. I would therefore like to propose that there could be a difference in degree of D-linkedness between (73a) and (73b).

(73) a. #[Dat lid van het koninklijk huis]$_i$ heeft Marie nooit
that member of the royal house has Marie never

[$_{PP}$ naar t_i] gekeken.
to looked
'That member of the royal family, Marie never looked at.'

b. #[Die vrouw]$_i$ heeft Marie nooit [$_{PP}$ naar t_i] gekeken.
that woman has Marie never to looked
'That woman, Marie never looked at.'

The moved DP in (73a) is both culturally salient, the Netherlands have a royal family, and positioned in the topic position. Hence it is linked to the discourse twice: once through its position and once through its cultural salience. The moved DP in (73b), on the other hand, is only linked to the discourse once through its structural position. To test whether examples such as in (73) really do lead to a difference in degree of D-linkedness, both cases of inherent D-linking and cases of topicalization were included in the questionnaire. Since in the case of topicalization the DP is linked to the discourse solely on the basis of its syntactic position, I will refer to this type of D-linking as structural D-linking. The third category of D-linking is "non-D-linked". For such items I decided to use quantified DPs *hoeveel* 'how many'. Recall Cinque's (1990) observation that although NPs can escape from certain islands in Italian, non-referential NPs such as how many weeks cannot. I modelled my non-D-linked items on his examples.

The three categories in (72), then, provide a sliding scale of D-linking. Inherently D-linked items are the strongest D-linked and non-D-linked items are the weakest. If D-linking does indeed play a role in preposition stranding without the use of r-pronouns, then the inherently D-linked items should be the most acceptable.

The second variable, next to D-linking, is distance. The results in the first experiment showed that preposition stranding with regular pronouns improves under long distance movement. The question is how much distance and what type of distance could potentially improve preposition stranding without r-pronouns. The long distance movement in the first experiment involved a structural distance, since it was movement across a clause boundary. In order to test the role of structural distance, the second experiment contained main clauses, clauses with one embedding and clauses with two embeddings. The addition of clauses with two embeddings was based on the findings in Dickey (1996). More than two embeddings were excluded on the grounds that keeping track of three or more embeddings poses such a high processing load that it could affect the results of the experiment.

Next to structural distance there is also the potential influence of physical, purely linear, distance. It could be that long distance movement improves the acceptability not because it involves embedding, but because it physically separates the stranded preposition from the moved XP far enough for stranding to become acceptable. In order to distinguish the difference between physical (linear) distance and structural distance, I included preposition stranding in main clauses in which the Mittelfeld ("middle field") was expanded with adverbs and PPs, as in (74b).

(74) a. Welke diersoort heeft men op gejaagd.
which animal-species has one up hunted
'Which species of animals has one been hunting?'

b. Welke diersoort heeft men jarenlang zonder
Which animal-species has one years-long without

mededogen op gejaagd?
compassion up hunted
'Which animal species has one been hunting relentlessly for years?'

If physical distance does play a role, then the expanded main clause in (74b) should be more acceptable than the main clause in (74a).

The combination of the two variables led to 12 test sentences: four categories of distance with three levels of D-linking each, as schematized in (75).[48]

(75) (i) P-stranding in main clause
a. inherently D-linked
b. structurally D-linked
c. non-D-linked

48 The full set of sentences can be found in appendix E.

(ii) P-stranding in extended main clause
a. inherently D-linked
b. structurally D-linked
c. non-D-linked

(iii) P-stranding across one clause boundary
a. inherently D-linked
b. structurally D-linked
c. non-D-linked

(iv) P-stranding across two clause boundaries
a. inherently D-linked
b. structurally D-linked
c. non-D-linked

Like the first experiment, this experiment contained control items that were targeted as completely acceptable and filler items that were targeted as completely unacceptable. The filler items were all cases of ungrammatical movement and the control items were all cases of grammatical preposition stranding. The questionnaire contained four control and four filler items, which led to a total of 20 sentences. There were two versions of the questionnaire, in each of which the order of the 20 sentences was semi-randomized.[49] The set-up was identical to that of the first experiment. Subjects were asked to rate a sentence on a scale of 1 to 7, 1 representing fully unacceptable and 7 representing fully acceptable. At the start of the questionnaire each subject was given the instruction to judge how the sentence sounded and was encouraged to pronounce the sentence out loud.

7.2 Results

The questionnaire was presented to 58 adult native speakers of Dutch, all of whom were university students. As in the first experiment, for each test item three averages (the mean, median and mode) were calculated. The results for the control items and the filler items are presented in tables 9 and 10.

49 Since this questionnaire only contained 20 sentences, there was no need to divide the sentences into two lists.

Table 9: the averages for the four filler sentences

	F1	**F2**	**F3**	**F4**
Mean	1.5	2.7	1.1	1.6
Median	1	2	1	1
Mode	1	1 and 2	1	1

Table 10: the averages for the four control sentences

	F1	**F2**	**F3**	**F4**
Mean	6.5	6.8	3.3	2.6
Median	7	7	3	2
Mode	7	7	3	1

Like for the first experiment, I will consider a score of either 1 or 2 to mean fully unacceptable, a score of 6 or 7 to mean fully acceptable and a score of 3 to 5 to mean (marginally) acceptable. As can be seen in table 9, the filler items were scored as expected. The filler items are intended to be completely unacceptable and their scores are in the completely unacceptable range.[50] The results for the control items are not as clear. The first two control items, given in (76a) and (76b), were scored as expected. All the control items are intended to be fully acceptable and these two control items were scored in the fully acceptable range. However, the other two control items did not score in the fully acceptable range. Control item 3, given in (76c), was judged marginally acceptable and the last control item, given in (76d), was even considered to be fully unacceptable. This drastic difference in acceptability is probably due to the difference between the structures in the first two and the last two control items.

(76) a. Waar heeft Marie mee gespeeld?
where has Marie with played
'What has Marie played with?'

b. Daar heeft Jan gisteren niets over verteld.
there has Jan yesterday nothing about told
'That, Jan didn't say anything about yesterday.'

50 It must be noted, though, that the filler F2 was scored relatively high. There does not seem to be any reason for this score: the score is consistent across subjects and versions. F2 is a case of a wh-island violation. The first questionnaire also contained such a filler and this filler scored perfectly as expected. Since F2 was still scored within the unacceptable range, I will leave this matter be.

c. Daar zei Jan dat Marie nog over na moest denken.
there said jan that Marie yet about after must think
'That, Jan said Marie still had to think about.'

d. Daar dacht Klaas dat Jan zei dat Marie rekening mee
there thought Klaas that Jan said that Marie account with

moest houden.
must hold
'That, Klaas thought Jan said that Marie had to take into consideration.'

One clear difference between the first two and the last two control items is the type of verb used in the verb-second position. In the first two sentences, the finite verb is an auxiliary. In the second two sentences, the finite verb is a lexical verb. This difference might play a role in the interpretation of the r-pronoun. The r-pronoun *daar* 'there' in (76b,c and d) can be interpreted as a locative adverb to the lexical verb. The sentences in (76c) and (76d) offer the speaker the opportunity to link the r-pronoun to the finite lexical verb in the verb-second position. The readings would be as follows.

(77) a. Daar zei Jan dat ...
there said Jan that …
'There Jan said that …'

b. Daar dacht Klaas dat ...
there thought Klaas that …
'There Klaas thought that …

The locative pronoun *daar* 'there' provides a location for where Jan said something or for where Klaas thought something. Once the r-pronoun is interpreted as a locative adverb to the finite lexical verb, the stranded preposition in the embedded clause is left without a complement. As a result, the sentence becomes unacceptable. This wrong parse is not available in the first two control items. In the first two control items, the lexical verb appears at the end of the sentence. The parser encounters the stranded preposition before it encounters the lexical verb. And thus, the r-pronoun will automatically be attached to the preposition and it will never be analysed as a locative adverb.

The unacceptability of the last two control items, then, may not be related to the matter at hand. As can be seen from the first two control items, native speakers of Dutch judge preposition stranding with r-pronouns fully acceptable. Therefore, as in the first experiment, the results for the filler and control items (at least the first two) validate the questionnaire in this experiment.

7.2.1 D-linking

Let us now turn to the two variables tested in this questionnaire: D-linking and distance. The results for D-linking are given in the tables 11A to 11C.

Table 11A: the averages for inherently D-linked

	T1	**T10**	**T4**	**T7**
Mean	4.5	4.6	4	2.9
Median	5	4	4	2.5
Mode	7	7	3	2

Table 11B: the averages for structurally D-linked

	T3	**T12**	**T6**	**T9**
Mean	3.8	2.5	2.2	1.7
Median	4	3	2	1
Mode	2	3	1	1

Table 11C: the averages for non-D-linked

	T2	**T11**	**T5**	**T8**
Mean	3.5	2.9	2.7	3.5
Median	3	3	2	3.5
Mode	3	3	1 and 2	2

As can be seen, the inherently D-linked items score somewhat better than both the structurally D-linked items and the non-D-linked items. A repeated measures ANOVA pairwise comparison (with Bonferroni correction) confirms this.[51]

51 For the full results of the pairwise comparison, see table A in appendix F.

Table 12: pairwise comparison for D-linking

	p-values
inherent vs. structural	<0.001
inherent vs. non-D-linked	<0.001
structural vs. non-D-linked	0.003

The results in table 12 show that all three levels of discourse linking differ from each other significantly, but not necessarily in the direction that was expected. As predicted, inherently D-linked items are considered to be significantly more acceptable than both structurally and non-D-linked items. However, the significant difference between structurally and non-D-linked is negative in that non-D-linked items are considered to be significantly more acceptable than structurally D-linked items. This result might be caused by the relatively high score for T8. T8 is the test sentence with two embedded clauses and a non-D-linked item, given here in (78).

(78) [Hoeveel ballen]$_i$ zei Claartje dat Marie dacht dat Jan
how-many balls said Claartje that Marie thought that Jan

[$_{PP}$ mee t_i] heeft gegooid?
with has thrown
'How many balls did Claartje say that Marie thought that Jan had thrown?'

I will analyse T8 further below, but let us for the moment exclude T8 from the analysis and focus on the other three sentences with a non-D-linked item. Recall that all levels of D-linking were tested in a main clause, a main clause with an extended Mittelfeld, a clause with one embedding and a clause with two embeddings. As such, the sentences can be paired and shown to be different from each other only with respect to the level of D-linking (i.e. there is a main clause with an inherently D-linked item, a structurally D-linked item and a non-D-linked item). Table 13 shows the results of a paired t-test for the remaining three levels of distance for structurally and non-D-linked items.

Table 13: comparison between structurally and non-D-linked per distance level

	p-values
main clause (T3-T2)	0.043
extended main clause (T12-T11)	0.136
one embedding (T6-T5)	0.003

As can be seen, the results are not conclusive. Structurally D-linked items (T3 and T6) are judged significantly better than non-D-linked items (T2 and T5) in main clauses and in clauses with one embedding. However non D-linked items (T11) and structurally D-linked items (T12) in extended main clauses do not differ significantly. The results for the variable of D-linking thus show that inherently D-linked items are judged better than both structurally and non-D-linked items, which is conform the findings in the literature. The proposed level of structural D-linking appears to not differ significantly from non-D-linked items.

T8, example (78), also reveals another strange anomaly. The result of a repeated measures ANOVA pairwise comparison (with Bonferroni correction) shows that this test sentence is considered significantly more acceptable than the test sentence with one embedded clause and a non-D-linked item (p=0.002, T5 given here in 79).

(79) [Hoeveel bedden]$_i$ vraagt Marie zich af dat Jan [$_{PP}$ in t_i]
how-many beds asks Marie reflexive off that Jan

heeft geslapen?
has slept
'How many beds does Mary wonder Jan has slept in?'

I will address this apparent anomaly below, but I will note one thing here. For the other two levels of D-linking, the test sentences involving two embedded clauses are considered significantly less acceptable than the test sentences involving one embedded clause (p=0.001 for inherently D-linked and p=0.038 for structurally D-linked). I will turn to the effect of distance in the next section, but a comment from one of the test subjects indicates that although the how many X was intended as non-D-linked, it could potentially be interpreted as D-linked. The test subject said that she could accept a non-D-linked item such as (80) in a context in which it was already clear that one was talking about a certain set of chairs.

(80) Hoeveel stoelen heeft Marie slingers aan gehangen?
how-many chairs has Marie garlands on hung
'How many chairs did Marie hang garlands on?'

Having a certain set of chairs in mind renders the *hoeveel stoelen* 'how many chairs' D-linked, since it refers to an already existing set of chairs. The test sentences with non-D-linked items were not preceded by a context. Thus if subjects were allowing *hoeveel stoelen* 'how many chairs' to be D-linked, they would have to introduce the discourse referent themselves. It is unclear how many test subjects were interpreting the non-D-linked items while providing a discourse referent for the 'how many' phrase. This makes it somewhat unclear to what degree the results in table 11C really represent the variable of non-D-linked. It is important to note, however, that the test subject who reported providing a discourse referent for the *hoeveel stoelen* 'how many chairs' judged the sentence to be acceptable. The fact that she provided a discourse referent to render the sentence grammatical clearly indicates that D-linking does seem to be playing a role in preposition stranding without the use of r-pronouns.

7.2.2 Distance

Now that it has been established that D-linking seems to be playing a role, let us turn to the second variable: distance. The results for distance are given in the tables 14A to 14D.

Table 14A: the averages for stranding in main clause

	T1	**T2**	**T3**
Mean	4.5	3.5	3.8
Median	5	3	4
Mode	7	3	2

Table 14B: the averages for stranding in main clause where the Mittelfeld is extended

	T10	**T11**	**T12**
Mean	4.6	2.9	3.5
Median	4	3	3
Mode	7	3	3

Table 14C: the averages for stranding with one embedded clause

	T4	**T5**	**T6**
Mean	4	2.7	2.2
Median	4	2	2
Mode	3	1 and 2	1

Table 14D: the averages for stranding with two embedded clauses

	T7	**T8**	**T9**
Mean	2.9	3.5	1.7
Median	2.5	3.5	1
Mode	2	2	1

At first glance, the results for distance do not appear to give a clear result. A look at the repeated measures ANOVA pairwise comparison (with Bonferroni correction) shows a clearer picture.[52]

Table 15: pairwise comparison for distance

	p-values
main clause vs. extended main clause	0.244
main clause vs. one embedding	<0.001
main clause vs. two embeddings	<0.001
one embedding vs. two embeddings	0.509

It is clear that physical distance, the difference between the main clause and the extended main clause, is not significant. People find preposition stranding in main clauses equally acceptable to preposition stranding in an extended main clause. Structural distance, however, does seem to play a role. The difference between main clauses on the one hand and main clauses with one or two embeddings on the other is significant. Surprisingly enough, the relation is a negative one. The longer the structural distance, the significantly less acceptable people judge the sentence. If preposition stranding without r-pronouns involved an empty resumptive pronoun,

52 For the full results of the pairwise comparison, see table B in appendix F.

then one would expect the structures to improve with distance. Particularly the structure with two embeddings should be judged acceptable, since Dickey (1996) argues that that is the environment in which resumptive pronouns begin to appear in English. The fact that the structures with two embeddings score the worst clearly indicates that preposition stranding without r-pronouns does not involve a resumptive pronoun strategy.

7.2.3 The interaction between D-linking and distance

The two test variables of distance and D-linking also show significant interaction. If the effect of distance is spelled out per level of D-linking, one gets the results in tables 16A to 16C. The results have again been calculated with a repeated measures ANOVA pairwise comparison (with Bonferroni correction) and the full set of results can be found in table C in appendix F.

Table 16A: pairwise comparison for inherently D-linked versus distance

	p-values
main clause vs. one embedding	0.275
main extended clause vs. one embedding	0.113
main clause vs. two embeddings	<0.001
main extended clause vs. two embeddings	<0.001
one embedding vs. two embeddings	0.001

Table 16A shows the results of the effect of distance on inherently D-linked items. To clarify how the table should be read, the scores people gave to a main clause with an inherently D-linked item do not differ significantly from the scores people gave to a main clause with one embedding and an inherently D-linked item (p=0.275). The point at which distance does lead to significantly different results for inherently D-linked items is at two embeddings. Sentences with two embeddings are considered to be significantly less acceptable than both main clauses (whether they are extended or not) and sentences with only one embedding. This indicates that people are willing to accept preposition stranding with an inherently D-linked item in any construction except for the construction with double embedding, again confirming the importance of D-linking. As expected, the strength of D-linking is clearly less for structurally D-linked items.

Table 16B: pairwise comparison for structurally D-linked versus distance

	p-values
main clause vs. one embedding	<0.001
main extended clause vs. one embedding	<0.001
main clause vs. two embeddings	<0.001
main extended clause vs. two embeddings	<0.001
one embedding vs. two embeddings	0.038

For inherently D-linked items there was no difference between a main clause and a sentence with one embedding, but table 16B shows that there is such a difference for structurally D-linked items. For structurally D-linked items too, both main clauses (whether they are extended or not) and sentences with only one embedding are considered significantly more acceptable than sentences with two embeddings. However, in contrast to their judgements for inherently D-linked items, people consider main clauses with structurally D-linked items (whether they are extended or not) to be more acceptable than sentences with one embedding as well. It appears as if with a less D-linked item, the complement of a preposition can be moved across a smaller structural distance.

As we already saw earlier in the discussion of the effects of D-linking, something strange seems to be happening with the non-D-linked items.

Table 16C: pairwise comparison for non-D-linked versus distance

	p-values
main clause vs. one embedding	0.008
main extended clause vs. one embedding	0.064
main clause vs. two embeddings	1.000
main extended clause vs. two embeddings	0.160
one embedding vs. two embeddings	0.002

Like for structurally D-linked items, people consider main clauses with non-D-linked items more acceptable than sentences with one embedding. This effect seems to disappear when the main clause is extended. However, since the score is close to being marginally significant, I will not dwell on this any further. There is a much more puzzling aspect to the results in table 16C that deserves our attention instead.

The sentences with two embeddings received an identical score to main clauses and do not differ significantly from extended main clauses. And possibly even more surprisingly, although sentences with two embeddings do differ significantly from sentences with one embedding, the difference is a positive one. People consider sentences with two embeddings to be significantly more acceptable than sentences with only one embedding. This is clearly different from the results found for inherently and structurally D-linked items. For both inherently and structurally D-linked items, the structures with two embeddings scored significantly worse than all other structures.

The picture that the overall results seem to paint is as follows: the acceptability of preposition stranding with full DPs degrades over distance and with decreasing D-linkedness. In general, the longer the movement, the less acceptable the movement and the more an item is D-linked, the more acceptable the movement. The exception to this general picture is the case that is predicted to be the least acceptable: T8. T8, which is a case of preposition stranding with a non-D-linked DP (the lowest level of D-linking) across two clause boundaries (the furthest distance) suddenly becomes significantly more acceptable. This raises the question what may have caused this surprising behaviour. Two potential answers spring to mind. First, it was already noted in section 7.2.1 that some people might be able to provide a discourse referent for the non-D-linked items, rendering them D-linked. Perhaps when people were confronted with the combination of the hardest distance to process and the least D-linked item, they made the D-linked item more D-linked to help the processing effort. If this is indeed the case, and they do indeed make use of such a strategy, then it needs to be explained why people only appear to make use of this strategy in this particular instance. It is clear from the results that people do not always introduce a discourse referent. The movement of the structurally D-linked item across two clause boundaries was considered completely unacceptable (a mean of 1.7, see table 11B). If one can introduce a discourse referent to enhance processing, why not always do so?

