

[REVIEW]

The Acquisition of Word Order: Micro-Cues, Information Structure, and Economy

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I. Introduction

In the study of young children's early syntactic development, the main question is how we can capture the underlying linguistic representations involved in children's grammar. What are the essential properties of such representations? *'The Acquisition of Word Order: Micro-Cues, Information Structure, and Economy'* attempts to answer this question. From a generative point of view, this book gives us insight into how Norwegian children acquire various word orders. There is no doubt that Westergaard's study using a Norwegian corpus is influential because it provides us with crucial cross-linguistic evidence, while many other studies have been focusing on examining English corpora.

The important questions which this book addresses are "What is the role of the input?" , "How do children acquire language in such a short period of time?", and "Why do children typically not make errors in the acquisition of word order?" In this book, Westergaard examines children who speak Tromsø, a dialect of Norwegian. Norwegian is normally considered to be a V2 language, but Tromsø has various non-V2 word orders, dependent on clause types, the category of the initial element, and information

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structure. Westergaard argues that a parametric approach (e.g., V2 parameter) cannot explain the various word order phenomena in the Tromsø dialect, and tries to seek a more precise explanation to account for such varied word orders, proposing a new language acquisition model, ‘the micro-cue approach’.

The main arguments of the book are summarized as follows: (1) Language acquisition occurs as an interaction between UG and the input. (2) Through exposure to input, children detect micro-cues and internalize them in their I-language. (3) V2 word order is caused by verb movement to different heads in a split-CP domain. (4) Information structure is integrated into syntactic structure (CP domain). (5) Errors that children make are due to principles of economy.

In the next section, a brief overview of the book is given. Section 3 introduces the micro-cue model providing background, specifics regarding the micro-cue, and the language acquisition process. Section 4 reviews the findings from the Norwegian corpus data where it is shown that the data is consistent with Westergaard’s micro-cue approach. Section 5 is a brief discussion on the main claims from Westergaard and Section 6 offers concluding remarks.

II. An Overview of the Book

After briefly presenting Tromsø, the theoretical background of the micro-cue model, and child acquisition data in chapter 1, this book introduces the Tromsø dialect in Chapter 2. In particular, the author explains which clause types have V2 or non-V2 order. One important observation is that there is no distinction between the infinitive (a non-finite form) and the present (a finite form) in many regular verbs in the Tromsø dialect. This, according to Westergaard, does make Norwegian children confused and produce sentences which look ungrammatical. Chapter 3 outlines Westergaard’s theoretical assumptions based on the Split-CP model (Rizzi, 1997, 2001). With the observation of word orders in Tromsø dialect described in the previous chapter, the structure in the Split-CP domain is illustrated. It is followed by the micro-cue model for an account of acquisition. There is also speculation about several micro-cues relevant to the various word orders in Tromsø. Chapter 4 examines child-directed speech data involved in the corpus, which Westergaard claims is more reliable as an example of input to which children are exposed than speech data among only adults. It is also shown how the amount of input should be interpreted. Chapters 5 to 9 show how children acquire each clause type within the child corpus data: non-subject-initial

declaratives (Chapter 5), subject-initial declaratives (Chapter 6), *wh*-questions (Chapter 7), *yes/no* questions (Chapter 8), and various non-V2 contexts (Chapter 9). Throughout these chapters Westergaard demonstrates that the child speech data supports the micro-cue model, while the data cannot be explained by other theories such as V2 parameter, the constructivist model, or the competition model. Chapter 10 discusses the child data examined in the previous five chapters within the syntactic model of split ForceP and the micro-cue framework. Considering the syntactic model, Westergaard argues that information structure is integrated into syntax, and actually included in the C domain.

III. The Micro-Cue Approach

1. Background

The micro-cue model was developed based on ‘the cue-based model’ proposed by Lightfoot (1999, 2006). The basic assumption made by Lightfoot is that there are word order parameters that are formulated as cues. According to Lightfoot, the cues are given by UG, and a cue is actually a piece of I-language structure (i.e., a piece of syntactic structure). When children are exposed to relevant input, the input strings act as TRIGGERS to the cues. For Lightfoot, the cues are not in the input but in UG. For example, if V2 structure is involved in the input, a cue for V2 ($_{CP}[XP\ cV\dots]$) is created in their I-language. That is, a cue has a hierarchical structure.