An alternative solution to the behaviour could be sought in reading behaviour. The experiment was done off-line. Maybe an on-line experiment will reveal that in the worst case scenario (least D-linked and furthest distance) people actually take the time to reread the sentence slowly. This could drastically enhance their understanding of the sentence, improving the acceptability score. However, again one would have to answer the question why this only seems to affect the worse case scenario and not the other cases of unacceptable preposition stranding.

Neither of the two solutions can be tested on the basis of the data in this chapter. I will therefore leave this issue for further research.[53] The important results found by the current study are that preposition stranding is affected by both D-linking and structural distance. The effect of D-linking is as expected, in that the more an item is D-linked, the more acceptable the cases of preposition stranding

53 It is important to note that T8 can be read and understood withing the need to interpret the preposition. As such, people might simply have left the stranded preposition unparsed. If so, then this would drastically raise the acceptability of the sentence and might have affected the test results.

become. The effect of structural distance is not as expected. Rather than improving with distance, cases of preposition stranding become less acceptable the more clause boundaries have been crossed. This finding clearly shows that the cases of preposition stranding under consideration cannot be due to a resumptive pronoun strategy.

8. Discussion

The results of the second experiment show that D-linking plays a role in preposition stranding without r-pronouns. This finding matches with the results of the first experiment, in which preposition stranding with the more D-linked DPs were judged more acceptable than preposition stranding with the less D-linked pronouns. The finding in the first experiment that increase of distance improves the acceptability of preposition stranding is not supported by the findings in the second experiment. The conclusion, therefore must be that preposition stranding without r-pronouns becomes more acceptable under D-linking, but does not become more acceptable with an increase in distance. This conclusion has a more important conclusion underlying it: adult native speakers of Dutch allow preposition stranding that violates the r-pronoun restriction. As can be seen in the tables in 11, all the inherently D-linked items and half of both the structurally D-linked and non-D-linked items are (marginally) acceptable. These results confirm the findings in the first experiment. The acceptability of the *welke* 'which' items and the marginal acceptability of the quantified phrases also provides further evidence against a silent r-pronoun strategy as used in left dislocation as the underlying structure for preposition stranding without r-pronouns. The picture that emerges from the two experiments is thus as follows: native speakers of Dutch allow preposition stranding without the use of r-pronouns. This type of stranding is not caused by a silent r-pronoun strategy, but is facilitated by D-linking.

The fact that this type of stranding is not facilitated by a silent r-pronoun strategy provides evidence in favour of the repair strategy proposed in this chapter. The fact that stranding is facilitated by D-linking but not positively affected by distance indicates that the repair strategy does not involve resumptive pronouns. The exact nature of the repair strategy has to be left for further research. However, these results do raise an interesting question: are there other cases in which an island violation in acquisition leads to some sort of repair strategy in the adult grammar? At the moment, I do not have such a case. I will, however, note that not all island violations in the child's grammar leak into the adult grammar. One of the well-known island violations in child Dutch is that of left branch extraction (van Kampen 1994).

(81) Welke$_i$ wil jij [t_i liedje] zingen? Sarah, 3;7
which want you song sing
'Which song do you want to sing?'

Left branch extractions were included in both questionnaires as filler items. The sentence in (82a) was used in the first questionnaire (in both lists) and the sentence in (82b) was used in the second questionnaire.

(82) a. *Welk$_i$ heeft Marie [t_i boek] gelezen?
which has Marie book read
'Which book did Marie read?'

b. *Welke$_i$ heeft Erik [t_i jas] gekocht?
which has Erik coat bought
'Which coat did Erik buy?'

The results of these two fillers are given in table 17, where Q stands for questionnaire. Q1 is (82a) and Q2 is (82b). Recall that the first questionnaire had two lists, represented here by List1 and List2.

Table 17: averages for left branch extraction

	Q1		**Q2**
	L1	**L2**	
Mean	1.1	1.3	1.5
Median	1	1	1
Mode	1	1	1

Adult speakers clearly find cases of left branch extraction completely unacceptable. Thus unlike for preposition stranding, the fact that left branch extraction was possible at some stage in acquisition did not have an effect on adults ratings of its unacceptability. This raises the question why certain island violations in child Dutch have an effect in the adult grammar, whereas others do not. There is one clear difference between preposition stranding that violates the r-pronoun restriction and left branch extraction that might play a role. This difference is the type of difference between adult and child language. In the case of preposition stranding, the difference between adult and child language is one of restriction: children allow all complements of the preposition to move, whereas adults restrict the movement to r-pronouns. In the case of left branch extraction, the difference between adult and child language is one of a strict ban: children allow left branch extractions, but adults do not. This difference between a restriction and a ban could have an effect in that it could be easier in the adult grammar to ease up on a restriction rather than to violate a strict ban.

9. Conclusion

This chapter has studied the use of preposition stranding without r-pronouns. On the basis of two questionnaires, it was shown that adult native speakers of Dutch allow preposition stranding without r-pronouns, contrary to what the standard theory posits. It was further shown that these cases of preposition stranding are indeed cases of stranding. They do not involve a silent r-pronoun strategy as used in left dislocation or an empty resumptive pronoun strategy. Preposition stranding without the use of r-pronouns is affected by discourse linking. It was argued that the reason why adult speakers of Dutch can strand prepositions without r-pronouns can be found in acquisition. At a certain stage in acquisition, children overgeneralise preposition stranding. And although the child will eventually retreat from that overgeneralisation, the ability to strand a preposition without an r-pronoun somehow remains available in the adult grammar as a repair mechanism. As a result, adult speakers of Dutch consider preposition stranding without r-pronouns acceptable, but not fully grammatical.

Chapter 5

Discussion of the acquisition process and further issues

1. Introduction

This study has presented a case study of the acquisition of the syntactic structure of particle verbs. This case study was used to illustrate a certain view on the acquisition process. In this process, the child makes use of pragmatic bootstrapping, syntactic cueing and generalisation skills to build layers of grammar. The goal of this chapter is to address some remaining issues. The chapter will start by taking a closer look at the syntactic structure of particle verbs in section 2. Recall that the literature offers two different syntactic structures, a small clause structure and a complex head structure, without providing conclusive evidence in favour of either. I will argue that the data presented in this study support the complex head theory.

Once the syntactic structure of particle verbs is discussed, the chapter will turn to a discussion of the take on the acquisition process proposed in this study. Section 3 will once more go over the entire process, placing the data presented in this study in their right context. Section 4 will then pay attention to the lexicon, which has not been discussed so far, and section 5 will discuss the role of memorized chunks in the acquisition process. Section 6 will then detail the proposal that grammar is layered and section 7 will complete the chapter and present an outlook on future research.

2. The syntactic structure of particle verbs

Recall that particle verbs exhibit ambiguous behaviour. On the one hand, they behave word like in that they can carry derivational morphology and on the other hand, they behave non-word like in that they can be separated in syntax (cf. chapter 1, section 6). This ambiguous behaviour has led to two different theories in the literature. Den Dikken (1992) takes the non-word like behaviour to be the basis of particle verbs and proposes that particles head a small clause. Neeleman (1994), however, takes the word like behaviour to be the basis of particle verbs and proposes that particle verbs form complex heads. The discussion in this study has focussed on the acquisition of the basic property of particle verbs, the complex predicate status, and on the acquisition of the lexical categories A, V and P. In this discussion it was not needed to take sides in the debate on the syntactic structure of particle verbs. However, I believe that the acquisition process laid out in this study argues in favour of the complex head analysis.

2.1 Evidence from acquisition

Chapter 2 gave a detailed discussion of the acquisition of the complex predicate status of particle verbs. It was shown that at the start of the acquisition process, particles are used independently and as early as in the two-word stage. To illustrate, children utter two-word phrases as in (1), where the P-elements *op* 'up' and *uit* 'out' clearly resemble the particles *op* 'up' and *uit* 'out' in adult Dutch, as in (2).

(1) a. melk op
milk up
'the milk is gone'

b. boekje uit
book-diminutive out
'done reading the book'

(2) a. De melk is op.
the milk is up
'There is no more milk/the milk is gone.'

b. Het boekje is uit.
The book-diminutive is out
'I have finished the book.'

As is typical of the two-word stage, the function words in the adult utterance are absent in the child utterance. At the next step in the acquisition process, children combine particles with auxiliaries and light verbs, as in (3). And finally, at the last step, children combine particles with lexical verbs, as in (4).

(3) a. doe melk weg
do milk away
'Put away the milk.'

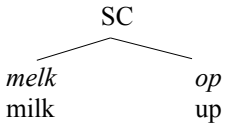
b. wil boekje uit
want book-diminutive out
'I want to be done reading the book.'

(4) Papa lees boekje voor.
daddy read book-diminutive for
'Daddy reads the book to me.'

At first sight, it might appear that this order in acquisition argues in favour of the small clause theory. In the two-word stage, particles are used as pragmatic predicates in a structure that could be argued to be a small clause. It would then seem tempting

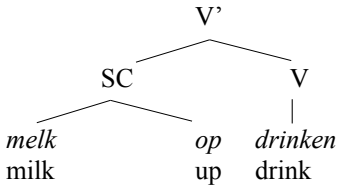
to propose that once particles combine with verbs to form particle verbs, they maintain this small clause structure. The structural representation of the acquisition process could then be as in (5), where (5a) represents the two-word stage and (5b) represents the stage at which the particle and the lexical verb are combined.

(5) a.



'the milk is gone'

b.



'drink all of the milk'

Straightforward as this analysis may seem, I would like to argue that it is not the preferred option. Before we can turn to the argument, it is important to note that there is nothing in the acquisition process that prevents the child from either forming a small clause or a complex head. The deciding evidence is found at the moment the child will have to form a syntactic structure to accommodate the complex predicate. And it is at this point that I argue that the small clause theory provides a less preferred solution.

Recall that in chapter 2 it was argued that the formation of a particle verb is due to the child having to realize both the lexical verb and the particle in exactly the same syntactic position. To briefly summarize the analysis, at the two-word stage both particles and non-finite lexical verbs are analysed as comments (6a), and finite verbs are analysed as operators (6b). With the rise of finite lexical verbs, the operator and comment position are linked, resulting in verb-movement (6c). This linking of the two positions forces the child to realise both the finite lexical verb and the particle in the same position (6d).

(6) a.

topic	*comment*	
melk	op	'milk gone'
koekje	eten	'cookie eat'

b.

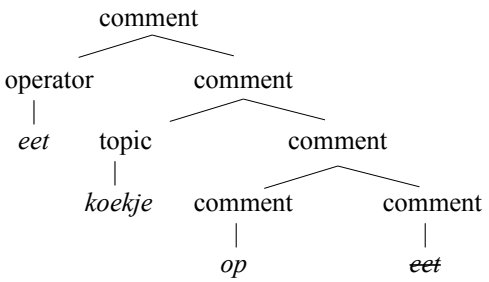
operator	*comment*	
kwil	weg	'want gone'
moet	lezen	'must read'

c. *operator [topic [adv comment]]*
zie ik niet ~~zie~~
see I not ~~see~~

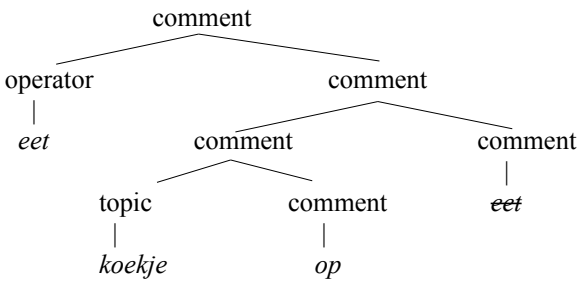
d. *[operator [topic comment]]*
eet koekje op ~~eet~~
eat cookie up ~~eat~~

The question that this analysis raises is what structure the child introduces to solve the problem of having to realise two syntactic elements in the same position. The answer put forward in chapter 2 is that since the finite lexical verb has to end up in a comment position, the child has two options (cf. chapter 2, section 5.2). In the first option, the child takes the comment containing the particle and turns it into a complex comment by adding the finite lexical verb, as in (7a). In the second option, the child decides to adjoin the finite lexical verb to the comment that contains both the particle and the noun, as in (7b). The option in (7b) represents the small clause theory and is essentially similar to the structure proposed in (5).

(7) a.



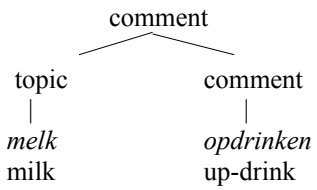
b.



Both structures lead to the same word order. As such, it cannot be judged from the child's expressions which one she has chosen. There are, however, some theoretical considerations to be taken into account. First, the option in (7a) offers the more minimal solution. When two heads compete over the same syntactic position, syntax merges them and turns them into a complex head. Since other parts of the acquisition process are already driven by local, minimal decisions, it would make

sense for this decision to be local as well. And secondly, the child will not only have to realise both a finite lexical verb and a particle in the same syntactic position, she will also have to split a non-finite particle verb. Recall that before the acquisition of V2, the child treats non-finite particle verbs as one unit and classifies them as a comment. An utterance containing a non-finite particle verb thus has the following structure.

(8)



With the acquisition of V2, the child will have to separate the particle and the verb. In this situation, opting for the complex comment as in (7a) is more straightforward than the complete reanalysis that option (7b) would bring. Splitting the comment opdrinken 'up-drink' into a complex comment consisting of op 'up' and drinken 'drink' would allow the child to maintain most of the structure in (8). Whereas moving drinken 'drink' to the higher comment position as in (7b) would radically alter the structure, making the particle op 'up' head its own projection. Thus once again, and perhaps more clearly visible this time, the complex head option is the more minimal option. I would like to argue that because it is the more minimal option, it is also the preferred option and the acquisition of the syntactic structure of particle verbs in Dutch argues in favour of the complex head theory.

2.2 Evidence from the adult grammar

Next to evidence from acquisition, there is also some evidence from the adult grammar arguing in favour of the complex head theory. In chapter 4 it was proposed that there is a repair strategy in the adult grammar of Dutch which allows speakers to deal with ungrammatical preposition stranding and has its roots in acquisition. These roots were presented in chapter 3, where it was shown that the acquisition of the lexical category P leads to overgeneralisation of preposition stranding. As was the case for the argument from acquisition, the ability in the adult grammar to strand a preposition while violating the r-pronoun restriction seems to argue in favour of the small clause theory. Under the small clause theory, the structural difference between a transitive particle verb (9b) and a verb with a PP argument (9a) is minimal.

(9) a. $[_{V'}\ [_{PP}$ aan $[_{DP}$ de jongen]] denken] PP compl.
to the boy think
'Think of the boy.'

b. $[_{V'}\ [_{SC}\ [_{PP}$ op $[_{DP}$ de boterham]]] eten] prt verb
up the sandwich eat
'Eat up the sandwich.'

As such, it should be a simple step to transform the structure in (9a), where the DP is subject to the r-pronoun restriction, to the structure in (9b), where the DP is not. This transformation would be the repair mechanism. As one might have noticed, the word order in (9b) is incorrect. The structure in (9b) is the structure of particle verbs as proposed by Den Dikken (1992). Den Dikken argues that the particle cannot assign case. As a consequence, the complement of the particle moves to the specifier position of the small clause where it receives case from the verb, as in (10).

(10) $[_{V'}\ [_{SC}\ [_{DP}$ de boterham$]_i$ $[_{PP}$ op $t_i]]$ eten]
the sandwich up eat
'Eat up the sandwich.'

This case-driven movement pinpoints the structural difference between (9a) and (9b). The structure in (9a) contains a preposition. This preposition assigns case to its complement and there is no case-driven movement. The structure in (9b), on the other hand, contains a particle, which cannot assign case and as a result, there is case-driven movement. If the ability to repair a violation of the r-pronoun restriction on preposition stranding is indeed due to treating a stranded preposition on a par with a particle, then this difference in case assignment is where the repair mechanism could be found. Removal or suppression of the case feature on the preposition would render the structures in (9) identical. Once the case feature has been removed or suppressed, the complement of the preposition no longer receives case. Like the complement of the particle, it has to move to the specifier position to receive case from the verb. Since this movement is obligatory, it would bypass the r-pronoun restriction that normally holds for the specifier of the PP (i.e. only r-pronouns can occupy the Spec-PP position, see van Riemsdijk 1978 and chapter 4). Once the complement has moved to the specifier position, it is freely available for further movement leading to preposition stranding that violates the r-pronoun restriction. The repair mechanism would then allow speakers to fix the otherwise ungrammatical preposition stranding by suppressing the case feature on the preposition and thus forcing the movement of the complement. It seems then that the small clause theory can offer a straightforward implementation of the repair mechanism.

However attractive this solution may seem, it does have its problems. First, it is not entirely clear what it would mean for a case feature to be suppressed. But most importantly, it is not clear what it would mean for a preposition to be treated identically to a particle. Particles and prepositions differ with respect to stress patterns and semantic interpretation. With a stranded preposition, the stress falls on the verb, as in (11a), whereas with a particle, the stress falls on the particle, as in (11b).

(11) a. Daar wil ik graag op ZITTEN.
there want I gladly up sit
'That I would like to sit on.'

b. Dat wil ik graag OPeten.
that want I gladly up-eat
'That I would like to eat.'

In the cases of ungrammatical preposition stranding, the stress pattern is similar to the one for regular preposition stranding and not to the one for particle verbs.

(12) Dan weet je welk onderdeel je goed naar moet KIJKEN.
then know you which component you good to must look
'Then you know which part you have to look at carefully.'

This indicates that whatever repair strategy is used, the preposition is not treated identically to a particle. Similar results are found when one considers the semantics of the P-element. The stranded preposition retains its prepositional meaning and never receives a particle-like interpretation. The stranded preposition *op* 'up' in (11a) has a locative interpretation, an interpretation that the particle *op* 'up' cannot have. This locative interpretation perseveres in ungrammatical preposition stranding such as (13).

(13) #Welke stoel wil je graag op zitten?
which chair want you gladly on sit
'Which chair would you like to sit on?'

This again indicates that the preposition does not get treated identically to a particle. If the preposition should not be treated on a par with a particle, then this specific implementation of the repair mechanism under the small clause theory is incorrect.

An alternative implementation of the repair mechanism is to make use of head incorporation. The rationale behind treating the preposition as a particle is that it would free up the complement of the preposition for movement. Incorporation of the preposition into the verb would achieve the same (cf. Hornstein & Weinberg 1981 and Blom 2005). Once the preposition is incorporated into the verb, the prepositional complement becomes the complement of the preposition-verb compound. As such, it is identical to any other verbal complement and freely available for movement. The advantage of this analysis is that the preposition remains a preposition and is never treated as a particle.

This form of incorporation can be implemented under either the small clause or the complex head theory. However, it is interesting to note that only the implementation under the complex head theory allows us to keep the intuition that the repair mechanism has its roots in acquisition. Unlike for the small clause theory, under the complex head analysis there is a clear structural difference between a verb

with a prepositional complement, (14a), and a transitive particle verb, (14b).

(14) a. [$_{V'}$ [$_{PP}$ aan [$_{DP}$ de jongen]] denken]
to the boy think
'Think of the boy.'

b. [$_{V'}$ [$_{DP}$ de boterham] [$_{V}$ [$_{PRT}$ op][$_{V}$ eten]]]
the sandwich up eat
'Eat up the sandwich.'

As a result of the incorporation of the preposition into the verb, the two structures become much more identical.