In Lightfoot’s model a cue for V2 ($_{CP}[XP\ cV\dots]$) is assumed to be given by UG. It is because children know that in this case initial XP is not in the IP-domain. Lightfoot claims that this is a ‘poverty of the stimulus’ case since children know it without negative input. However, Westergaard believes it is necessary to extend Lightfoot’s cue-based model in order to capture more complicated word order phenomena.

Finally, Westergaard argues that the cues proposed by Lightfoot should be divided into increasingly smaller and smaller sub-categories, resulting in ‘micro-cues’. There are two crucial differences between Lightfoot’s approach and Westergaard’s. One is that it is possible for the micro-cue to specify contexts for a word order of V2 or non-V2 as its part. Therefore, the micro-cue has more power than the cue in that it can account for more word orders. Another difference is that, while cues proposed by Lightfoot are provided by UG (‘a richer UG’ p5), micro-cues are not given by UG but are language specific. That is, the micro-cues need to be learned.

How do children learn the micro-cues? According to Westergaard, this occurs with interaction of UG and input. It should be noted that UG assumed in the micro-cue

model means categories and features, which are required when children search and parse micro-cues in input. In addition, Westergaard argues that economy principles of syntactic structure building operate during their language acquisition. Namely, when children need to move an element in a sentence, it moves as short a distance as possible.

Furthermore, Westergaard applies an idea of Split CP proposed by Lizzi (1997, 2001) to her micro-cue model, to specify what type of micro-cues Trollsø children search for in input during their acquisition process. However, an interesting idea of Westergaard's here is that ForceP is split. She states "First and foremost, the ForceP is split into different projections expressing illocutionary force, such that different clause types have different 'flavors' of Force, so to speak" (p38). In Westergaard's model, the proposed projections relevant to Trollsø are a Decl(arative)P(hrased) for a declarative, an Int(errogative)P(hrased) for a *wh*-question, a Pol(arity)P(hrased) for a *yes/no* question, a Excl(amative)P(hrased) for exclamative, a Imp(erative)P(hrased) for imperative. Accordingly, Westergaard believes that various word orders in Trollsø are actually due to verb movement to different heads in the C domain.

2. Clause Types and Corresponding Micro-cues

Westergaard formulates the micro-cues relevant to V2/non V2 word order to which Norwegian children are exposed. Several clause types and corresponding micro-cues that are classified into either word order group are presented in (1) and (2).

(1) V2 word order

a. Non-subject-initial declaratives: $_{\text{DeclP}}[\text{XP}_{\text{Decl}} \text{V} \dots]$

b. *Yes/no* questions: $_{\text{PolP}}[\text{Pol} \text{V}]$

c. Non-subject *wh*-questions: $_{\text{IntP}}[\text{wh}_{\text{Int}} \text{V} \dots]$

d. *Wh*-questions with phrasal *wh*: $_{\text{IntP}}[\text{XP}_{[+\text{wh}]} \text{Int} \text{V}]$

e. *Wh*-questions with monosyllabic *wh* + Subject = new information:

$$_{\text{IntP}}[\text{Int} \text{wh}_{\text{TopP}}[\text{Top} \text{V} \dots \text{XP}_{[+\text{FOC}]}]]$$

(2) Non-V2 word order

a. Subject-initial declaratives with focus-sensitive adverbs (e.g. *bare* 'only, just'):

$$_{\text{DeclP}}[\text{XP}_{\text{FocP}}[\text{Foc-Adv}_{\text{Foc}} \text{V}]]$$

b. Non-subject-initial declaratives with *kanskje* 'maybe': $_{\text{DeclP}}[\text{kanskje XP} \dots \text{VP}[\text{V}]]$