(15) a. [$_{V'}$ [$_{PP}$ t_i [$_{DP}$ de jongen]] [$_{V}$ [$_{P}$ aan$_i$] [$_{V}$ denken]
the boy to think
'Think of the boy.'

b. [$_{V'}$ [$_{DP}$ de boterham] [$_{V}$ [$_{PRT}$ op][$_{V}$ eten]]]
the sandwich up eat
'Eat up the sandwich.'

The identity fits perfectly with the proposal that the cause of the acceptance of preposition stranding without r-pronouns can be found in a stage in acquisition where children mistakenly analyse stranded prepositions as particles. The repair strategy mimics the stage in acquisition by structurally rendering the two different constructions as identical as possible, without touching the identity of the preposition.[54] Implementation of the head incorporation under the small clause theory does not allow for the same clear connection with acquisition. Under the small clause theory, the moment the preposition is incorporated into the verb, the two structures become radically different.

(16) a. [$_{V'}$ [$_{PP}$ t_i [$_{DP}$ de jongen]] [$_{V}$ aan$_i$ denken]]
the boy to think
'Think of the boy.'

54 In order to accommodate the observed differences between stranded prepositions and particles with regard to stress, one would have to assume that although the structures in (15) are nearly identical, for stress assignment reasons they are not. Arguably, compound structures formed by merge, as the particle verb in (15b), are inherently different from compound structures formed by movement, as the incorporated preposition in (15a). How this difference would affect stress assignment will have to be left for future research. Note that the key argument of the incorporation approach is that the identity of the preposition is not changed. The complement of the preposition is freed up by movement of the preposition, rather than by suppression of one of its distinguishing features, as proposed earlier. Preserving the identity of the preposition allows for a straightforward explanation of the observed semantic differences and the subtle difference in syntactic structure between (15a) and (15b) should allow for an explanation of the differences in stress assignment.

b. [$_{V'}$ [$_{SC}$ [$_{PP}$ op [$_{DP}$ de boterham]]] eten]
up the sandwich eat
'Eat up the sandwich.'

Preposition stranding would involve a complex verb, whereas a particle verb would not. This means that under the small clause theory, the head incorporation would have no relation to the structure of particle verbs. As such, it would lose the connection with the stage in acquisition, which is clearly an undesirable result. It is thus the complex head theory that allows for the more straightforward implementation of the repair strategy argued for in chapter 4. It appears then that evidence in favour of the complex head theory can be found both in acquisition and in the adult grammar.

2.2.1 Diachronic evidence

Next to providing an implementation of the repair strategy proposed in this study, there is also some diachronic evidence suggesting that incorporation of the preposition into the verb is real. Blom (2005) argues that particle verbs are part of a diachronic shift from a verb combined with an independent adposition to a prefixed verb. She shows that independent syntactic elements adjacent to the verb, like postpositions, can through time grammaticalise into particles. Particles, in turn, can then grammaticalise into prefixes. Blom argues that the prerequisite for this grammaticalisation process is that the independent syntactic element and verb have to be adjacent. As can be seen in (17), a postposition is adjacent to the verb and is as such a good candidate for grammaticalisation.

(17) Jan wil [$_{PP}$ die boom in] klimmen.
Jan wants that tree in climb
'Jan wants to climb that tree.'

Blom provides evidence that postpositions can turn into particles. One example she gives is of the particle verb *toespreken* 'address' in modern Dutch (18a), which used to be a verb with a postposition in Middle Dutch (18b), (Blom 2005, p.264-268).

(18) a. … dat hij het publiek toesprak.
… that he the audience to-spoke
'… that he addressed the audience.'

b. … dese coninck deze woorde [$_{PP}$ desen goutsmet toe]
… this king these words this goldsmith to

gheseyt hadde.
spoken had
'… this king had spoken these words to the goldsmith.'

One can also find potential evidence in modern Dutch for this diachronic shift. Modern Dutch contains minimal pairs, where one of the P-elements that combines with the verb is a particle and the other, homophonous P-element is a prefix. In (19) and (20) the next step of the grammaticalisation process is illustrated with a minimal pair where the P-element *voor* 'for' is a particle in (19a) and (20a) and a prefix in (19b) and (20b).

(19) a. Brand komt vaak voor.
fire come often for
'Fires occur often.'

b. Jan voorkomt vaak een brand.
Jan for-comes often a fire
'Jan often prevents a fire.'

(20) a. ... omdat brand vaak VOORkomt.
... because fire often for-comes
'… because fire often occurs.'

b. ... omdat Jan brand vaak voorKOMT.
... because Jan fire often for-comes
'… because Jan often prevents fire.'

As can be seen in (19), the particle verb *voorkomen* 'to occur' in (19a) splits under verb-second, whereas with the prefixed verb *voorkomen* 'to prevent' in (19b), the prefix obligatorily moves along. The examples in (20) show the difference in stress pattern. With the particle verb in (20a), the stress falls on the particle, whereas with the prefixed verb in (20b), the stress falls on the verb.

Minimal pairs with a preposition and particle also exist.

(21) a. Jan wacht op zijn vrienden.
Jan waits on his friends
'Jan waits for his friends.'

b. Jan wacht zijn vrienden op.
Jan waits his friends on
'Jan waits for his friends.'

The P-element *op* 'on' in (21a) is a preposition, whereas it is a particle in (21b). Of course, the verb and the preposition will only be adjacent, and therefore available to the grammaticalisation process, when the verb is non-finite and the preposition is stranded.

(22) Waar$_i$ wil Jan [$_{PP}$ op t_i] wachten?
where wants Jan on wait
'What does Jan want to wait for?'

For the current argument the crucial element of Blom's analysis is that the diachronic evidence shows that adpositions can become part of the verbal domain. The same claim is made by the incorporation implementation of the repair strategy under the complex head theory. This convergence in evidence indicates two things. First, it provides evidence to support the implementation of the repair strategy as head incorporation with a complex head structure. And as such, it indirectly argues in favour of the complex head analysis of particle verbs. And secondly, it gives credit to the existence of the repair strategy. It could be argued that because the adult Dutch grammar has a repair strategy that allows the preposition to be incorporated into the verbal projection, it does not only allow adult speakers to repair ungrammatical preposition stranding, it also fuels the diachronic shift from verb with PP as a complement to particle verb and eventually to prefixed verb.

2.3 Conclusion

Evidence from both acquisition and the adult grammar presented in this study argues in favour of the complex head theory. The complex head theory can offer a straightforward implementation of the repair mechanism and offers a more minimal solution to the problem the child is faced with when she has to realize two heads in one syntactic position. As such this study contributes to the discussion on whether particle verbs select a small clause or form complex heads by providing evidence in favour of the latter.

3. On the acquisition process

Next to addressing the acquisition of the syntactic structure of particle verbs, this study has also presented an approach to the acquisition process itself. This approach was presented in the chapter 1 and chapters 2, 3 and 4 provided evidence in favour of different components of the proposal. The purpose of this section is to tie all the ends together and present a comprehensive overview of which parts of the acquisition process were illustrated where.

3.1 General overview

In chapter 1 it was argued that children make use of pragmatic bootstrapping and syntactic cueing to build their grammar. This process was argued to be complemented by a general learning strategy that enables children to focus on easy-to-identify expressions and slowly enhance their grammar by one unknown item at a time. The process of syntactic cueing was argued to make use of local, binary frames and to contribute to an increasingly more complex lexicon. The precise role of the lexicon was not discussed and will be addressed in section 4, but it was argued that pressure on the lexicon leads to the introduction of rules. The consecutive grammars that children build were argued to be layered in that a grammar at a previous stage remains accessible at a later stage. The exact nature of this layering will be discussed in section 6, but it was argued to be the cause of the repair mechanism presented in chapter 4. Throughout the acquisition process, it was argued children are not conservative, but make active use of generalisations. All these features of the acquisition process were directly or indirectly illustrated in chapters 2 and 3.

3.2 Acquiring complex predicate status

The beginning of the acquisition of the syntactic structure of particle verbs was illustrated in chapter 2. At the start of the acquisition process the child makes use of a general learning strategy and of pragmatic bootstrapping. It was shown that the child uses pragmatic bootstrapping to classify words into three categories: operator, topic or comment. Comments carry the function of pragmatic predicate. As such, all predicate-like elements, including particles and non-finite lexical verbs, are initially labelled as comment by the child. Operators form a closed set of illocution markers and contain all finite verbal expressions, including finite lexical verbs. This initial bootstrapping leaves the child with lexical verbs that belong to two different pragmatic classes. Finite lexical verbs are classified as operators and non-finite lexical verbs as comments. This difference in classification allows the child to realize that the lexical verb has a dual function in a sentence as both a pragmatic predicate and an illocution marker. The start of this realization is triggered by the use of utterances with a finite lexical verb and no other predicate-like element. An example of such an utterance is given in (23) (cf. chapter 2, section 5).

(23) *[operator [topic adv comment]]*
zie ik niet ___
see I not
'(That) I do not see.'

The absence of any other predicate-like element leaves the child with an empty comment position. This empty comment position will have to be related to something in the utterance to give it an interpretation. The only element in the

utterance that the comment can possibly be linked to is the operator. Neither the topic, nor the adverb contain an element that has ever appeared in the comment position. The operator, on the other hand, contains an element *zie* 'see', which in meaning and phonological form is very closely related to another element *zien* 'seen', which does appear in the comment position. As such, the empty comment position is related to the operator position. The linking of the two positions enables the child both to realize that the lexical verb has a dual function and to introduce the verb-movement rule that underlies verb-second. It is at this stage of the acquisition process that syntactic cueing plays a role in the acquisition of verbs generally and of particle verbs specifically. Syntactic cueing enables the child to distinguish the non-finite verbs from other elements classified as comments. Only non-finite verbs are linked to the operator position and hence non-finite verbs are structurally different from other comments. This syntactic cueing introduces the lexical category V and provides the child with the necessary information to distinguish the verbal part of the particle verb from the particle.

It was argued that the linking of the two positions also places a burden on the lexicon. At first, the child will store two, unrelated entries for each lexical verb. In one entry the verb is finite and is labelled operator and in the other entry the verb is non-finite and is labelled comment. With more and more verbs having these two lexical entries, the lexicon doubles in size. At some point, the child will realize that introducing a rule that automatically links the non-finite verb in the comment position to the finite verb in the operator position (i.e. verb-movement) will greatly reduce the number of lexical entries. The exact nature of this process will be discussed in section 4, but it is not hard to imagine that reducing the number of lexical entries will have a positive effect on lexical retrieval and hence on processing speed.

The proposal in chapter 2 is thus that the combination of pragmatic bootstrapping, syntactic cueing and pressure on the lexicon leads to the acquisition of the verb-movement rule that underlies V2. And it is the introduction of this verb-movement rule that leads to the acquisition of the complex predicate status of particle verbs. Particles, like non-finite lexical verbs, are classified as comments. The verb-movement rule links the finite lexical verb to the comment position. In the case of particle verbs, this position is already filled by a particle. Since the position is already filled, the child will have to introduce a new syntactic structure that can accommodate both the (trace/copy of the) finite lexical verb and the particle in the comment position. This new syntactic structure is the initiation of the complex predicate nature of particle verbs.

3.3 The use of local, binary frames

The continuation of the acquisition process of the syntactic structure of particle verbs was laid out in chapter 3. The acquisition of the complex predicate status of particle verbs left the child with a lexical category, V, for the verbal part of the

particle verb. The next step in the acquisition process is to distinguish the particles from the other comments and to determine which lexical class or classes they form. In the adult grammar, particles belong either to the lexical category A or P. The child will thus have to acquire these two categories. The acquisition of these two categories is composed of two separate steps. First, the child will have to be able to distinguish elements belonging to category A from elements belonging to category P. After this initial step, the child will have to be able to distinguish the particles from the other elements belonging to the same lexical category. Thus the child will have to acquire the difference between adpositions and particles for category P and the difference between adjectives and particles for category A.

It was shown in chapter 3 that the acquisition of both differences, between the two categories and within the categories, occurs on the basis of syntactic cueing. Children make use of local, binary frames to tell different elements apart. The local, binary frames help the child at first decipher the difference between adjectives and prepositions. Adjectives appear after a determiner (24a), whereas prepositions precede determiners (24b).

(24) a. de mooie jongen
the pretty boy
'the pretty boy'

b. op de tafel
on the table
'on the table'

It was argued that this local difference is sufficient to introduce the lexical categories A and P (or, at the very least, to introduce a categorical difference between expressions such as op in (24b) and expressions such as *mooie* in (24a)). It was then shown that the local, binary frames help the child tease apart prepositions from particles. Prepositions appear in combination with nouns (25a), whereas particles appear in combination with non-finite (lexical) verbs (25b).

(25) a. in bad, uit bed
in bath out bed
'in bath, out of bed'

b. inschrijven, uitgeven
in-write out-give
'to register, to publish'

It was proposed that this structural distribution is enough to give the child a chance to start distinguishing particles from prepositions. However, it was shown that the process of distinguishing prepositions from particles is complicated by the use of preposition stranding in the adult language. In the adult grammar a stranded

preposition appears adjacent to the non-finite (lexical) verb.

(26) Waar$_i$ moet Jan vooral niet [$_{PP}$ aan t_i] denken?
where must Jan mainly not to think
'What is it that Jan really shouldn't think of?'

As such, for the child the stranded preposition *aan* 'to' in (26) resembles a particle in that it, just like a particle, appears adjacent to a non-finite (lexical) verb. As a result, the child will analyse a stranded preposition as a particle and be blind at first to preposition stranding. Since preposition stranding is restricted in the adult grammar, the child's unawareness of preposition stranding makes it impossible for the child to be aware of the restrictions on preposition stranding. It was argued that this leads to an overgeneralisation of preposition stranding: the child will create constructions in which a preposition appears adjacent to a non-finite (lexical) verb and the complement of the preposition is fronted without the proper adherence to the restrictions on preposition stranding.

The acquisition of the restriction on preposition stranding is once again based on the use of local, binary frames. At some point the child will realise that the frame of P-N (P-element appears adjacent to noun, the frame which indicates a preposition) (27a) is in complementary distribution with another frame, that of an r-pronoun appearing directly adjacent to a preposition (r-pro-P, r-pronoun appears adjacent to a P-element) (27b).

(27) a. in bad
in bath

b. daarin
there-in

Recall that the restriction on preposition stranding in the adult language concerns r-pronouns in that only these can strand a preposition. Once the child realises that the two frames are in complementary distribution, she can introduce the r-pronoun restriction on preposition stranding. She realises that once the N complement of the preposition appears in front of the preposition, it transforms into an r-pronoun. This r-pronoun can then appear elsewhere in the sentence, moved away from the preposition, as well. The introduction of the r-pronoun restriction will allow the child to eventually retreat from the overgeneralisation of preposition stranding.

The acquisition of the difference between lexical categories A and P and of the difference between prepositions and particles shows the important role played by syntactic cueing and the use of local, binary frames. It also reveals that children are keen to generalise. The local, binary frame of P-V (P-element appears adjacent to V, the frame or particles) is eagerly applied to all P-elements that meet the requirement, whether they are real particles in the adult grammar or not (cf. chapter 3, section 6). This enthusiasm leads to the overgeneralisation of preposition stranding. The

overgeneralisation does not form a problem for the acquisition process, since there is positive evidence available in the adult input that will guide the child away from the overgeneralisation. Crucially, this positive evidence can only be analysed by the child once the overgeneralisation is made.

3.4 Loose ends

The acquisition process presented in chapters 2 and 3 illustrates the use of the general learning system, of pragmatic bootstrapping and of syntactic cueing. It also showed how syntactic cueing makes use of local, binary frames and how the child makes use of generalisations. Certain aspects of the acquisition process were hinted at in the chapters and in the discussion above, but were not discussed in detail. Those aspects concern the role of the lexicon, the nature of the layering of grammar and the precise function of unanalysed chunks and memorized constructions. All these aspects will be addressed in the next three sections. I will first detail the role of the lexicon in section 4. In section 5 I will then turn to a discussion of the function of unanalysed chunks and will argue that although there are similarities with the account proposed in this study, I do not believe grammar to be construction-based. Finally, in section 6 I will address the nature of the layering of grammar.

4. The structure of the lexicon

Part of this study focussed on the acquisition of lexical categories: chapters 2 and 3 discussed the acquisition of the categories V, A and P. When one discusses the acquisition of lexical categories, one has to adopt a theory of the structure of the lexicon. This theory has to specify in detail what type of information and how much information is stored with a lexical entry. This section briefly presents two very different perspectives on how the lexicon is structured. On the one side there is the lexicalist approach, which assumes that words are stored with a rich and very specific set of syntactic and semantic features. On the other side there is the exo-skeletal approach (Borer 2005), which assumes that words are stored as sound-meaning pairs only and that all word formation takes place in syntax. Based on similarities between the acquisition process proposed in this study and the exo-skeletal approach, I will adopt the exo-skeletal approach. In section 4.3 I will discuss in some detail how the exo-skeletal approach can be fitted in the acquisition process proposed in this study.

4.1 The lexicalist approach

In the lexicalist approach, the lexicon is a module separate from syntax which contains both words and word formation rules. The origin of the lexicalist approach

lies in the idiosyncratic nature of word formation. Prior to the lexicalist approach, all word formation was thought to occur in syntax and the lexicon consisted of a list of sound-meaning pairs only (cf. Scalise & Guavara (2005) for an overview of the development of lexicalism). Closer observation of word formation, however, revealed that word formation rules differ from syntactic rules. Unlike syntactic rules, word formation rules do not apply to all words alike. To exemplify, the suffix –able does not attach to all verbs: a book can be readable, but a lamp is not glow-able, nor is a tall tower fall-able. To explain the difference between word formation rules and structure building rules, Chomsky (1970) proposed to separate them. Word formation rules would no longer belong in syntax, but would be situated in the lexicon. By having separate morphological rules, these rules would not have to comply with the restrictions and limitations on syntactic rules and would thus be allowed to differ. As a result, the lexicon no longer only consisted of a list of words, but also contained a set of morphological rules. This not only enlarges the lexicon, but it also changes the function of the lexicon. The lexicon no longer just stores words, it now also builds words. Once the words have been built, they enter the syntactic derivation.

Next to proposing that words are built in the lexicon, the lexicalist approach also assumes that words are stored with specific syntactic information. This information is used in the syntactic derivation to guarantee a grammatical result. Different types of information can be stored in a lexical entry. With the addition of morphological rules, an entry in the lexicon at the very least contains categorical information. Affixes can come with categorical information. For example, the affix *-er* will turn a verb such as *walk* into the noun *walker*. But affixes can also have requirements on category. An affix such as *-full* only attaches to nouns (thus someone can be *careful*, but cannot be *happyful*). As such, adding derivational morphology to the lexicon automatically adds categorical information to the lexical entries. Lexical entries can also encode other information. In the case of verbs, they can include subcategorisation frames and linking rules (see Rappaport Hovav & Levin 1998 for a full discussion). A subcategorisation frame contains information about the specific requirements a verb has on the categorial status of its complement. For example, a verb like live requires its complement to be a PP, whereas a verb like eat requires its complement to be a DP. Linking rules encode the syntactic realisation of the argument structure (i.e. for a verb like fear, the subject is the experiencer and the object the theme, whereas for a verb like scare, the object is the experiencer and the subject the theme, but see also the discussion below). In the Minimalist Program (Chomsky 1995), lexical entries contain features that either need to be checked or provide checking opportunities. It is these features, stored in the lexical entry, that guide the entire syntactic derivation.

In the lexicalist approach, then, words are formed in the lexicon and are stored with a rich set of specific syntactic instructions. This set of instructions is used in the syntactic derivation to guarantee a converging derivation. This means that a great deal of the information needed to derive a sentence is already present in the entry of a word in the lexicon.

4.2 The exo-skeletal approach

Borer (2005) argues against a strict lexicalist approach on the basis of a phenomenon known as "coercion". Coercion occurs when a word is put in a syntactic context that forces the word to be part of a different lexical class. Consider, for example, the noun *siren*. Borer (2005: p. 8) shows that although *siren* is considered to be a noun, it can be used as a verb.

(28) a. The police car sirened the Porsche to stop.
b. The factory horns sirened throughout the raid.

If *siren* is stored in the lexicon as a noun, then it should never be able to appear in a verbal position. Coercion therefore poses a serious puzzle to any lexicalist approach. Borer takes coercion to indicate that words are not stored as lexical categories in the lexicon. If siren is not stored with the categorical label N, then it is free to appear in any syntactic environment, including the one that renders it a verb. She then pushes the proposal to the extreme, by proposing that if words are not stored with their categorical label, then maybe they are not stored with any syntactic or semantic information at all. She labels this approach 'exo-skeletal' in that the function a word has in a syntactic structure is completely determined by the syntactic environment it occurs in. The word receives, as it were, its skeleton from the outside, in the syntactic structure, rather than being stored with one in the lexicon. Therefore, siren is a noun when it occurs in a nominal environment and it is a verb when it occurs in a verbal environment.

Next to being able to explain coercion without extra effort, there is another advantage to the exo-skeletal approach. Borer points out that in a lexicalist approach, both the lexical item and the syntactic structure contribute identical syntactic information. In the lexicalist approach, a verb is, first of all, stored with the categorical label V. But it also carries information about its thematic structure and about how it should be linked in syntax. For example, an experiencer verb like *love* is stored as a transitive verb with an experiencer and a theme, where the experiencer is to be merged as the subject and the theme is to be merged as a direct object, as in (29a). Another experiencer verb like *frighten* is stored similarly as *love*, but with reverse linking rules in that the theme is merged as the subject and the experiencer as the direct object, as in (29b).

(29) a. love {experiencer$_{SUBJ}$, theme$_{DO}$}
John loves spiders.

b. frighten {theme$_{SUBJ}$, experiencer$_{DO}$}
Spiders frighten Mary.

At the same time, in the current generative framework syntax, has unique structural positions for subjects, direct objects and indirect objects. A direct object is thus

marked as a direct object twice. Once by virtue of its position in the syntactic structure and once by virtue of its position in the thematic structure combined with the linking rules. Borer argues that this double marking leads to redundancy in the system. If words were no longer stored with any syntactic information, the system could focus on expressing the relevant information in syntax only and it would no longer contain redundant information.

In the Minimalist Program, the information that enables syntax to provide unique syntactic positions for subjects, direct objects and indirect objects is encoded by functional projections. These functional projection contain sets of very specific syntactic instructions and will have to be stored somewhere. The only place they can be stored is in the lexicon. However, Borer proposes that words are not stored with their syntactic information. Therefore, in order to maintain her exo-skeletal approach, she makes the proposal that the lexicon is split. The lexicon contains two separate lists of items. One list is an encyclopedic list of words and stores nothing more than the relation between sound and meaning. The other list is a list of functional categories and features. Borer proposes that this latter list is universal to all languages and hence innate. The encyclopedic list is language-specific, since the sound-meaning pairing is arbitrary. The building of syntactic structure, then, occurs solely with the use of the functional categories from the innate list of categories and features. Words, which are all stored in the encyclopedic list, are then used at will, enabling them to occur in any syntactic structure.

4.3 Acquiring the lexicon

Borer's proposal that the lexical category of a word is determined by its syntactic context matches really well with the acquisition process presented in this study. I have argued that children acquire the categorical function of a word through the syntactic context the word appears in. The child is able to classify a word as a verb, because it behaves syntactically as a verb. However, I have also stated that words are stored in the lexicon with their pragmatic labels and the syntactic environments they can appear in. Storing the word with this type of information is what eventually leads to too high a burden on the lexicon and to rule formation. This appears to be in contradiction with Borer's approach, which states that words are stored as simple sound-meaning pairs without any other information.

Since the intuition behind Borer's proposal, words are stored without syntactic information, and the intuition behind the acquisition process proposed in this study, children acquire the categorical status of words on the basis of syntactic information, are so alike, I will adopt Borer's account. This means that a solution to the apparent contradiction concerning storing other information with the word is needed. I would tentatively like to propose the following. Recall Borer's proposal that the lexicon is split into two lists. One contains the sound-meaning pairs and the other contains the functional categories and features. Now suppose that these two lists are linked. Words in the encyclopedic list that generally appear in the same

syntactic environment have a strong connection to the functional categories and features that provide that syntactic environment. To be more specific, words like water, which tend to be nouns, have strong links to the functional categories that would render them nouns in syntax. And words like walk, which can either be a noun or a verb, would have equally strong links to the functional categories that would render them nouns as to the functional categories that would render them verbs.

Linking the two lists might have two advantages. First, people are able to categorize words without using those words in a sentence. For example, speakers of English have an intuition that water is a noun, even if water is used in isolation. This intuition is easily captured in the lexicalist approach, since water would be stored with its categorical information, but is hard to capture in Borer's account. According to Borer, water would only receive the categorical label N after it has been used in a syntactic environment that would render it a noun. As such, the information that water is a noun only exists if water is used in a sentence. However, the intuition that water is a noun seems to exist independently of its use in a sentence. Linking the two lists could provide a way to capture this intuition without needing to stray from the proposal that water is stored without any categorical information. If water has strong connections to those functional categories that would render it a noun if it were to be used in a sentence, then the intuition would follow. The intuition would then be nothing more than knowing that water is commonly used in a syntactic noun environment (cf. Grimshaw (1981) for an in depth discussion of canonical realization).

The fact that water has strong connections to those functional categories that would render it a noun does not mean that it cannot be used in any other syntactic context. The only result of the strong connections would be that using water in another syntactic context could lead to slower processing and a surprise reaction. This leads us to the second possible advantage. Linking the two lists could enhance processing speed. In a neural network, paths that are frequently used are stronger than paths that are used less frequently. Strong paths are easier and quicker to use and enable fast processing. By linking the two lists, strong paths can be built between the words in the encyclopedic list and the list of functional categories. The existence of these strong paths would speed up the word finding process and, as such, the entire derivation.

Linking the two lists enables one to keep Borer's intuition that words are stored without syntactic information, while at the same time one can account for the coercion facts and capture the common intuition that certain words are nouns and other words are verbs. How does this apply to acquisition? Recall that Borer proposes that the list of functional categories is innate. Recall further that the acquisition process proposed in this study states that acquisition should be able to occur without innate, specifically linguistic knowledge. This poses a clear conflict. The list of functional categories cannot be innate and has to be the result of the acquisition process. In order to marry the exo-skeletal approach with the acquisition process proposed here, I would like to propose the following acquisition path. The

child does not start with a lexicon that consists of two lists. She will first store each word with its pragmatic and structural information, as exemplified in chapter 2. Thus a lexical verb such as *drinken* 'to drink' will first be stored in the lexicon along the following lines.

(30) *drinken* ('to drink')
pragmatic information: comment
structural information: utterance-final position

It was shown in chapter 2 that the child eventually realises that lexical verbs can appear in two positions in Dutch. At first, she will store both possibilities in her lexicon. So next to the entry in (30), she will also have an entry such as (31).

(31) *drink* ('drink')
pragmatic information: operator
structural information: left periphery of utterance

The entry in (31) contains the information of the finite version of the verb *drinken* 'to drink', which is positioned in the verb-second position. But with the growth of the lexicon, and with more lexical verbs appearing in more than one structural configuration, the child will abstract away from storing each word with its individual information and introduce a separation. From this moment on, the arbitrary sound-meaning pairs will be stored in one place in her lexicon and the pragmatic and structural information will be stored in another place in her lexicon. The pragmatic labels will eventually turn into lexical categories, as was shown for category V in chapter 2 and for categories A and P in chapter 3. By storing the pragmatic and structural information separately from the sound-meaning pairs, she will only have to store the information once and hence save storage space. For example, rather than having four entries which specify the same pragmatic and structural information twice, as in (32), the child can now store the pragmatic and structural information once and provide a linking with the stored sound-meaning pairs, as in (33).

(32) *drinken* ('to drink')
pragmatic information: comment
structural information: utterance-final position

lezen ('to read')
pragmatic information: comment
structural information: utterance-final position

drink (‘drink’)
pragmatic information: operator
structural information: left periphery of utterance

lees (‘read’)
pragmatic information: operator
structural information: left periphery of utterance

(33)

sound-meaning pairs	pragmatic and structural information
drinken ‘to drink’	comment, utterance-final position
lezen ‘to read’	
lees ‘read’	operator, left periphery of utterance
drink ‘drink’	

At the start of the separation process, the links between the words and their pragmatic and structural information are very strong. Over time, words will be used in more than one configuration and the links will grow weaker (or, more likely, more strong links will be introduced). Eventually, the child will arrive at an adult lexicon, with an encyclopedic list on the one side, a list of lexical categories on the other and strong links between them.

5. On constructions and constructionist grammar

In this study I have presented and detailed the proposal that the child makes use of local, syntactic information to acquire her language (cf. chapters 2 and 3 in particular). In the previous section I have proposed that children store this information in their lexicon at first before they arrive at an exo-skeletal lexicon. This stage in acquisition at which children store words and memorized chunks in their lexicon along with the relevant pragmatic/semantic and syntactic information resembles proposals made in the framework of Construction Grammar (Lakoff 1987, Langacker 1987/1991, Goldberg 1995). In this framework it is argued that the entire grammar solely consists of an intricate network of constructions, all of which are stored in the lexicon. This clearly resembles proposals made here about the nature of the lexicon in the early stages of acquisition. But even though it might appear as if the child is building a construction grammar, I will propose that the child inevitably arrives at a rule-based grammar. In this section, I will first briefly introduce the Construction Grammar approach and its take on acquisition. I will then argue that the acquisition process laid out in this study clearly argues in favour of a rule-based account.

5.1 Construction Grammar

Construction Grammar originated as an alternative to rule-based grammar in a desire to explain anomalies on the syntax-semantics interface. These anomalies are most clearly represented by idiomatic expressions. Idiomatic expressions form a challenge to the generative approach. In the generative framework it is assumed that the meaning of a sentence is compositional. To calculate the meaning of a sentence, one only needs to take the words used in the sentence and combine them with the syntactic environment they are used in. Thus, although the sentences in (34a) and (34b) consist of the same words, they have a different meaning due to the difference in syntactic environment for each individual word.

(34) a. Dog bites man.
b. Man bites dog.

Idioms are different from regular sentences in that next to their compositional meaning, they also carry a non-compositional, idiomatic meaning. Take, for example, the sentence in (35).

(35) John kicked the bucket.

Next to the literal, or compositional, interpretation of John physically kicking a bucket, there is also an idiomatic, or non-compositional, interpretation of John dying. The question now is how people arrive at the non-compositional interpretation. One possible answer is that the idiomatic part of the expression (i.e. 'kick the bucket') is stored in the lexicon in its entirety, including the relevant syntactic information and of course, the non-compositional interpretation (Jackendoff 1997, Ifill 2002). Construction Grammar took the proposal that idioms are stored as a construction in the lexicon and extended it to the entire grammar. The general argument is that at some level or other, all expressions show idiomatic behaviour. Take, for example, the expression in (36).

(36) The more you read, the smarter you become.

Parts of the expression in (36) seem to depend on the other in a way that the entire expression can be argued to be a fixed construction. The entire expression contains two separate parts that are not combined with a conjunction (nor can they be). Both parts contain a variable, where the variable in the first part must be independent (i.e. read) and the variable in the second part must be dependent (i.e. smart). These requirements (no use of conjunction, obligatorily independent/dependent variables and the unusual combination of a determiner with a comparative phrase) render the structure in (36) not fully predictable and as such somewhat idiomatic.

It is argued that idiomatic behaviour can even be found in more regular structures such as passive. As is well-known, not all verbs can appear in passive

voice. Intransitive verbs in English such as sleep in (37b) typically cannot, because they lack a direct object (or more precisely, an internal argument, cf. Burzio 1986).

(37) a. The vase was broken (by the clumsy boy).
b. *John was slept (by the nice nurse).

Since not all verbs can appear in passive voice, the passive construction is limited and could therefore also be argued to be somewhat idiomatic.

Next to providing an explanation for the idiomatic behaviour of language, Construction Grammar also points to the possibility that the adult language contains chunks. Frequently used expressions like those in (38) can be argued to be used as unanalysed chunks.

(38) a. I dunno.
b. Could you please …
c. My name is …
d. How are you doing?
e. by and large

Bybee & Scheibman (1999) provide psychological evidence that I dunno is indeed produced as one single item comparable to a regular word. The presence of chunks would straightforwardly fit in the Construction Grammar approach. The chunks would be stored similarly to the idiomatic expressions: as whole utterances with the accompanying readings.

Idiomatic expressions such as kick the bucket can be stored as whole items, but semi-idiomatic expressions such as passive cannot. As such, Construction Grammar proposes that it is not the entire sentence in (37a) that is stored, but rather an abstract representation of the passive construction. These abstract representations are shaped as follows (Goldberg 2003).

(39) Subj Aux VP_{PP} (by PP)

This construction is stored with the abstract semantic/pragmatic function of a passive, which according to Goldberg is ‘to make the undergoer topical and/or actor non-topical’. All syntactic constructions (i.e. question phrases, topic constructions , passives, etc.) are argued to have an abstract representation similar to the one in (39). Crucially, these constructions do not contain any transformational rules. Construction Grammar assumes that the surface structure of syntax is all the structure there is. As such, transformational rules, such as wh-movement or topicalisation, do not exist in Construction Grammar. Instead, it is argued that all the constructions are individual constructions with their own semantic/pragmatic function.

All the constructions needed to form a language are stored in a so-called “constructicon” (Goldberg 1995,2003). A constructicon encompasses both what is

the lexicon and grammar in the generative framework, since a construction encodes both lexical and structural properties. The constructicon is a complex and intricate network that connects all the constructions that occur in one language. So, for example, although the passive is argued to be an independent construction from the active, it is likely that they are connected in the constructicon. As such, the connections combined with the abstract level of the constructions are argued to account for the regularities observed in languages.

5.2 Construction Grammar and acquisition

Like most linguistic frameworks, Construction Grammar aims to provide an account of first language acquisition. Since a grammar in Construction Grammar solely consists of constructions, Construction Grammar focuses on the acquisition of constructions. It has often been observed that children make use of fixed expressions or chunks in the early stages of acquisition (Brown 1973, Bowerman 1976, Tomasello 1992, 2000 to name just a few). In the generative framework, and in this study, it is argued that children seek abstract properties where they can and inevitably move away from using fixed expressions to a rule-based grammar. In Construction Grammar, these fixed expressions are taken to be the start of the constructicon. Children are argued to start out as conservative learners who mimic the adult expressions. In doing so, they build a small constructicon containing unanalysed chunks, ranging in size from one-word expressions to more complex constructions, and their accompanying semantic and pragmatic use. In the next stage, children are argued to introduce gaps in their existing constructions, rendering them as pivotal schemes (Tomasello 2000).

(40) a. Where's daddy?
b. Where's … ?

A fixed construction from the first stage (40a), will become a pivot structure in the second stage, as in (40b). What is considered typical of this stage is that children can have different constructions for different words. The most well-known case at hand are Tomasello's verb-islands. Tomasello noticed while observing his daughter, that she used different verbs in different inflectional paradigms. One verb could appear in past tense only, whereas another verb could appear in present tense only. Even though the child used both past and present tense, she apparently had not yet generalised the inflectional paradigm to include all verbs. The creativity needed to do this arises at the next stage, where children start generalizing their constructions. Children slowly move from unanalysed chunks and pivotal schemes to abstract constructions like the one in (39).

5.3 Discussion

The start of the acquisition process proposed in this study shows resemblance to the acquisition process proposed in Construction Grammar. In both cases, it is proposed that children use unanalysed chunks and that these chunks are stored with their pragmatic functions. The difference between the account proposed here and Construction Grammar arises at the stage where children start generalising. Construction Grammar proposes that children use their generalising ability to arrive at abstract constructions. The account argued for here states that children use their generalising ability to arrive at a rule-based grammar. In this section I will show how this study provides an argument in favour of the rule-based approach.[55]

Recall from chapter 2 that the realisation of the complex predicate status of particle verbs is dependent on the acquisition of verb-movement in verb-second environments. Prior to the acquisition of V2, the child has the following classifications.

(41)

non-finite lexical verb:	utterance-final comment
finite lexical verb:	operator in left periphery
particle:	utterance-final comment

These classifications could be rephrased as the following constructions:

(42)

a. [OPERATOR/TOPIC ___] [NON-FINITE LEXICAL VERB ___]
b. [FINITE LEXICAL VERB ___] [COMMENT ___]
c. [OPERATOR/TOPIC ___] [PARTICLE ___]

An operator (or topic) can be followed by either a non-finite lexical verb, as in (42a), or by a particle, as in (42c). The construction in (42b) shows that a finite lexical verb is followed by a comment. This stage in the acquisition process can thus easily be captured in Construction Grammar. The next step in the acquisition process is the acquisition of the verb-movement in verb-second environments. It was argued in chapter 2 that with the rise of V2, the finite lexical verb in the operator position is linked to the comment position. And when the comment position is already filled with a particle, this leads to the realisation of the complex predicate status of particle verbs. This is where the account in this study differs from that in Construction Grammar. If the same development (i.e. the acquisition of the verb-movement in verb-second environments leading to the acquisition of the complex predicate status of particle verbs) were phrased in Construction Grammar, the complex predicate status would not follow. In Construction Grammar, V2 is not derived by a verb-movement rule, but through an independent frame. Acquiring V2 would mean acquiring the correct abstract frame with its accompanying semantic/pragmatic

55 See Westergaard (2009) for additional argumentation that the acquisition of movement, the use of verb-second in question phrases in the Norwegian dialect of Tromsø, is more easily captured in a rule-based grammar than in Construction Grammar.

function (which most likely would be an illocutionary function). The finite lexical verb would not be linked to the comment position. Without this linking, there is no need for the acquisition of V2 to be related to the acquisition of the complex predicate status of particle verbs. The developmental evidence in chapter 2, however, shows that the acquisition of the complex predicate status of particle verbs closely follows the acquisition of V2. This would be a total surprise in a Construction Grammar approach and would remain unexplained.

Generative rules form an ideal testing ground for distinguishing a rule-based grammar from a Construction Grammar. Research in this study shows that Construction Grammar fails to capture possible causal relations between the acquisition of a movement rule and other parts of the grammar. In a rule-based account it is possible to show how the causal relation between the acquisition of verb-second and the acquisition of the complex predicate status of particle verbs follows. Construction Grammar simply does not provide an explanation for this causal relation.

Evidence presented in this study (and in chapter 2 in particular) therefore clearly argues in favour of a rule-based account. The first stage of acquisition might resemble Construction Grammar, with the use of unanalysed chunks and pragmatic information, but children inevitably arrive at a rule-based grammar.

6. Grammar is layered

In chapter 4, I showed that adult speakers of Dutch can violate the r-pronoun restriction on preposition stranding. I argued this was due to a stage in acquisition where children mistakenly analyse stranded prepositions as particles and as a result overgeneralise preposition stranding (cf. chapter 3). The idea proposed in chapter 4 is that the stage in acquisition where children overgeneralise somehow stays accessible in the adult grammar. The question that has not been addressed so far is why it remains accessible. Here, I would like to argue that the answer can be found in processing and more specifically in the interplay between syntax and information structure.