c. Exclamatives: $_{\text{ExclP}}[\text{wh} \dots \text{VP}[\text{V}]]$

d. Embedded questions: $_{\text{WhP}}[\text{wh} \dots \text{VP}[\text{V}]]$

e. Embedded declaratives: $_{IP}[XP..._{VP}[V]]$

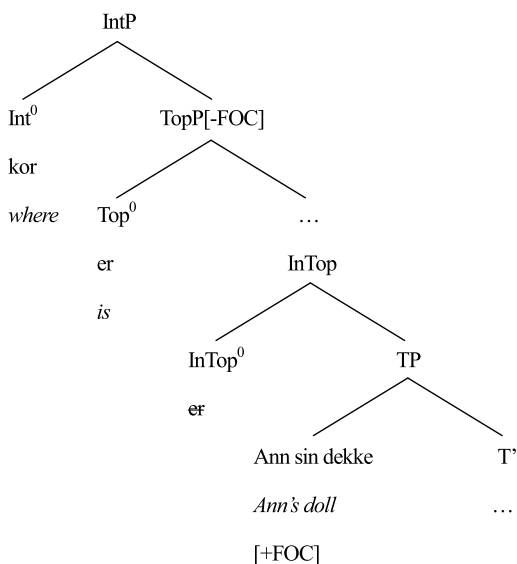
f. *Wh*-questions with monosyllabic *wh* + Subject = given information:

$_{IntP}[wh\ TopP[XP_{[-FOC]}..._{InTop}[_{InTop^0}[V]]]]$

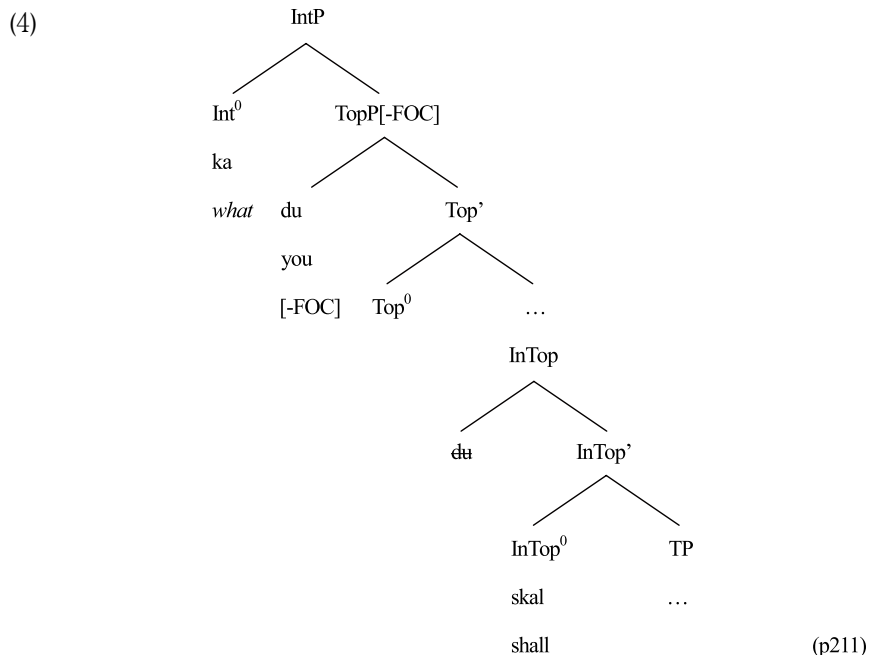
g. Subject questions: $_{IntP}[XP_{[+wh]}_{Int^0}[som]]$

Westergaard states that in addition to clause types, two more features decide V2 or non-V2 word order: the category of the initial element and the information structure. For example, if a declarative sentence has an adverb *kanskje* ‘maybe’ in its initial position as shown in (2b), the sentence has non-V2 word order. Furthermore, if *wh*-questions with monosyllabic *wh* have a subject which is introduced for the first time (i.e., having new information) as in (1e), they have V2 word order. On the other hand, if *wh*-questions with monosyllabic *wh* have a subject which has given information such as a pronominal, the question has non-V2 word order as in (2f). In the micro-cue model, information structure (i.e., new information and given information) is integrated into the syntactic structure as presented in (3) and (4).

(3)



(p211)



3. Children's Acquisition Process of Word Order

The micro-cue model does not need a syntactic trigger, such as verb inflection, for verb movement. Instead, the input of each sentence that involves the relevant micro-cue is assumed to be a trigger, and children take the micro-cue in I-language.

According to Westergaard, children are endowed with UG that consists of categories, features, and operations of structure building. The role of UG in the micro-cue model is to support children in detecting micro-cues in input and parsing them.

Westergaard argues that when children start parsing a sentence to detect a micro-cue, they ignore other clause types involved in input. For example, when they acquire a micro-cue in a clause type of *wh*-questions, children pay no attention to other clause types such as declaratives. Therefore, micro-cues that were already acquired do not enhance children's acquisition of a new micro-cue in other clause types.

Furthermore, Westergaard states that L1 acquisition interacts with the economy principle that is related to structure building and movement operations (pp3-4): children "only build as much structure as is triggered by the primary linguistic data", children move an element to "positions that are as low as possible in the clause structure". These claims are based on the weak continuity framework (e.g., Clahsen, Eisenbeiss, and Vainikka (1994)), and the extension condition of Chomsky (2001).

IV. Findings from the Norwegian Child Corpus Data

1. Input Frequency and Acquisition Order

As was shown in the previous section, Westergaard argues that the process whereby children parse a sentence to detect a micro-cue is selective. Namely, children focus only on the relevant clause types and ignore other clause types when acquiring a micro-cue. That is, the ratio of clause types with V2 and non-V2 in the input of child-directed speech does not have any effect on acquisition.

Westergaard examined child-directed speech to ascertain how much input Tromsø children are exposed to for each clause type. She checked approximately 2,600 sample adult utterances in the child language corpus. The sample data is made up of four one-hour files of three adults; two files of a mother whose child's age range is 1;10.23-1;11.22, and one of each of the two investigators (age of the children 2;6.21 and 3;1.8). The corpus of child spontaneous data includes the three children's (Ann, Ina, and Ole) data, which were collected monthly. Their data files start around age 1;8 and end around age 3;0.

By calculating the total input of each clause type, Westergaard confirms that the frequency of each clause type is very low in the corpus of child-directed speech. This finding is consistent with her micro-cue model because it indicates that children do not need a large amount of input. On the other hand, this becomes counter evidence against a usage-based model where token frequency is crucial for child acquisition.

In terms of the percentage relative to the total number of clauses (matrix and embedded, N=2,097), the clause types of evidence for V2 occupies 54.2% (1,137/2,097) while the clause type of evidence for non-V2, is only 10.1% (212/2,097). In spite of the evidence from the child-directed speech data, both V2 word order and non V2 word order were observed simultaneously in the Norwegian child corpus. It was observed that at the stage of multi-word utterances, the three children produced V2 word order in all the clause types investigated in this book: non-subject-initial declaratives, subject-declaratives with negation, *wh*-questions with long *wh*-elements, and *yes/no*-questions. Moreover, non-V2 word order (e.g., non-subject-initial declaratives with *kanskje* 'maybe', subject questions) also appears simultaneously. Therefore, no acquisition order between the two word orders was found.

Westergaard suggests that token frequency is not relevant, but rather type frequency is crucial for acquisition in the micro-cue model, stating that "for most clause types, the cue is expressed in 100% of all relevant utterances." (p70). Children can get a high rate of exposure per micro-cue in the input. Therefore, when the amount of

input is calculated, the denominator is not the amount of all clause types, but only that of the relevant clause types. Accordingly, under the micro-cue model, there should be no difference in the pace of acquisition between V2 and non-V2 word order, which is supported by the child data analysis in Chapters 5-9.

V. Discussion

In this book, based on the generative approach, Westergaard proposed a new theoretical framework of a language acquisition mechanism, which makes it possible to explain various word orders. In this section, I briefly discuss potential issues and points of interest underlying the micro-cue model.