6.1 The relation between syntax and information structure

The idea that information encoded in the left periphery might be in competition with the syntactic information encoded throughout the sentence is not new. Los (2009) argues that there is a close relationship between information structure and syntax. She shows that the loss of V2 in English coincides with the rise of passives and clefts. She argues that this is due to the fact that the loss of V2 affected the information structure in that it created a need for syntactic subjects. In a verb-second structure, the first constituent can be multifunctional. It can encode marked and unmarked topics and it can encode marked focus. Los argues that after the loss of

V2, the marking of topic and focus is distributed between the subject, which can only be the unmarked topic, and the pre-subject constituent, which can now only be the marked topic and carries the marked focus. This distribution attributes a new function to the subject, that of unmarked topic, which was previously encoded by the first constituent. As a consequence, it is now the subject that provides the link to the existing discourse. This puts pressure on the syntax in that syntax has to ensure that the unmarked topic can appear in the subject position. The result is a rise of clefts and passives, which create new ways to place constituents in the subject position. The proposal put forward by Los not only shows there is an intricate interplay between information structure and syntax, it also shows that changes at the information structure level can have a profound effect on syntax.
In a similar vein, Metz et al. (2010) and Metz & Van Hout (2012) show that children have difficulty understanding object questions in Dutch. Questions such as in (43) are ambiguous in Dutch.

(43) a. Welk meisje heeft de man gezien?
which girl has the man seen
'Which girl did the man see?/Which girl saw the man?'

b. $[_{CP}$ [Welk meisje]$_i$ $[_{C'}$ heeft $[_{TP}$ t_i $[_{VP}$ de man gezien]]]]
'Which girl saw the man?'

c. $[_{CP}$ [Welk meisje]$_i$ $[_{C'}$ heeft $[_{TP}$ de man $[_{VP}$ t_i gezien?]]]]
'Which girl did the man see?'

The wh-element *welk meisje* 'which girl' can either be the subject (43b), or the direct object (43c). The ambiguity in (43a) is partly due to the fact that both *welk meisje* 'which girl' and *de man* 'the man' are singular. Therefore, the agreement on the auxiliary cannot provide any information about which of the two constituents is the subject. It has been shown that when presented with a question such as in (43), both children and adults strongly prefer to interpret the question as a subject question (Philip et al. 2001).

The sentence in (43a) can be disambiguated by ensuring that one of the two constituents does not agree in number with the finite verb. A subject question could be as in (44a) and an object question could be as in (44b).

(44) a. Welke meisjes hebben de man gezien?
which girls have the man seen
'Which girls saw the man?'

b. Welke meisjes heeft de man gezien?
which girls has the man seen
'Which girls did the man see?'

Since *de man* 'the man' in (44a) does not agree with *hebben* 'have', but *welke meisjes* 'which girls' does, *welke meisjes* has to be subject. Similarly for (44b), *heeft* 'has' agrees with *de man* 'the man' and therefore *de man* will have to be subject. Metz & Van Hout show that in spite of the disambiguating cue provided by number, children still prefer a subject reading in an object question such as (44b). Thus, upon hearing (44b), children will select the picture where *welke meisjes* 'which girls' is acting as subject, while seemingly disregarding the fact that the auxiliary is marked for singular. To explain this finding, Metz & Van Hout propose that children have a processing strategy to always interpret the first constituent as the subject. This processing strategy is so strong that it overrules information provided by syntax that could contradict it (cf. Trueswell et al. 1999 on the potential role played by cue competition).

The idea that syntax can be overruled in processing has also been proposed by Avrutin (2006). Avrutin suggests that when interpreting (syntactic) dependencies, there is competition between at the very least the syntactic and information structure components. Take, for example, a passive construction such as in (45).

(45) Mary was hit.

The syntactic component tells the listener that Mary has been moved from the direct object position to the subject position, as in (46a).

(46) a. Mary_i was hit t_i.
b. $[_{\text{TOPIC}}$ Mary] was hit

According to this analysis, *Mary* is the direct object and thus the theme of hit. The information structure component gives contradicting instructions. Considering that *Mary* is the first, and therefore most prominent, constituent, information structure tells the listener to interpret *Mary* as the topic of the sentence, as in (46b). Since most topics are agents, it effectively instructs the listener to interpret *Mary* as the agent, or the subject of hit. Avrutin, following work by Reuland (2001) and others, argues that when in conflict, the syntactic component wins. Syntax is a fully automated and autonomous process and is therefore considered to be cheaper than the information structure component, which has to incorporate information from several sources. Since processing through the syntactic component is cheaper, speakers will always choose this option. As a result, *Mary* in (46) will always be interpreted as the direct object, or theme, of hit. However, there are cases where the syntactic component is weakened, rendering the information structure component the cheapest way to process a sentence. Avrutin argues that this is the case for both children and Broca's aphasics. In both children and Broca's aphasics, the syntactic component is not as strong as in healthy adults due to a reduction of processing power. As a result, children and Broca's aphasics rely more heavily on processing through the information structure component. In the case of passive, the reduced processing power can result in inability to process the syntactic dependency created

between the constituent in the subject position and the trace in the object position (as in 46a) fast enough. Processing through the information structure component offers a quick, alternative analysis of the sentence, which leads to the interpretation of Mary as the agent of hit. Avrutin refers to experimental studies which show that Broca's aphasics perform at chance level when they are interpreting the thematic role of *Mary* (Grodzinsky 1990). Avrutin argues that this chance level behaviour can be explained if these aphasics are trying to cope with reduced processing power and as such sometimes need to rely on the information structure component for a fast parse of the sentence.

Evidence from different linguistic fields, diachronic syntax, language acquisition and language breakdown, thus provides the same conclusion. There is an intricate interplay between syntax and information structure and information structure can sometimes overrule syntax. I will now turn to the case of preposition stranding without the use of r-pronouns and will argue that this too can be attributed to the interaction between syntax and information structure.

6.2 The r-pronoun is underspecified

I would like to argue that the r-pronoun restriction on preposition stranding poses a conflict of interest between syntax, which requires the use of an r-pronoun, and the need to be as informative as possible. An r-pronoun is underspecified with regard to animacy and number.[56] In (47) one can see that the r-pronoun daar 'there' can be used to refer to both human and non-human objects.[57]

(47) a. Koekjes, daar had ik nou niet aan gedacht.
cookies, there had I now niet to thought
'Cookies, I hadn't thought of that.'

b. Die man, daar zou ik nou nooit iets van kopen.
that man, there would I now never something of(f) buy
'That man, I would never buy anything of(f) him.'

The examples in (47) also show that *daar* 'there' can refer to a singular object, *die man* 'that man' in (47b), as well as to a plural object, *koekjes* 'cookies' in (47a). The r-pronoun is thus underspecified for both humanness and number.

56 Or more specifically, the r-pronoun does not carry the feature [+human] (cf. Chapter 4, section 5.1). In the main text I will refer to this by using the term 'humanness'.

57 Not all native speakers like to use an r-pronoun to refer to animate objects Instead, they either use pied-piping, as in (i), or strand a preposition without the use of the r-pronoun. It is exactly this conflict of interests (wanting to refer to an animate object and not liking the use of an r-pronoun to do so) that is under discussion in this section.

(i) Die man, [$_{PP}$ van hem]$_i$ zou ik nooit iets t_i kopen.
that man, of(f) him would I never something buy
'That man, I would never buy anything of(f) him.'

The underspecification of the r-pronoun, combined with its obligatory use in preposition stranding, poses a problem for the speaker. Suppose a speaker would like to form a question that includes preposition stranding. In an interrogative clause without preposition stranding, the speaker can use an array of wh-elements. Some of these elements allow for specific marking of humanness and number. The use of the wh-pronoun *wie* 'who' allows the speaker to refer specifically to human referents in the discourse. The use of a wh-phrase starting with *welke* 'which' allows the speaker to pick out a specific member, (48b), or a set of specific members, (48a), in a group. As such, it can also be used to express number.[58]

(48) a. Welke mannen heb je gisteren gezien?
which men have you yesterday seen
'Which men did you see yesterday?'

b. Welke man heb je gisteren gezien?
which man have you yesterday seen
'Which man did you see yesterday?'

However, once the speaker wants to form an interrogative clause that includes preposition stranding, the speaker is forced to use the r-pronoun *waar* 'where'. The obligatory use of this r-pronoun leaves the speaker unable to express any of the specific information that other wh-elements can express.

A similar observation holds for topicalisation. Unlike in the formation of question sentences, the speaker does not have the choice of a topic pronoun that can be used to specifically refer to human objects. The regular topic pronoun *die* 'that' does not refer back to uniquely human objects, unlike the wh-pronoun *wie* 'who', as can be seen in (49).

(49) a. Die fiets, die wil ik hebben.
that bike, that want I have
'That bike, that's the one I want.'

b. Die man, die heb ik gisteren gezien.
that man, that have I yesterday seen
'That man, that's who I saw yesterday.'

c. Die mensen, die heb ik gisteren gezien.
that people, that have I yesterday seen
'Those people, those are who I saw yesterday.'

The regular pronoun *die* 'that' can refer to both human (49b,c) and non-human (49a)

58 Although it has to be noted that expressing number is not a specific property of the wh-element *welke* 'which'. The use of *welke* 'which' allows for the use of a full DP, which in turn allows for the marking of number.

objects. It is thus underspecified for humanness. The topic pronoun *die* 'that' cannot be used to express number either. The examples in (49) show it can refer to both a singular object (49a,b) and to a plural object (49c) indicating that it is also underspecified for number.[59] As such, the topic pronoun *die* 'that' behaves similarly to the r-pronoun equivalent *daar* 'there'. However, like with the formation of question phrases, the speaker can make use of full DPs to mark humanness and number. Full DPs can mark both, as was already partly shown in (48). Of course, full DPs cannot be used when the topicalisation structure involves preposition stranding. As with the formation of an interrogative clause, the speaker is forced to use an r-pronoun and as a result unable to express any of the specific information that a full topic DP could express.

The obligatory use of an r-pronoun clearly conflicts with the desire to be as precise as possible (as in Grice's maxim of quantity). The r-pronoun restriction on preposition stranding thus provides us with another case of conflict between syntax and information structure. On the one hand, the syntactic requirement on preposition stranding forces the speaker to use the underspecified r-pronoun. On the other hand, the desire to be as precise as possible forces the speaker to use elements other than r-pronouns that can express specific information about humanness and number. Results from the experimental studies in chapter 4 show that speakers sometimes opt for the latter. Hypothetically, what might be happening is the following. At the start of the formulation of a wh-construction or a topicalisation structure, the speaker will select the item that allows her to refer to the referent in mind as clearly as possible. In doing so, she will satisfy the need to be as specific and hence as informative as possible. As we have seen, this strategy will suffice for the formation of most questions and topicalisations in Dutch. However, the moment the wh-element or topic has stranded a preposition, this strategy will create a problem. The specific item chosen by the speaker at the start of the formulation of the sentence will most likely not be an r-pronoun. If that is indeed the case, then the structure created up until that point has violated the r-pronoun restriction on preposition stranding. The only option the speaker has to salvage the derivation is to allow the requirement from the information structure to be as precise as possible to overrule the requirement from syntax to use an r-pronoun. The reason why the speaker has this option is because stranding a preposition without an r-pronoun used to be grammatical at a certain stage in acquisition. The process that made this stage possible in acquisition is still around in the adult grammar and as such, without this stage of overgeneralisation, the speaker would not be able to overrule the syntactic requirement.

59 This observation also holds for *wie* 'who'. The wh-pronoun *wie* 'who' can be used to either refer to one person, or to a group of persons. Thus where *wie* 'who' is specified for humanness, it is not specified for number.

6.3 Neural networks

In the case of preposition stranding, and arguably in other cases of dependencies as well, both the syntactic and information structure components offer a processing path. Processing through the syntactic component is cheaper and therefore, if all else is equal, preferred. Processing through information structure becomes available the moment processing through the syntactic component fails (either due to reduced processing capacity or to a violation in the syntactic component).[60] This interaction between syntax and information structure is present from the earliest stage in acquisition onwards. In the stage of overgeneralisation of preposition stranding, the syntactic requirements meet the needs of information structure perfectly. The child can use the most specific wh-element or topic as required without violating any syntactic restriction. The moment the child acquires the r-pronoun restriction, syntax and information structure start to conflict. The syntactic requirement to use an r-pronoun now hinders the attempt to be as informative as possible. And even though processing through the syntactic component may be cheaper, the need to be as informative as possible will occasionally overrule syntax and allow processing through the information structure component. As such, the overgeneralisation in acquisition has an effect on the adult grammar. The child recovers from the overgeneralisation and acquires the correct syntactic restriction, but the ability to strand a preposition freely remains available.

This proposal raises several questions. In chapter 4 it was shown that not all dependencies can be interpreted through the information structure component. Recall that where adult speakers of Dutch mimic a stage in acquisition where they can strand a preposition freely, they do not mimic the stage in acquisition that allows for left branch extraction. The preposition stranding in (50a) is considered to be acceptable, the left branch extraction in (50b) is not.

(50) a. #[Welke man]$_i$ heeft Jan [$_{PP}$ op t_i] gestemd?
which man has Jan on voted
'Which man did Jan vote for?'

b. *Welke$_i$ heeft Marie [$_{DP}$ t_i boek] gelezen?
which has Marie book read
'Which book did Marie read?'

Both constructions occur in acquisition, so what allows the overgeneralisation of preposition stranding to remain accessible whereas the violation of the left branch condition becomes inaccessible? The intuitive answer already put forward in chapter 4 is that there is a difference between (50a) and (50b) in the acquisitional path. In the

60 This does not always appear to be the case. Certain strong syntactic violations lead to a crashed derivation and as a result an uninterpretable sentence. Processing these sentences through information structure is either not possible, or does not provide an interpretable alternative. See the discussion below.

case of preposition stranding, the child has to acquire a restriction and in the case of left branch extraction the child has to acquire a ban. Arguably, the violation of a restriction is less severe than the violation of a ban. However, both involve a violation in the syntactic component and the question remains what effect this has on processing the sentence through the information structure component. It is clear that processing through the information structure component cannot occur completely separately from syntax, but to what degree the two are linked will need to be looked at in future research.

A part of the solution could potentially be found in neural networks. Grammar is a large neural network. The precise workings of the intricate network that underlies grammar is yet unknown. However, I would like to offer the following hypothesis on the process of acquisition and on the building of the network. During the acquisition of grammar, pathways in the neural network will change (i.e. be strengthened or weakened) and might eventually disappear. Studying the conditions under which these changes take place and at what rate they take place could provide a useful insight into why certain constructions used in acquisition disappear, while others do not. It could potentially also provide an explanation for the interaction between syntax and information structure. It has been argued (van Kampen 1997, Jordens 2002) that in the first stages of acquisition, the child's utterances are as close to information structure as possible. Later in the acquisition process, the child will acquire the syntactic rules of her language and slowly move away from utterances that transparently relate to information structure. Now suppose that the acquisition of grammar were to progress along the following lines. In the first neural network the child builds, she relies heavily on information that would later constitute the information structure component. Throughout the acquisition process, the child is acquiring syntactic rules. Each time she acquires such a rule, she introduces a second pathway for that specific construction. She then has two pathways. The old one, which is now related to information structure, and the new one, which is related to syntax. Since syntax, for yet unspecified reasons, is more economical, the new pathway will be used more frequently. The more the new pathway is used, the stronger it will grow and the more economical it is to use it the next time. The old pathway will either be weakened and remain available or be weakened to such a degree that it will eventually disappear. Whether or not the old pathway will disappear depends on whether or not it is still occasionally used. The occasional use is then arguably related to the strength of the new, syntactic, pathway (and potentially to the force with which the old pathway is weakened). The stronger the new pathway, the less likely the old pathway is used and the more likely it will disappear.

Syntactic pathways that relate to bans might then be stronger than syntactic pathways that relate to restrictions. The important thing to note is that a close examination of neural networks will provide us with a clear view that grammar is layered. Pathways used in a previous stage in acquisition will not simply have disappeared in the next stage in acquisition. Decisions made in that previous stage form the foundation of the decisions made in the next stage. Grammar then builds

layers upon layers and occasionally decisions made in an earlier stage will remain available right up to the final, adult, stage.

6.4 Summary

In chapter 4 it was shown that adult speakers of Dutch can violate the r-pronoun restriction on preposition stranding. It was proposed that the reason why speakers can violate the restriction can be found in acquisition. Children go through a stage at which they overgeneralise preposition stranding and this overgeneralisation somehow stays accessible in the adult grammar. In this section I have argued that the cause of the overgeneralisation staying accessible is the interaction between syntax and information structure. It has been shown in the literature that information structure can affect syntax. The interaction can cause change in the syntactic system (Los 2009) or can cause information structure to overrule syntax (Avrutin 2006, Metz et al, 2010, Metz & Van Hout 2012). In the case of preposition stranding, there is a clear conflict between syntax and information structure. Syntax demands the use of an r-pronoun, which is underspecified for humanness and number. Simultaneously, information structure requests the use of an element that is as specific as possible, i.e. carries information on humanness and number, and as such disprefers the r-pronoun. Occasionally, under certain circumstances that still need to be specified, the information structure requirement to be as informative as possible wins out. The speaker selects an element other than the r-pronoun and as a result the syntactic restriction on preposition stranding is violated. The reason that this violation does not lead to an uninterpretable sentence is because of the stage in acquisition at which free preposition stranding was available.

I have, somewhat speculatively, suggested that an implementation of this process could be given in terms of a neural network. A careful study of neural networks could provide us with a better understanding of the layering of grammar. It could provide more than one pathway for the computation of a certain dependency. Different pathways can be associated with different grammatical modules. Since the strength of the pathways most likely is not going to be equal, it could also explain the findings in chapter 4. Preposition stranding that violates the r-pronoun restriction is generally considered to be (marginally) acceptable, but is hardly ever considered to be fully acceptable. If preposition stranding without an r-pronoun is indeed processed through the information structure component and if such processing is more costly than processing through the syntactic component, then this finding is expected. Individual differences in the acceptance of preposition stranding that violates the r-pronoun restriction could potentially be due to individual differences in building a neural network. Perhaps certain speakers are more rigorous in removing old pathways than others, providing them with a more restrictive grammar.

7. What is to come

This study has presented a view on the acquisition process in which the child makes use of pragmatic bootstrapping, syntactic cueing and generalisation skills to build layers of grammar. It was shown that this perspective on the acquisition process can account for the acquisition of two instances of movement, verb movement and preposition stranding, and of three lexical categories, V, A and P. The account presented here raises important questions and warrants research on several topics. The first immediate step that has to be taken is to expand the amount of data. The view on the acquisition process has to be extended so it can include the acquisition of other instances of movement and of other lexical categories.

Next to including more data, the research should also be extended to include other languages. The research program presented here prides itself in attempting to account for language acquisition without the use of innate, specifically linguistic knowledge. This places the role of linguistic input in a primary position. The input will naturally differ per language and this could have a profound effect on how linguistic typology is viewed. If acquisition really can be accounted for solely on the basis of input, then differences in input must lead to differences in grammatical structures. A careful study of the acquisition of the syntactic structure of particle verbs across Germanic languages might reveal that very insight. In this study I have argued that in Dutch, the acquisition of the complex predicate status of particle verbs is dependent on the acquisition of the verb movement in verb-second environments. I have also argued that this order of steps in acquisition presents evidence in favour of the complex head theory. The dependence of the acquisition of particle verbs on the acquisition of V2 cannot hold for all Germanic languages. English, for example, has particle verbs, but lacks V2 and therefore also lacks the verb movement involved in verb-second environments. As such, the acquisition of the complex predicate status of particle verbs in English cannot be dependent on the acquisition of V2. An obvious alternative candidate that can present the child with a means to acquire the complex predicate status is the use of particle shift in English (see chapter 1, section 6.1.1.1). In some theoretical accounts, both particle shift in English and V2 in Dutch have a similar relationship with particle verbs. In particle shift, the verbal part of the particle verb remains in-situ and the particle moves. With V2, the relation is reversed and the particle remains in-situ, whereas the verbal part of the particle verb moves. Both present promising scenarios for the acquisition of the complex predicate status of particle verbs, but both scenarios are different. This difference in acquisition could lead to a difference in syntactic structure. Where the dependence on V2 presents evidence in favour of the complex head theory, the dependence on particle shift might not. In fact, it could present evidence in favour of the small clause theory. The option that one construction could have two different syntactic realisations in different languages is generally considered undesirable. However, if the adult grammar is the result of acquisition solely based on input, then this could very well be the consequence. In the specific case of particle verbs, I do not believe this outcome to be problematic. In chapter 1, I have shown that there is

disagreement in the literature on the exact nature of their syntactic structure. A large part of this disagreement is based on the differences in behaviour of particle verbs in different languages (i.e. the presence of particle shift in English and the presence of V2 in Dutch, cf. chapter 1, section 6). Perhaps a careful observation of the acquisition of particle verbs across languages will lead to the realization that although particle verbs are all complex predicates, and thus identical on the semantic level, they have different syntactic structures in different languages.

This study has also put forward the proposal that grammar is layered and that certain constructions used in the stages of acquisition can leak into the adult grammar under certain circumstances. This proposal is solely based on the use of preposition stranding that violates the r-pronoun restriction in both acquisition and adult Dutch and needs further research. What, at the very least, needs to be investigated are the following four aspects of the proposal:

(51)
i. Which constructions in acquisition can remain accessible in the adult grammar?
ii. Why do these constructions remain accessible?
iii. Under which conditions do adult speakers make use of these constructions?
iv. Why do adult speakers make use of these constructions?

I have made an attempt at providing insight in all four of these questions and have provided a place to start the research from. I have proposed that the constructions that can remain accessible are only those constructions where the difference between the stage in acquisition where they are permissible and the adult grammar is a difference of limitation (i.e. with regard to preposition stranding, the free stranding in acquisition is limited to the use of r-pronouns only in the adult grammar). The tentative answer I have explored for aspects (51ii) and (51iv) is that there is a conflict of interest between the desire to be as informative as possible and the restrictions posed by the grammar. It is this conflict that can lead to a violation of the grammar in favour of informativeness. This conflict exists from the earliest stages of acquisition onwards and is why certain constructions remain accessible. As long as the new construction acquired in the next stage of acquisition is a limited version of the construction used in the previous stage in acquisition (as is the case for preposition stranding, but not, for example, for the left branch construction), the construction remains accessible if needed for reasons of informativeness. And the experimental work presented in chapter 4 provides an insight into the question under which conditions adult speakers can make use of a construction from a stage in acquisition. All of this work is novel and would benefit from extending the research to include constructions other than preposition stranding and to languages other than Dutch.

References

Avrutin, S. 2006. Weak syntax. In Grodzinsky, Y. and Amunts, K. (eds.), *Broca's region*. Oxford: Oxford University Press. 49-62.

Abels, K. 2002. *Successive Cyclicity, Anti-Locality and Adposition Stranding*. PhD Dissertation. University of Connecticut.

Bach, E. 1971. Questions. *Linguistic Inquiry 2*. 153-156.

Bates, E. and MacWhinney, B. 1982. Functionalist approaches to language acquisition. In Wanner, E. and Gleitman, R. (eds.), *Language Acquisition: State of the Art*. Cambridge: Cambridge University Press. 173-218.

Berko, J. 1958. The Child's Learning of English Morphology. *Word 14*. 150-177.

Besten, H. den. 1977. On the interaction of root transformations and lexical deletive rules. In Werner, A. (ed.), *On the Formal Syntax of Westgermania*. Amsterdam: John Benjamins.

Besten, H. den. and G. Webelhuth. 1987. *Remnant Topicalization and the Constituent Structure of VP in Germanic Languages*. Paper presented at the GLOW Colloquium, Venice.

Blom, C. 2005. *Complex Predicates in Dutch: Synchrony and Diachron*y. PhD Dissertation, Vrije Universiteit Amsterdam.

Blom, E. 2003. *From Root Infinitive to Finite Sentence*. PhD Dissertation. Utrecht University.

Boeckx, C. and Grohmann, K. 2005. Left dislocation in Germanic. In Abraham, W. (ed.), *Focus on Germanic Typology*. Berlin: Akademie-Verlag. 131-144.

Borer, H. 1991. The causative-inchoative alternation: a case study in Parallel Morphology. *The Linguistic Review 8*. 119-158.

Borer, H. 2005. *In Name Only. Structuring Sense, Volume I*. Oxford: Oxford University Press.

Bowerman, M. 1976. Semantic factors in the acquisition of rules for word use and sentence construction. In Morehead, D. and Morehead A. (eds.), *Normal and deficient child language*. Baltimore: University Park Press.

Brown, R. 1973. *A first language: the early stages*. Cambridge MA: Harvard University Press.

Burzio, L. 1986. *Italian Syntax*. Dordrecht: Reidel.

Bybee, J. and Scheibmann, J. 1999. *The effect of usage on degrees of constituency: the reduction of don't in English*. Linguistics 37. 575-596.

Chomsky, N. 1970. Remarks on nominalization. In Jacobs, R. and Rosenbaum, P. (eds.), *Readings in English Transformational Grammar.* Waltham, MA: Ginn and Co. 184-221.

Chomsky, N. 1981. *Lectures on Government and Binding*. Dordrecht: Foris Publications.

Chomsky, N. 1995. *The Minimalist Program*. Cambridge, MA: The MIT Press.

Chomsky, N. and Lasnik, H. 1993. The theory of principles and parameters. In Jacobs, J., Stechow, A. von, Sternefeld, W. and Vanneman, T. (eds.), *Syntax: An International Handbook of Contemporary Research, Vol. 1*. Berlin: Walter de Gruyter. 506-569.

Cinque, G. 1990. *Types of Ā-dependecies*. Cambridge, MA: MIT press.

Clahsen, H. and Smolka, K. 1986. Psycholinguistic evidence and the description of V2 phenomena in German. In Haider, H. and Prinzhorn, M. (eds.), *Verb Second Phenomena in Germanic Languages*. Dordrecht: Foris Publications.

Coopmans, P. and Schippers, R. 2008. Preposition stranding in development. In Koppen, M. van & Botma, B. (eds.), *Linguistics in the Netherlands 2008*. Amsterdam: John Benjamins. 75-87.

Craenenbroeck, J. van. 2010. Complex wh-phrases don't move: On the interaction between the split CP-hypothesis and the syntax of wh-movement. In Panagioditis, Ph. (ed.), *The Complementizer Phrase: Subjects and Operators*. New York: Oxford University Press. 236-261.

Dickey, M.W. 1996. Contraints on the sentence processor and the distribution of resumptive pronouns. In Dickey, M.W. and Tunstall, S. (eds.), *University of Massachusetts Occasional Papers 19: Linguistics in the Laboratory*. Amherst, MA: GLSA. 157-192.

Dikken, M. den. 1992. *Particles*. PhD Dissertation. Leiden University.

Dresher, B. E. 1999. Charting the learning path: cues to parameter setting. *Linguistic Inquiry 30*. 27-68.

Emonds, J. 1976. *A Transformational Approach to English Syntax*. New York: Academic Press.

Evers, A. 1982. *Twee functionele principes voor de regel "Verschuif werkwoord"*. GLOT 5. 11-30.

Evers, A. 2003. Verbal clusters and cluster creepers. In Seuren, P. and Kempen, G. (eds.), *Verb Constructions in German and Dutch*. Amsterdam: John Benjamins. 43-89.

Evers, A. and Kampen, J. van. 2008. Parameter setting and input reduction. In Biberauer, M.T. (ed.), *The Limits of Syntactic Variation*. Amsterdam: John Benjamins. 483-515.

Gleitman, L. 1990. The structural sources of verb meaning. *Language Acquisition 1*. 3-55.

Gibson, E. & Wexler, K. 1994. Triggers. *Linguistic Inquiry 25*. 406-454.

Goldberg, A.E. 1995. *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago University Press.

Goldberg, A.E. 2003. Constructions: a new theoretical approach to language. *TRENDS in cognitive sciences 7:5*, 219-224.

Greenberg, Joseph H. 1963. *Universals of Languages*. Cambridge, MA: MIT Press.

Grimshaw, J. 1981. Form, function, and the language acquisition device. In Baker, C. L. and McCarthy, J. (eds.), *The Logical Problem of Language Acquisition*. Cambridge, MA: MIT Press. 165-188.

Grodzinsky, Y. 1990. *Theoretical perspectives on language deficit*. Cambridge MA: MIT Press.

Featherston, S. 2007. *Data in Generative Grammar: the Stick and the Carrot*. http://www.sfb441.uni-tuebingen.de/~sam/papers/target2.pdf

Fleischer, J. 2002. Preposition stranding in German dialects. In Barbiers, S., Cornips, L. and Kleij, S. van der. (eds.), *Syntactic Microvariation*. Amsterdam: Meertens Insitute. 116–151. http://www.meertens.knaw.nl/projecten/sand/synmic/pdf/fleischer.pdf

Haan, G. de. 1987. A theory-bound approach to the acquisition of verb placement in Dutch. In Haan, G. de and Zonneveld, W. (eds.), *Formal Parameters of Generative Grammar: OTS Yearbook 1987*. Dordrecht: ICG.

Haan, G. de and Weerman, F. 1986. Finiteness and verb fronting in Frisian. In Haider, H. and Prinzhorn, M. (eds.), *Verb Second Phenomena in Germanic Languages*. Dordrecht: Foris Publications. 77-111.

Haider, H. and Prinzhorn, M. 1986. *Verb Second Phenomena in Germanic Languages*. Dordrecht: Foris.

Hauser, M., Chomsky, N., and Fitch, T. 2002. The Faculty of Language: What Is It, Who Has It, and How Did It Evolve? *Science 298*. 1569-1579.

Hoekstra, Y. 1995. Preposition stranding and resumptivity in West Germanic. In Haider, H,. Olsen, S. and Vikner, S. (eds.) *Studies on Comparative Germanic Syntax*. Dordrecht: Kluwer Academic Publishers. 95-118.

Holmberg, A. and Platzack, C. 1995. *The role of inflection in Scandinavian syntax*. (Oxford Studies in Comparative Syntax). Oxford: Oxford University Press.

Hornstein, N. and Weinberg, A. 1981. Case theory and Preposition stranding. *Linguistic Inquiry 12*. 55–91.

Ifill, T. 2002. *Seeking the Nature of Idioms: A Study in Idiomatic Structure*. ms. Haverford College.

Jackendoff, R. 1997. *The Architecture of the Language Faculty*. Cambridge, MA: MIT Press.

Jordens, P. 2002. Finiteness in early child Dutch. *Linguistics 40 (4)*. 687-765.

Kampen, J. van. 1994. The learnability of the Left Branch Condition. In Bok-Bennema, R. and Cremers, C. (eds.), *Linguistics in the Netherlands 1994*, Amsterdam: John Benjamins. 83-94.

Kampen, J. van. 1996. PF/LF convergence in acquisition. In Kusumoto, K. (ed.), *Proceedings of the North East Linguistic Society 26*. Amherst, MA: GLSA. 149-163.

Kampen, J. van. 1997. *First Steps in Wh-Movement*. PhD Dissertation. Utrecht University.

Kampen, J. van. 2004. Learnability of syntactic categories. In Kampen, J. van. and Baauw, S. (eds.), *Proceedings of GALA 2003*. 245-256.

Kampen, J. van. 2010. Typological guidance in the acquisition of V2 Dutch. *Lingua 120*. 264-283.

Kampen, J. van and Schippers, R. 2011. An acquisition procedure for category assignment: The case of Dutch P0. In Pirvulescu, M., Cuervo, M.C., Pérez-Leroux, A.T., Steele, J. and Strik, N., *Proceedings of GALANA 2010*. MA: Cascadilla Proceedings Project. 139-149.

Klein, W. 2001. *On Finiteness*. Manuscript. http://www.mpi.nl/world/materials/publications/Klein/170_2006_On_Finiteness.pdf

Koeneman, O. 2000. *The Flexible Nature of Verb Movement*. PhD Dissertation. Utrecht University.

Koopman, H. 1984. *The Syntax of Verbs*. Dordrecht: Foris Publications.

Koster, J. 1975. Dutch as an SOV Language. *Linguistic Analysis 1*. 111-136.

Koster, J. 1978. Why subject sentences don't exist. In Keyser, S. J. (ed.), *Recent Transformational Studies in European Languages*. Cambridge, MA: MIT Press. 53-65.

Lakoff, G. 1987. *Women, Fire and Dangerous Things: What Categories Reveal About the Mind*. University of Chicago Press

Langacker, R.W. 1987/1991. *Foundations of Cognitive Grammar (Vols I & II)*. Stanford University Press

Law, P. 1998. A unified analysis of P-stranding in Romance and Germanic. In Tamanji , P. & Kusumoto, K. (eds.), *Proceedings of the North East Linguistic Society 28*. Amherst, MA: GLSA. 219–234.

Lebeaux, D. 1988. *Language Acquisition and the Form of the Grammar.* PhD Dissertation. University of Massachusetts, Amherst.

Lecher, W. 2009. A puzzle for remnant movement analysis of verb-second. In *Linguistic Inquiry 40 (2)*. 346-356.

Ligthfoot, D. 1991. *How to Set Parameters: Arguments from Language Change*. Cambridge, Ma: MIT Press.

Los, B.L.J. 2009. The consequences of the loss of verb-second in English: information structure and syntax in interaction. English Language and *Linguistics 13(1)*. 97-125.

MacWhinney, B. 1982. Basic syntactic processes. *Language Development vol. 1 Syntax and Semantics*. 73-136.

MacWhinney, B. 2006. *The CHILDES Project: Tools for Analyzing Talk, 3rd edition*. Mahwah, NJ: Lawrence Erlbaum Associates.

Manzini, R. and Wexler, K. 1987. Parameters, binding theory, and learnability. *Linguistic Inquiry 18*. 413-444.

Metz, M., Hout, A. van and Lely, H. van der. 2010. Understanding 'who' and 'which' questions in five to nine-year-old Dutch children: the role of number. *GAGL 51*, 27-41.

Metz, M. and Hout, A. van. 2012. *Understanding 'who' and 'which' questions in five to nine-year-old Dutch children*. Presentation TiN dag, feb. 4 2012.

Müller, G. 2004. Verb-second as vP-first. *The Journal of Comparative Germanic Linguistics 7 (3)*. 179-234. http://www.uni-leipzig.de/~muellerg/mu30.pdf

Neeleman, A. 1994. *Complex Predicates*. PhD Dissertation. Utrecht University.

Nilsen, Ø. 2002. V2 and Holmberg's generalization. In Zwart, J.W. and Abraham, W. (eds.) *Studies in Comparative Germanic syntax: proceedings from the 15th Workshop on Comparative Germanic Syntax*. Amsterdam: John Benjamins. 151-173.

Pesetsky, D. 1987. Wh-in-situ. Movement and unselective binding. In Reuland, E. and Meulen, A. ter. (eds.), *The Representation of (In)definiteness*. Cambridge, MA.: MIT press. 98-129.

Pesetsky, D. 2000. *Phrasal Movement and Its Kin*. Cambridge, MA: MIT press.

Philip, W., Coopmans, P., Atteveldt, W. van & Meer, M. van der. 2001. Subject-object asymmetry in child comprehension of Wh-questions. In Do, A. H-J., Dominguez, L. & Johansen, A. (eds.), *Proceedings of the 25th Annual Boston University Conference on Language Development, Volume 2*. Somerville: Cascadilla Press. 587-598.

Pinker, S. 1984. *Language Learnability and Language Development*. Cambridge, MA: Harvard University Press.

Platzack, C. 1986. The position of the finite verb in Swedish. In Haider, H. and Prinzhorn, M. (eds.), *Verb Second Phenomena in Germanic Languages*. Dordrecht: Foris Publications. 27-49.

Poeppel, D. and Wexler, K. 1993. The full competence hypothesis of clause structure in early German. *Language 69*. 1-33.

Ramchand, G. and Svenonius, P. 2002. The lexical syntax and lexical semantics of the verb-particle construction. In Mikkelsen, L. and Potts, C. (eds.), *Proceedings of the 21th West Coast Conference on Formal Linguistics*. Somerville, MA: Cascadilla Press. 387-400.

Rappaport Hovav, M. and Levin, B. 1998. Building Verb Meanings. In Butt, M. and Geuder, W. (eds.), *The Projection of Arguments: Lexical and Compositional Factors*. CSLI Publications, Stanford, CA. 97-134.

Reuland, E. 2001. Primitives of binding. *Linguistic Inquiry 32*. 439-492.

Riemsdijk, H. van. 1978. *A Case Study in Syntactic Markedness: The Binding Nature of Prepositional Phrases*. PhD Dissertation Lisse: The Peter de Ridder Press.

Riemsdijk, H, van. 1997. Left dislocation. In Anagnostopoulou, E., Riemsdijk, H. van. and Zwarts, F. (eds.), *Materials on Left Dislocation*. Amsterdam: John Benjamins. 1-13.

Riemsdijk, H. van. and Zwarts, F. 1997. Left dislocation in Dutch and status of copying rules. In Anagnostopoulou, E., Riemsdijk, H. van. and Zwarts, F. (eds.), *Materials on Left Dislocation*. Amsterdam: John Benjamins. 13-31.

Rizzi, L. 1990. Speculations on verb second. In Mascaró, J and Nespor, M. (eds.), *Grammar in Progress: GLOW Essays for Henk van Riemsdijk*. Dordrecht: Foris Publications. 375–386.

Ross, J. 1967. *Constraints on Variables in Syntax*. PhD Dissertation. MIT, Cambridge, MA .

Scalise, S. and Guavara, E. 2005. The lexicalist approach to word-formation and the notion of the lexicon. In Štekauer, P. and Liever, R. (eds.), *Handbook of word-formation*. Springer. 147-187.

Schippers, R. 2007. *Preposition Stranding and Functional Projections. Some Facts From Acquisition*. Master thesis. Utrecht University.

Schippers, R. In press. The acquisition of complex predicates: a case study of particle verbs in Dutch. In *Proceedings of GALA 2011*.

Snyder, W. 2001. On the nature of syntactic variation: evidence from complex predicates and complex word-formation. *Language 77*. 324-342.

Stowell. T. 1981. *Origins of Phrase Structure*. PhD Dissertation. MIT, Cambridge, MA.

Stowell, T. 1982. Conditions on reanalysis. In Marantz, A. and Stowell, T (eds.), *Papers in Syntax: MIT Working Papers in Linguistics 4*. Cambridge, MA: MIT Working Papers in Linguistics. 245-269.