The central and important claim of the language acquisition process put forward in this book is that children construct syntactic structures based on UG (universal categories/features and basic syntactic operations), input, and economy principles. Westergaard considers a theoretical assumption by Chomsky (2005), that three aspects are crucial for general description of the language design: UG, the environment, and general cognitive principles such as economy (p16). When we focus on the role of UG proposed in this book, it is minimized compared to the cue-based model proposed by Lightfoot (1999, 2006). As Westergaard points out, this is consistent with Chomsky (2007), and Boeckx (2008) who insisted that “the objective of the minimalist research program should be to account for language variation by attributing as little as possible to UG (p16)”. This is related to the debate on language evolution where it has been claimed that it is unrealistic for the genetic ability for language acquisition to be very complicated. The micro-cue model is highly consistent with the objective of the minimalist research program in that not only is its UG mechanism minimized, but also it can explain word order variations which are specific to Tromsø.

In this book, Westergaard closely examined input frequency in the Norwegian child corpus. It was found that type frequency, not token frequency was responsible in child acquisition. This finding is not consistent with the usage-based model where token frequency is considered more important for children to acquire a structure. However, Westergaard has considered the usage-based model carefully, for in the micro-cue approach, a previously acquired micro-cue does not enhance the acquisition of other micro-cues, but rather each micro-cue is acquired independently. Under the verb-island hypothesis (Tomasello 2003:117-118), one type of the usage-based model, a structure (e.g., regular past tense form -ed) is not generalized to other types of verbs even if children

can use it with one type of verb. The structure is acquired independently.

According to Westergaard, children do not make errors in the acquisition of word order because “for most clause types, the cue is expressed in 100% of all relevant utterances.” (p70). This indicates that children can get a high rate of exposure per micro-cue in the input, which leads children to produce each clause type correctly from early on.

Snyder (2009) argues for ‘grammatical conservatism’ which means that ‘we can be relatively liberal in crediting the child with adult-like grammatical knowledge (Snyder 2009: 77). Snyder examined Sarah’s data in the CHILDES database (MacWhinney, 2000) and found that the child started to produce a new grammatical construction (the verb-particle construction) regularly only after she knew that the construction was allowed in the adult language, and she had found the adult grammatical basis for the construction. This is the reason why children do not make errors. However, it does raise questions regarding the role of the parameter here.

Westergaard states, ‘the status of the micro-cues in adult grammar is not completely worked out with respect to the syntactic operations that are triggered by micro-cues’ (p65). The micro-cue model will be developed and elaborated upon more and more to increase consistency with adult grammar.

VI. Concluding Remarks

Westergaard’s Split-CP model of clause structure and the micro-cue model provide clear explanations for various word order phenomena. A detailed analysis of corpus data by Westergaard can reveal how children acquire word order, as she clearly shows us how several Norwegian word order patterns are acquired by children. Evidence in spontaneous speech data (i.e., corpus-based evidence) is very important in the light of the fact that not many corpus-based studies of child acquisition have been reported. This book can be recommended as a good model of corpus data analysis not only for experienced, but also for novice researchers.

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本書は、ノルウェー語の一方言としてとらえられる Tromsø を母語とする子どもたちが、様々な語順をどのように習得していくのかを、生成文法理論の観点から洞察している。本書で提案されている「micro-cue モデル」は、Lightfoot (1999, 2006) による「cue-based モデル」をさらに発展させたものであり、Tromsø における複雑な語順の習得を説明することが可能である。本書の主な論点は以下の通り。

- (1) 言語習得は、UGとインプットの相互作用により起こる。
- (2) 子どもたちは、インプットに触れることを通してmicro-cueを見つけ出し、それを I 言語として内在化していく。
- (3) V 2 語順は、split-CPのドメインにおける異なる主要部への動詞移動によるものである。
- (4) 情報構造は、統語構造 (CPドメイン) に統合される。
- (5) 子どもたちの誤りは、経済性の原理によるものである。

本書ではコーパスを使って分析がなされているが、コーパスデータを扱う多くの研究の対象が英語であり、また、子どもを対象としたコーパス研究が少ないことから、本書は非常に貴重な研究成果であると言える。本書は、コーパスデータ分析のよいモデルとして、ベテランの研究者だけではなく、若手研究者にとっても有用であろう。