Sugisaki, K. and Snyder, W. 2002. Preposition stranding and the compounding parameter: a developmental perspective. In Skarabela, B, Fish, S & Do, A.H.-J. (eds.), *Proceedings of the 26th Boston University Conference on Language Development*. Somerville, MA: Cascadilla Press. 677-688.

Sugisaki, Koji. 2008. The Acquisition of Preposition Stranding and its Theoretical Implications. In Otsu, Y. (ed.), *The Proceedings of the Ninth Tokyo Conference on Psycholinguistics*. Tokyo: Hituzi Syobo. 27-55.

Svenonius, P. 1996. *The Verb-Particle Alternation in Scandinavian Languages*. Manuscript. http://ling.auf.net/lingBuzz/000046

Svenonius, P. 2003. Swedish particles and directional prepositions. In Delsing, L., C. Falk, G. Josefsson, and Sigurdsson, H. Á. (eds.), *Grammar in Focus: Festschrift for Christer Platzack, vol. II*. Lund: Department of Scandinavian languages. 343-352.

Taraldsen, K. 1986. On verb second and the functional content of syntactic categories. In Haider, H. and Prinzhorn, M. (eds.). *Verb Second Phenomena in Germanic Languages*. Dordrecht: Foris Publications.

Thiersch, C. 1978. *Topics in German Syntax*. Unpublished PhD Dissertation, Department of Linguistics and Philosophy. Cambridge, MA: MIT.

Tomasello, M. 1992. *First verbs: a case study of early grammatical development*. Cambridge University Press.

Tomasello, M. 2000. First steps towards a usage-based theory of language acquisition. *Cognitive Linguistics 11:1*. 61-82.

Trueswell, J.C., Sekerina, I., Hill, N.M. & Logrip, M.L. 1999. The kindergartenpath effect: studying on-line sentence processing in young children. *Cognition 73*. 89-134.

Vanacker, V.F. 1970. Een 'Zuidnederlandse' konstruktie in een paar Zuidnederlandse dialekten. *De Nieuwe Taalgids, Van Haeringen Issue*. 140-157.

Vikner, S. 1994. Finite verb movement in Scandinavian embedded clauses. In Lightfoot, D. and Hornstein, N. (eds.), *Verb movement*. Cambridge University Press.

Weerman, F. 1989. *The V2 Conspiracy*. PhD Dissertation. Utrecht University.

Weskott, T. and Fanselow, G. 2008. Variance and informativity in different measures of linguistic acceptability. In Abner, N. and Bishop, J. (eds.), *Proceedings of the 27th West Coast Conference on Formal Linguistics*. Somerville, MA: Cascadilla Proceedings Project. 431–439.

Westergaard, M. 2009. Usage-based vs. rule-based learning: the acquisition of word order in wh-questions in English and Norwegian. *Journal of Child Language 36*. 1023–1051.

Wexler, K. 1994. Finiteness and head movement in early child grammars. In Lightfoot, D. and Hornstein, N. (eds.), *Verb Movement*. Cambridge University Press.

Wijnen, F. 1995. Incremental acquisition of phrase structure. In J. N. Beckman (ed.), *Proceedings of the North East Linguistic Society 25, vol. 2*. Amherst, MA: GLSA Publications. 105–118.

Wijnen, F. 2000. Input, intake, and sequence in syntactic development. In Beers, M, Bogaerde, B. van den., Bol, G., Jong, J. de. and Rooijmans, C. (eds.), *From Sound to Sentence*. Groningen: Center for language and cognition.

Wijnen, F., Kempen, M. and Gillis, S. 2001. Bare infinitives in Dutch early child language: an effect of input? *Journal of Child Language 28 (3)*. 629-660.

Zwart, J.W. 1993. *Dutch Syntax: a Minimalist Approach*. PhD Dissertation, University of Groningen.

Zwitserlood, R. 2010. *Morpho-syntactic Development and Speech Disruptions in Narratives of Dutch School Age Children with SLI Ages 6-7-8*. Paper presented at ELiTU, Utrecht.

Appendix A

Verbal expressions for Abel

Abel	age in weeks					
	111	**115**	**117**	**120**	**122**	**124**
finite	33	72	102	84	84	205
total	111	104	185	123	144	272

Abel	age in weeks					
	127	**129**	**131**	**136**	**138**	**140**
finite	109	67	84	107	161	101
total	160	103	142	133	202	130

Verbal expressions for Daan

Daan	age in weeks					
	118	**121**	**123**	**125**	**127**	**129**
finite	21	92	56	57	112	155
total	88	140	107	104	159	243

Daan	age in weeks				
	132	**134**	**136**	**138**	**141**
finite	120	169	157	216	136
total	193	220	235	260	159

Verbal expressions for Matthijs

Matthijs	age in weeks						
	128	**129**	**130**	**132**	**133**	**135**	**136**
finite	38	67	83	64	37	101	116
total	153	187	236	120	82	202	231

Matthijs	age in weeks						
	138	**139**	**142**	**145**	**147**	**148**	**150**
finite	121	78	140	100	136	100	193
total	179	126	205	142	173	126	216

Appendix B

First occurrence of a finite particle verb.

Abel

*CHI: oh, valt bijna om . 2;07.15
oh, falls almost over
'Oh, (it) is almost falling over.'

Daan

*CHI: <daaaa:n> [/] daaa:n [= dan] valt ie om [?] . 2;08.13
then then falls it over
'then it falls over'

Matthijs

*CHI: eet ə komkommer op . 2;06.11
eat ə cucumber up
'eat up a cucumber'

Sarah

*SAR: jij zet liedje aan. 2;04.02
you put song on
'You switch on the song'

Appendix C

The full contexts of the first use of preposition for Abel, Daan, Matthijs and Sarah.

Abel

*GER: wat ga je daarmee doen dan ?
what go you there-with do then
'what are you going to do with that?'

*CHI: &eh <daar kan je> [/] daar kan je mee in de tuin werken .
err <there can you. [/] there can you with in the garden work
'Err that you can, that you can work in the garden with.'

*GER: oh .
'oh'

Daan

*CHI: hee <ik w> [/] <ik w> [//] <hee mag> [/] hee mag ik hier mee dansen ?
hey <I w> [/] <I w> [//] <hey may> [/] hey may I here with dance
'Hey, may I dance with this?'

%exp: the mike .

*PAU: wil je met de microfoon dansen ?
want you with the microphone dance
'Do you want to dance with the microphone?'

*CHI: ja .
'yes'

Matthijs

*EVE: is het de trein naar Hattem ?
is it the train to Hattem
'Is it the train to Hattem?'

*CHI: ja !
'yes'

*EVE: oh .
'oh'

*CHI: hij moet # die moet hier op wachten .
he must # that must here on wait
'He must # that must wait for this.'

Sarah

*SAR: die is de koe.
that is the cow
'that is the cow'

*JAC: ja.
'yes'

*SAR: afgelope(n).
'finished'

*SAR: (waar) moet dat nou [!] toe?
(where) must that now [!] to
'Where must this go to?'

*SAR: koe is daar.
'cow is there'

*SAR: xxx pappa van.
'xxx daddy of'

Appendix D

Test sentences for experiment 1

List 1

T1. Welk resultaat had zij dan op gerekend?
which result has she then on counted
'Which result did she count on?'

T2. Dat goede doel heeft zij het geld aan gegeven.
that good cause has she the money to given
'That is the good cause she gave the money to.'

T3. Wie zal Marie voor kiezen?
who shall Marie for choose
'Who shall Marie choose?'

T4. Dat had zij geen rekening mee gehouden.
That had she no account with held
'That, she had no taken into consideration.'

T5. Welk meisje zegt Marie dat Jan naar heeft gekeken?
which girl says Marie dat Jan to has looked
'Which girl did Marie say Jan looked at?'

T6. Wie zegt Jan dat Marie voor zal kiezen?
who says Jan that Marie for will choose?
'Who does Jan say that Marie will choose?'

T7. Jan vraagt zich af welke jongen Marie voor zal kiezen.
Jan asks himself of which boy Marie for will choose
'Jan wonders which boy Marie will choose.'

T8. Marie vraagt zich af wie Jan naar heeft gekeken.
Marie asks herself of who Jan to has looked
'Marie wonders who Jan has looked at.'

T9. Welke boom zegt Jan dat hij Marie heeft in zien klimmen?
which tree says Jan that he Marie has in see climb
'Which tree does Jan say he has seen saw Marie climb?'

T10. Welk park zegt Jan dat hij Marie heeft zien door fietsen?
which park says Jan that he Marie has seen through cycle
'Which park does Jan say he has seen Marie cycle through?'

T11. Daar zegt Jan dat hij Marie heeft in zien klimmen.
there says Jan that he Marie has in seen climb
'That, Jan says he has seen Marie climb.'

T12. Daar zegt Jan dat hij Marie heeft zien door fietsen.
there says Jan that he Marie has seen through cycle
That, Jan says he has seen Marie cycle through.'

T13. Alleen serieuze biedingen worden op in gegaan.
only serious bids become up in gone
‘Only serious bids will be responded to.’

T14. De meeste kinderen worden goed voor gezorgd.
the most children become good for cared
'Most children are well-cared for.'

T15. Alles zei Jan dat ze op voorbereid waren.
Everything said Jan that she on prepared were
'Everything, Jan said they were prepared for.'

T16. Iedereen hebben wij goed naar geluisterd.
everyone have we good to listened
'Everyone, we have listened to well.'

T17. Aardbeien houd ik van.
strawberries love I of
‘Strawberries I love.’

T18. Rockmuziek luistert hij vaak naar.
rockmusic listens he often to
'Rock music he often listens to.'

<u>List 2</u>

T1. Welke jongen zal Marie voor kiezen?
which boy will Marie for choose
'Which boy will Marie choose?'

T2. Deze vraag had zij geen rekening mee gehouden.
this question had she not account with held
'This question she had not taken into consideration.'

T3. Wat had zij dan op gerekend?
what had she then on counted
'What did she count on then?'

T4. Hem heeft zij geld aan gegeven.
him has she money to given
'Him, she gave money to.'

T5. Welke jongen zegt Jan dat Marie voor zal kiezen?
which boy says Jan that Marie for will choose
'Which boy does Jan say that Marie will choose?'

T6. Wie zegt Marie dat Jan naar heeft gekeken?
who says Marie that Jan to has looked
'Who does Marie say that Jan has looked at?'

T7. Marie vraagt zich af welk meisje Jan naar heeft gekeken.
Marie asks herself of which girl Jan to has looked
'Marie wonders which girl Jan has looked at.'

T8. Jan vraagt zich af wie Marie voor zal kiezen.
Jan asks himself of who Marie for will choose
'Jan wonders who Marie will choose.'

T9. Welke boom zegt Jan dat hij Marie heeft zien in klimmen?
which tree says Jan that he Marie has seen in climb
'Which tree does Jan say that he has seen Marie climb?'

T10. Welk park zegt Jan dat hij Marie heeft door zien fietsen?
which park says Jan that he Marie has through seen cycle
'Which park does Jan say he has seen Marie cycle through?'

T11. Daar zegt Jan dat hij Marie heeft zien in klimmen.
there says Jan that he Marie has seen in climb
'That, Jan says he has seen Marie climb.'

T12. Daar zegt Jan dat hij Marie heeft door zien fietsen.
there says Jan that he Marie has through seen cycle
That, Jan says he has seen Marie cycle through.'

T13. Alleen bovengenoemde regels werden naar gekeken.
only above-mentioned rules became to looked
'Only the above-mentioned rules were looked at.'

T14. De meeste ouderen worden weinig mee gepraat.
the most elderly become little with talked
'Most elderly are hardly being talked to.'

T15. Iedereen hebben wij een gedicht voor geschreven.
Everyone have we a poem for written
'Everyone, we have written a poem for.'

T16. Alles wist Marie op in te gaan.
everything knows Marie on in to go
'Everyting, Marie knows how to respond to.'

T17. Bomen schuilt zij graag onder.
trees hide she gladle beneath
'Trees she likes to hide beneath.'

T18. Vitrinekasten zet hij meestal boeken in.
Display-cabinets put he usually books in
'Display cabinet he usually puts books in.'

Controls for experiment 1

C1. Waar zal Jan op moeten letten?
where will Jan on must let
'What must Jan pay attention to?'

C2. Waar kan je het best je brood in bewaren?
where can you the best your bread in keep
'What can you keep your bread in best?'

C3. Daar zullen sommigen zeker over vallen.
there will some surely over fall
'That some will surely complain about.'

C4. Er komt altijd ergens geluid uit.
there comes always somewhere sound out
'There is always something producing sound.'

C5. Zo'n oplichter, daar kan je toch echt geen geld aan geven.
Such-a conman, there can you surely-enough really no money to give
'Such a conman surely you cannot give any money to.'

C6. Politici, daar kun je toch eigenlijk niet op rekenen.
Politicians, there can you surely-enough in-reality not on count
'Politicians you surely cannot rely on in reality.

Fillers for experiment 1

F1. *Welk heeft Marie boek gelezen?
which has Marie book read
'Which has Marie book read.'

F2. *Wat vraagt Jan zich af waar Erik gekocht heeft?
what asks Jan himself of where Erik bought has
'What does Jan wonder where Erik has bought?'

F3. *Deze krant ontmoette ik een man die verkocht.
this newspaper met I a man that sold
'This newspaper I met a man who sold.'

F4. *Dit schilderij ziet Jan een meisje dat schildert.
this painting sees Jan a girl that paints
'This painting Jan sees a girl who paints.'

F5. *Jan morgen zal de auto schoonmaken.
Jan tomorrow will the car clean
'Jan tomorrow will clean the car.'

F6. *Marie heeft dat hekje groen gisteren geverfd.
Marie has that fence green yesterday painted
'Marie has painted that fence yesterday green.'

Appendix E

Test sentences for questionnaire 2

T1. Welke politieke partij zou Marie nooit op stemmen?
which political party will Marie never on vote
'Which political party will Marie never vote for?'

T2. Hoeveel stoelen heeft Claartje slingers aan gehangen?
how-many chairs has Claartje garlands on hung
'How many chair did Claartje hang garlands on?'

T3. De Tweede Wereldoorlog heeft men veel over geschreven.
the Second World-war has one much about written
'The Second World War has been written about often.'

T4. Welk lid van het koninklijk huis denkt Jan dat Marie naar heeft
which member of the royal house thinks Jan that Marie to has

gekeken?
looked
'Which member of the royal family does Jan think Marie has looked at?'

T5. Hoeveel bedden vraag Marie zich af dat Jan in heeft geslapen?
how-many beds asks Marie herself of that Jan in has slept
'How many beds does Marie wonder Jan has slept in?'

T6. Het journaal zei Jan dat Marie naar had geluisterd.
the news said Jan that Marie to had listen
'The news, Jan said Marie had listened to.'

T7. Welke rechter zei Jan dat Bram denkt dat Geert op kan vertrouwen?
which judge said Jan that Bram thinks that Geert on can trust
'Which judge did Jan say that Bram thinks that Geert can rely on?'

T8. Hoeveel ballen zei Claartje dat Marie dacht dat Jan mee heeft
how-many balls said Claartje that Marie thought that Jan with has

gegooid?
thrown
'How many balls did Claartje say that Marie thought that Jan has thrown?'

T9. De zomervakantie zegt Jan dat Marie gelooft dat Kees aan denkt.
the summer-holidays says Jan that Marie believes that Kees on thinks
'The summer holidays Jan says that Marie believes that Kees is thinking of.'

T10. Welke diersoort heeft men jarenlang zonder mededogen op
which animal-species has one years-long without compassion on

gejaagd?
Hunted
'Which species of animal has been hunted down relentlessly for years?'

T11. Hoeveel kandidaten heeft Jan gisteren met plezier naar geluisterd?
how-many candidates has Jan yesterday with pleasure to listened
'How many candidates has Jan listened to with pleasure yesterday?'

T12. Het bestaan van God hebben onderzoekers jarenlang uitgebreid over
the existence of God have researches years-long extended about

gediscussieerd.
discussed
'The existence of God has been discussed extensively for years.'

Controls for questionnaire 2

C1. Waar heeft Marie mee gespeeld?
where has Marie with played
'What did Marie play with?'

C2. Daar heeft Jan gisteren niets over verteld.
there has Jan yesterday nothing about told
'That, Jan didn't say abything about yesterday.'

C3. Daar zei Jan dat Marie nog over na moest denken.
there said Jan that Marie still about after must think
'That, Jan said Marie still had to think about.'

C4. Daar dacht Klaas dat Jan zei dat Marie rekening mee moest houden.
there thought Klaas that Jan said that Marie account with must hold
'That, Klaas thought that Jan said that Marie had to take into consideration.'

Fillers for questionniare 2

F1. Welke heeft Erik jas gekocht?
which has Erik coat bought
'Which has Erik coat bought.'

F2. Wat vraagt Marie zich af waar Jan gerepareerd heeft?
what asks Marie herself of where Jan repaired has
'What does Marie wondere where Jan has repaired?'

F3. Een boek stond ik naast de jongen die las.
a book stood I next to the boy that read
'A book, I stood next to the boy who read.'

F4. Dit lied hoorde Marie een vrouw die zong.
this song heard Marie a woman that sang
'This song, Marie heard a woman who sang.'

Appendix F

Table A: pairwise comparison for D-linking

(I) dlinking	(J) dlinking	Mean difference (I-J)	Std. error	Sig.[a]	95% confidence interval for difference[a]	
					Lower bound	Upper bound
1	2	1.228*	0.127	0.000	0.916	1.541
	3	0.763*	0.134	0.000	0.434	1.092
2	1	-1.228*	0.127	0.000	-1.541	-0.916
	3	-0.466*	0.134	0.003	-0.795	-0.014
3	1	-0.763*	0.134	0.000	-1.092	-0.434
	2	0.466*	0.134	0.003	0.136	0.795

Based on estimated marginal means

*. The mean difference is significant at the level 0.05 level.
a. Adjustment for multiple comparisons: Bonferroni.

The numbered levels of D-linking are as follows:

(77) level 1 = inherently D-linked
level 2 = structurally D-linked
level 3 = not D-linked

Table B: pairwise comparison for distance

(I) Distance	(J) Distance	Mean difference (I-J)	Std. Error	Sig.[a]	95% confidence interval for difference[a]	
					Lower bound	Upper bound
1	2	0.270	0.129	0.244	-0.082	0.623
	3	1.006*	0.171	0.000	0.538	1.473
	4	1.218*	0.169	0.000	0.756	1.681
2	1	-0.270	0.129	0.244	-0.623	0.082
	3	0.736*	0.140	0.000	0.353	1.118
	4	0.948*	0.138	0.000	0.571	1.326
3	1	-1.006*	0.171	0.000	-1.473	-0.538
	2	-0.736*	0.140	0.000	-1.118	-0.353
	4	0.213	0.121	0.509	-0.119	0.544
4	1	-1.218*	0.169	0.000	-1.681	-0.756
	2	-0.948*	0.138	0.000	-1.326	-0.571
	3	-0.213	0.121	0.509	-0.544	0.119

Based on estimated marginal means

*. The mean difference is significant at the level 0.05 level.
a. Adjustment for multiple comparisons: Bonferroni.

The numbered levels of distance are as follows:

(78) level 1 = main clause
level 2 = extended main clause
level 3 = main clause with one embedding
level 4 = main clause with two embeddings

Table C: pairwise comparison for D-linking vs. distance
see next page

dlinking	(I) Distance	(J) Distance	Mean difference (I-J)	Std. Error	Sig.[a]	95% confidence interval for difference[a]	
						Lower bound	Upper bound
1	1	2	-0.086	0.248	1.000	-0.763	0.590
		3	0.534	0.262	0.275	-0.181	1.250
		4	1.552*	0.251	0.000	0.866	2.238
	2	1	0.086	0.248	1.000	-0.590	0.736
		3	0.621	0.257	0.113	-0.081	1.322
		4	1.638*	0.239	0.000	0.984	2.292
	3	1	-0.534	0.262	0.275	-1.250	0.181
		2	-0.621	0.257	0.113	-1.322	0.081
		4	1.017*	0.260	0.001	0.307	1.727
	4	1	-1.552*	0.251	0.000	-2.238	-0.866
		2	-1.638*	0.239	0.000	-2.292	-0.984
		3	-1.017*	0.260	0.001	-1.727	-0.307
2	1	2	0.414	0.210	0.323	-0.161	0.988
		3	1.724*	0.224	0.000	1.112	2.336
		4	2.155*	0.208	0.000	1.585	2.725
	2	1	-0.414	0.210	0.323	-0.988	0.161
		3	1.310*	0.258	0.000	0.605	2.016
		4	1.741*	0.235	0.000	1.098	2.385
	3	1	-1.724*	0.224	0.000	-2.336	-1.112
		2	-1.310*	0.258	0.000	-2.016	-0.605
		4	0.431*	0.152	0.038	0.016	0.846
	4	1	-2.155*	0.208	0.000	-2.725	-1.585
		2	-1.741*	0.235	0.000	-2.385	-1.098
		3	-0.431*	0.152	0.038	-0.846	-0.016
3	1	2	0.483	0.183	0.064	-0.017	0.982
		3	0.759*	0.226	0.008	0.141	1.376
		4	-0.052	0.218	1.000	-0.647	0.544
	2	1	-0.483	0.183	0.064	-0.982	0.017
		3	0.276	0.196	0.994	-0.261	0.813
		4	-0.534	0.235	0.160	-1.177	0.108
	3	1	-0.759*	0.226	0.008	-1.376	-0.141
		2	-0.276	0.196	0.994	-0.813	0.216
		4	-0.810*	0.215	0.002	-1.398	-0.222
	4	1	0.052	0.218	1.000	-0.544	0.647
		2	0.524	0.235	0.160	-0.108	1.177
		3	0.810*	0.215	0.002	0.222	1.398

Based on estimated marginal means

*. The mean difference is significant at the level 0.05 level.
a. Adjustment for multiple comparisons: Bonferroni.

As a reminder: the numbered levels of D-linking and distance are as in (77) and (78), repeated here:

(77) level 1 = inherently D-linked
level 2 = structurally D-linked
level 3 = not D-linked

(78) level 1 = main clause
level 2 = extended main clause
level 3 = main clause with one embedding
level 4 = main clause with two embeddings

Samenvatting in het Nederlands

1. Inleiding

In dit proefschrift wordt er gekeken naar de verwerving van scheidbare werkwoorden in het Nederlands. Scheidbare werkwoorden zijn werkwoorden die bestaan uit een werkwoordelijk deel, zoals *eet* in (1a), en een scheidbaar deel, zoals *op* in (1a,b), dat in de linguïstiek een partikel wordt genoemd.

(1) a. Jan eet de appel op.
b. Marie ziet dat Jan de appel opeet.

Scheidbare werkwoorden worden zo genoemd omdat ze onder de verplichte werkwoordsverplaatsing, als in (1a), verplicht gescheiden worden. De verwerving van scheidbare werkwoorden zorgt voor een paar uitdagingen voor het kind. Hoe leert het kind dat het partikel *op* en het werkwoordelijk deel *eet* bij elkaar horen? Hoe leert het kind dat het het werkwoord is dat verplaatst en niet het partikel? En hoe leert het kind dat het partikel *op* in (1a) onderscheiden moet worden van het voorzetsel *op*, als in (2)?

(2) Die stoel, daar zit Jan graag op.

De studie in dit proefschrift geeft een antwoord op al deze vragen. Daarnaast biedt de bestudering van de verwerving van scheidbare werkwoorden ons de kans om het verwervingsproces in het algemeen in detail te onderzoeken. Ook hier wordt in dit proefschrift naar gekeken.

2. Werkwoordelijk deel en partikel

De allereerste stap die het kind moet zetten in het verwerven van scheidbare werkwoorden, is de stap waarin het zich realiseert dat de werkwoorden bestaan uit een werkwoordelijk deel en een partikel. Maar voordat het kind deze stap kan zetten, moet het eerst werkwoorden in hun algemeen leren herkennen en categoriseren. Het herkennen van werkwoorden als werkwoorden is echter lang niet zo gemakkelijk als het klinkt. Hoofdstuk 1 laat zien dat kinderen niet alleen af kunnen gaan op de betekenis van werkwoorden, noch op hun eigenschap van predicatie. Andere woordklassen, als adjectieven (bijv. *Jan is groen*), kunnen ook prediceren en andere woordklassen, zoals zelfstandig naamwoorden, zijn in staat om dezelfde betekenis over te brengen (bijv. *veroveren* tegenover *verovering*). De enige informatie die kinderen hebben om woorden in het allereerste begin van elkaar te ondescheiden is pragmatische informatie. Van Kampen (1997, 2010) stelt voor dat kinderen de volgende drie pragmatische noties gebruiken om woorden in het begin te categoriseren:

(3) a. topic = referentieel element
b. operator = klein, gesloten set van illocutie-elementen
c. comment = characterizerend element dat functioneert als een pragmatisch predicaat

Werkwoord vallen in de laatste categorie. Interessant genoeg vallen partikels ook in deze laatste categorie. Een partikel kan zonder het werkwoordelijk deel voorkomen, als in (4).

(4) De melk is op.

In (4) fungeert het partikel *op* als een predicaat. Het is in dat opzicht dan ook identiek aan een werkwoord en zal door het kind in het begin als hetzelfde soort woord behandeld worden.

Van Kampen stelt dat kinderen de noties in (3) niet alleen gebruiken om woorden te categoriseren, maar ook om syntactische structuren te bouwen. Gebaseerd op Bates & MacWhinney (1982) stelt zij voor dat de pragmatische notie *comment* recursief is en verplicht in elke uiting voor moet komen. Eénwoorduitingen zijn dan ook altijd comments. Een tweewoorduiting kan bestaan uit of een comment en een topic, als in (5a), of een comment en een operator, als in (5b).

(5) a. [COMMENT topic comment]
b. [COMMENT operator comment]

Het geheel vormt zelf weer een complexe comment. Dit complexe comment kan dan weer samengaan met of een topic of een operator, afhankelijk van welke al aanwezig is in de uiting.

(6) a. operator [COMMENT topic comment]
b. topic [COMMENT operator comment]

Dat kinderen werkwoorden, losse partikels en scheidbare werkwoorden in het begin als comment classificeren valt te zien aan het feit dat alle drie dezelfde positie in de zin innemen.

(7) a. *[operator [topic comment]]*
moet beertje slapen

b. *[operator [topic comment]]*
is koekje weg

c. *[operator [topic comment]]*
moet appel opeten

Het feit dat kinderen scheidbare werkwoorden eerst als comment classificeren laat zien dat kinderen in het begin scheidbare werkwoorden als één geheel beschouwen en (nog) niet doorhebben dat deze werkwoorden uit twee delen bestaan.

Hoofdstuk 2 laat zien dat de informatie die kinderen nodig hebben om erachter te komen dat scheidbare werkwoorden eigenlijk uit twee delen bestaan, komt met de verwerving van de verplichte werkwoordsverplaatsing (verb-second). Dit komt omdat de verwerving van verb-second het kind voor het eerst in de problemen brengt met de categorisatie die het tot op dat moment heeft gemaakt. In een zin met verb-second verschijnt het lexicale werkwoord niet in de comment positie, als in (7a,c), maar in de operator positie, als in (8).

(8) *[operator [topic adv comment]]*
ligt papa niet _

Het probleem met een zin als (8) is dat de comment positie leeg lijkt te zijn. Deze positie is echter verplicht en kan niet in een uiting achterwege worden gelaten. Het kind realiseert zich als snel dat deze lege comment positie alleen voorkomt wanneer de operator positie gevuld wordt door een lexicaal werkwoord (en niet een koppelwerkwoord of hulpwerkwoord als in 7). Dit stelt het kind in staat om de lege comment positie te relateren aan het lexicale werkwoord in de operator positie. Zodra deze relatie is gelegd, is de eerste stap gezet in de verwerving van verb-second. Deze stap leidt er echter ook toe dat kinderen gedwongen worden om scheidbare werkwoorden te scheiden. Neem een zin als (9).

(9) *[operator [topic comment]]*
eet koekje op

Het kind weet nu dat het lexicale werkwoord *eet* in de operator positie gerelateerd moet worden aan de comment positie. Deze comment positie is echter al gevuld door het partikel *op*. De enige oplossing die het kind heeft is om de structuur in (9) uit te breiden, zodat er ruimte is voor zowel het partikel *op* als het werkwoord *eet* in de comment positie. Zodra het kind deze analyse heeft gemaakt, zal het scheidbare werkwoorden als complexe eenheden behandelen.

Als de verwerving van de realisatie dat scheidbare werkwoorden complexe eenheden zijn afhankelijk is van de verwerving van verb-second, dan is de verwachting dat scheidbare werkwoorden tijdens de verwerving van verb-second niet of nauwelijks gebruikt worden. Longitudinale data van vier Nederlandstalig kinderen laten zien dat dit inderdaad het geval is.

3. Partikels en voorzetsels

Zodra het kind geleerd heeft dat scheidbare werkwoorden complexe eenheden zijn, is het in staat om het onderscheid tussen partikels en voorzetsels verwerven. Om het

onderscheid tussen verschillende lexicale categorieën te verwerven, stelt Van Kampen (1997, 2010) voor dat kinderen gebruik maken van locale, binaire frames. Kinderen kijken naar de directe syntactische omgeving waarin een woord voorkomt en gebruiken dit in de classificatie van een woord. Het Nederlands biedt het kind de volgende frames voor voorzetsels en partikels.

(10) a. partikel: P+V opeten, achterlaten, inslaan

b. voorzetsel: P+DP op de plank, achter de deur, in het water

Partikels worden direct gevolgd door een werkwoordelijk deel, daar waar voorzetsels direct gevolgd worden door een zelfstandig naamwoord. Kinderen maken gebruik van deze syntactische informatie om het onderscheid tussen de compleet homofone woorden te kunnen maken. Het volwassen Nederlands gooit echter roet in het eten in de vorm van (11).

(11) Hier wil ik op zitten.

In (11) staat het woord *op* en *op* verschijnt adjacent aan een werkwoord. Zodoende voldoet het aan het frame in (10a) en zullen kinderen het analyseren als een partikel. De zin in (11) is echter het resultaat van voorzetselstranding. Het voorzetsel *op* is gestrand door het zogenaamde r-pronomen *hier* en de onderliggende structuur van (11) is dan ook als in (12).

(12) Hier_i wil ik [$_{PP}$ op t_i] zitten.

De misleidende informatie in (11) leidt ertoe dat kinderen een stadium in hun taalverwerving hebben waarin ze niet doorhebben dat voorzetsels gestrand kunnen worden. Dit zou in principe niet merkbaar zijn, ware het niet dat voorzetselstranding in het Nederlands beperkt is. Alleen de r-pronomina, als *hier* in (11), mogen een voorzetsel stranden. Andere pronomina, zoals *wat* in (13a), of volledige DPs, zoals *de bank* in (13b), kunnen voorzetsels niet stranden (Van Riemsdijk 1978).

(13) a. *Wat wil ik op zitten?
b. *De bank wil ik op zitten.

Aangezien kinderen in eerste instantie niet doorhebben dat *op* een gestrand voorzetsel is in (11), zijn ze zich ook niet bewust van de beperking op voorzetselstranding. Het resultaat zijn uitingen als in (14), waar voorzetsels gestrand zijn zonder het gebruik van r-pronomina.

(14)

Die kan thee op.	Abel 2;04.09
Nee oh dat kan ik niet mee dansen.	Daan 3;01.00
Deze molentjes water door doen.	Matthijs 3;03.05

Twee aparte longitudinale studies in hoofdstuk 3 laten zien dat kinderen inderdaad een stadium in hun taalverwerving hebben waarin ze geen onderscheid maken tussen voorzetsels in partikels. De eerste studie laat zien dat de mate van object drop voor partikelwerkwoorden en PPs gevolgd door een werkwoord hetzelfde is. De tweede studie laat zien dat kinderen eigenlijk nooit gebruik maken van pied-piping en altijd kiezen voor voorzetselstranding.

Kinderen komen uiteindelijk zonder problemen uit deze situatie. Elegant is dat het juist een locaal, binair frame is dat kinderen in staat stelt om de beperking op voorzetselstranding te verwerven en uiteindelijk het definitieve onderscheid tussen voorzetsels en partikels te maken. Het frame in kwestie is het frame in (15).

(15) r-pronomen+P

Een r-pronomen kan direct adjacent aan een voorzetsel voorkomen, als in (16).

(16) hierop, daarin, eronder

Wanneer kinderen gebuik maken van de twee frames in (10), is er ruimte voor het frame in (15) om een rol te spelen. Kinderen gaan zich langzaam realiseren dat het frame in (15) in complementaire distributie is met het frame in (10b). Een P kan óf voorafgegaan worden door een r-pronomen, óf gevolgd worden door een DP, maar nooit beide. Zodra het kind zich dit realiseert kan het de beperking op voorzetselstranding verwerven. En dit leidt er dan weer toe dat het kind *op* in (11) kan herkennen als een gestrand voorzetsel, omdat het nu de juiste onderliggende structuur, als in (12), aan de zin heeft toegekend.

4. Voorzetselstranding en volwassen sprekers

Zolas gezegd is de analyse van voorzetselstranding in de literatuur als volgt (Van Riemsdijk 1978): stranden mag alleen met gebruik van een r-pronomen. Voorbeelden uit spontane spraak lijken dit echter tegen te spreken.

(17) a. #Ik weet niet wie$_i$ ik [$_{PP}$ naar t_i] moet kijken tegenwoordig.
b. #Mark$_i$ hebben we [$_{PP}$ voor t_i] gekozen.

Het lijkt alsof in (17a) het gewone pronomen *wie* het voorzetsel heeft gestrand en alsof in (17b) de DP *Mark* het voorzetsel hebben gestrand. Beide gevallen zouden volgens de literatuur volledig ongrammaticaal moeten zijn. In hoofdstuk 4 worden twee experimenten besproken die onderzoeken in hoeverre sprekers van het Nederlands uitingen als in (17) accepteren. In deze experimenten werden proefpersonen om waarde-oordelen gevraagd met behulp van een schriftelijke vragenlijst. De resultaten van beide experimenten laat zien dat volwassen sprekers uitingen als in (17) accepteren. Voorzetselstranding zonder het gebruik van een r-

pronomen wordt niet zo acceptabel geacht als voorzetselstranding met, maar wordt acceptabeler geacht dan andere eilandschendingen.

Deze resultaten roepen de vraag op waarom spekers van het Nederlands voorzetselstranding als in (17) accepteren. In hoofdstukken 4 en 5 wordt het voorstel gedaan dat de gematigde acceptatie van uitingen als in (17) het gevolg is van een tweetal oorzaken. Ten eerste is er reeds in de literatuur aangetoond dat er een tweestrijd bestaat tussen syntax aan de ene kant en informatiestructuur/pragmatiek aan de andere kant en dat die tweestrijd soms door informatiestructuur gewonnen kan worden (Avrutin 2006, Los 2009, Metz et al 2010). In het geval van voorzetselstranding is er ook sprake van tegenstrijdige verlangens van beide modules. Syntax vereist het gebruik van het r-pronomen. Informatiestructuur vereist dat de uiting zo informatief mogelijk is. Het door syntax vereiste r-pronomen is echter ondergespecificeerd voor zowel animacy als nummer. Een spreker die in een vraagzin met voorzetselstranding specifiek wil vragen naar een persoon, door bijvoorbeeld het gebruik van *wie* of *welke man*, komt hiermee in de problemen. De eis van informatiestructuur, gebruik de meest specifieke vorm (*wie* of *welke man*), komt niet overeen met de eis van syntax, gebruik een r-pronomen. In sommige gevallen kan de eis van informatiestructuur de eis van syntax overtroeven. De reden waarom dit mogelijk is, is gelijk de tweede oorzaak van de gematigde acceptatie van uitingen als in (17) en is te vinden in taalverwerving. Zoals wordt aangetoond in hoofdstuk 3, en zojuist besproken hier, hebben kinderen een stadium in hun taalverwerving waarin uitingen als (17) volledig grammaticaal zijn. Het voorstel is dat dit stadium nooit geheel verdwijnt, maar als alternatief beschikbaar blijft. Zodra kinderen de beperking op voorzetselstranding verwerven ontstaat de tweestrijd tussen syntax en informatiestructuur. Om die tweestrijd op te lossen kunnen kinderen soms gebruik maken van de structuur die vlak voor de verwerving van de beperking nog volledig grammaticaal was. En omdat deze structuur soms nog gebruikt wordt, verdwijnt deze nooit geheel uit de grammatica en komt hij uiteindelijk ook als noodoplossing in de volwassen grammatica terecht.

5. Het verwervingsproces

Het voorstel dat een stadium in de taalverwerving beschikbaar kan blijven in de volwassen grammatica schept een ander beeld van zowel het verweringsproces als de volwassen grammatica dan dat gewoonlijk in de literatuur naar voren komt. Dit proefschrift wil, naast een uitgebreide discussie over de verwerving van scheidbare werkwoorden, ook een bijdrage leveren aan het algehele debat over taalverwerving en de architectuur van grammatica. Het proces dat in deze dissertatie geschetst wordt is een proces waarin kinderen gebruik maken van pragmatische principes om woorden voor het eerst te categoriseren en om rudimentaire syntactische structuren mee te bouwen. Vervolgens maken kinderen gebruik van syntactische informatie om deze structuren uit te breiden en te verrijken. Met de groei van het lexicon komt de druk om informatie efficiënter op te slaan, wat leidt tot de introductie van regels.

Langzaam bouwen kinderen de ene na de andere grammatica en doorlopen ze verschillende stadia in hun taalverwerving. Deze stadia gaan echter nooit volledig verloren, maar worden eerder op elkaar gestapeld. De ene grammatica wordt gebouwd op de grondvesten van de ander, wat betekent dat bepaalde eigenschappen van de eerdere grammatica soms door kunnen schijnen in de latere grammatica. Tijdens dit gehele verwervingsproces laten kinderen zien dat ze creatieve en generalizerende leerders zijn die actief met hun taal omgaan. Dit leidt er soms toe dat ze een overgeneralizatie maken, maar de volwassen taal is altijd rijk genoeg om ze uiteindelijk uit deze overgeneralizatie te leiden.

Curriculum Vitae

Rianne Schippers was born on March 27, 1982 in Apeldoorn. In 2000 she started her studies in Linguistics at Utrecht University. She completed her Bachelor's degree in 2003. She subsequently enrolled in the research master *Linguistics: The study of the Language Faculty*, which she completed in 2007 (cum laude). After a short period of teaching at Utrecht University, she then worked from March 2008 till April 2012 as a PhD-student at the Utrecht Institute of Linguistics (OTS), where she carried out research in the NWO-financed project *Towards an experience-based model of early syntax acquisition*. During her PhD period she also worked as a teacher in the Modern Languages and Linguistics departments at Utrecht University.