The availability of universal grammar to adult and child learners — a study of the acquisition of German word order

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Children learning German as their first language grasp its verb-final character from the very beginning. Adults learning German as a second language tend to assume in the beginning that it has a subject-verb-object order, and modify this hypothesis only gradually. We argue that this difference is due to the fact that children have access to the 'move alpha' matrix when learning the language, allowing them to make more abstract hypotheses, while adults can only rely on general learning strategies.

Introduction

Most recent work on acquisition has stressed the essential similarity between the acquisition of a first language by children and that of a second language (Andersen, 1984 and several of the papers contained in it). There it is argued that the same 'operating principles' and 'learning strategies' are responsible for both types of acquisition, but that a host of cognitive, affective, and social factors (cf., e.g. McLaughlin, 1978) account for the observed differences in rate, manner, and level of eventual attainment. One of the original sources of the hypothesis that first language (henceforth L1) and second language (henceforth L2) acquisition might be different in nature was Chomsky's postulation of the Language Acquisition Device (LAD) as a mental organ that goes through a number of biologically determined maturational stages, while interacting of course with the environment. This postulation, which has received neurolinguistic correlates in the work of Lenneberg (1967) and others, has been interpreted within the acquisition literature as implying that L1 acquisition in general (including lexicon, morphology, pronunciation, syntax, language use, etc.), since it is guided by the LAD, proceeds faster, with less errors, and with greater ultimate success, than L2 acquisition. In fact, the
research results with respect to ultimate attainment (e.g. Krashen et al., 1979; Patkowski, 1980) confirm this. Opponents of the LAD hypothesis, however, claim that this result is only natural given the enormous advantages that children may have over adults in terms of the frequency and type of interaction with the speakers of the target language.

What has been lost sight of in this by now extensive research tradition, however, is that Chomsky's postulation of the LAD in linguistic research is increasingly based on abstract principles. Even if research results would show that adults in L2 acquisition learn aspects of language (including most of the vocabulary, most of the pronunciation, some of the syntax in a superficial sense, and the pragmatics) much faster, with less errors, and more completely than children in L1 acquisition, this would be perfectly compatible with the LAD hypothesis. The latter has only something to say about those aspects of language acquisition and use that are governed by the principles of universal grammar. For these reasons, a test of the LAD hypothesis with respect to the distinction between child L1 and adult L2 acquisition will necessarily have to focus on universal grammar and its structural principles. This is what we hope to accomplish in this paper. We will show that the way in which German children acquire the word order of their language is very different from the way adults acquire it when they acquire German as a second (or third, etc.) language. We argue that this difference is due to the fact that language acquisition by adults involves general learning strategies, while principles specified by the LAD operate in L1 acquisition in addition to general learning principles.

Moreover, we will try to show that Slobin and Bever's theory (1982) about the acquisition of word order in child language is not compatible with the German data. The child, rather than working with surface bound inductive strategies, is capable of formulating abstract hypotheses about the structure of the language it is confronted with. We do, however, want to claim that Slobin and Bever's theory has application to L2 acquisition by adults.

German word order, and specifically the position of the verb in the sentence, has been well-described in the literature of generative grammar, which we will summarize in section I of this paper, and has been the subject of a number of L1 and L2 acquisition studies, on which we will focus in sections II and III, respectively. From a purely practical view, the position of the verb (although determined in German by abstract principles) is something that every speaker has to face and can hence be easily studied even for young children and beginning adult learners. We will argue in section I that the rules governing the positioning of the verb belong to universal grammar
and provide insight into the functioning of the LAD. Our main finding will be that the acquisition data can be interpreted as showing that children have access to the LAD while adults in L2 acquisition do not.

There are a number of reasons why the LAD might not be involved in adult L2 acquisition. For example, the LAD may disappear in the process of maturation. An alternative, proposed by Krashen (1981 and elsewhere) would be that the LAD could potentially operate with adults in the same way as with children, but is blocked by a number of emotional, social and attitudinal filters. We will not further speculate here on this very general problem, not yet having the decisive data on child second language acquisition necessary to gain a clearer understanding.

We will now turn to the rule of verb movement in German, and its relation to universal grammar.

I Verb movement in German

While the fundamental typological characteristics of German have been a matter of some debate, at least in the generative tradition, there appears to be a consensus now that the underlying position of the verb is at the end of the verb phrase. This underlying position is manifest in surface structure in several constructions:

1) 
   \textit{subordinate clauses} \\
   Hans sagt [dass er den Mann kennt] \\
   'Hans says that he knows the man' \\
2) 
   \textit{infinitive clauses} \\
   Hans behauptet [PRO den Man zu kennen] \\
   'Hans claims to know the man' \\
3) 
   \textit{clauses with a modal} \\
   Ich muss den Mann kennen \\
   'I must know the man' \\
4) 
   \textit{clauses with an auxiliary} \\
   Ich habe den Mann gekannt \\
   'I have known the man'

In all the above environments the lexical verb occupies clause-final position. In (1) it is a tensed verb in a subordinate clause, while in examples (2)–(4) it is a non-finite verb. These cases, and the difficulty of formulating a rule which will produce this type of structure, have led to the hypothesis that the final position is basic, and that the cases in which the main verb occurs in a non-final position, to be discussed shortly, are derived via verb movement. The relevant structures are given in (5)–(7):
5) Ich *kenne* den Mann
   'I know the man'

6) Früher *kannte* ich den Mann sehr gut
   'Before I knew the man very well'

7) Den Mann *kenne* ich sehr gut
   'The man I know very well'

In all cases the verb occupies the second position in the sentence. Crucially, this is not always the post-subject position, as is customary in unmarked English clauses of the same type. This is clear when one compares (6) and (7) with their glosses: in English the verb actually occupies the third position here, and in German the verb is anchored on the second position. It is always a finite verb that appears in second position, and it is only in main clauses that it appears there. These observations have given rise to the following analysis for (5)–(7): (Koster, 1978; Thiersch, 1978; Den Besten, 1983; cf. also Bierwisch, 1963; Edmondson, 1982; Koopman, 1984). (We should stress that there are other variants of this analysis in the literature (e.g. Travis, 1984; Kratzer, 1984; Haider & Prinzhorn, (eds.), 1986); they do not affect our basic point, however.)

In declarative clauses some constituent is moved to a TOPIC position, and the tensed verb (which carries the feature [+ T(ense)]) is moved into a [+T] position in the complementizer through a very general type of a movement rule. This double movement analysis (of the verb and of a constituent into TOPIC) assures that the verb will always be in second position in this type of clause. Since it is to the [+T] position that the verb moves, and since this [+T] position is
filled with a lexical complementizer such as *dass* 'that' in subordinate clauses, the analysis insures as well that the verb can move only in main clauses. The alternation between *dass* and the finite verb is due to the fact that *dass*, which introduces tensed clauses, is marked [+T] as well. Finally, since the movement rule is supposed to be a substitution rule, only [+T], i.e., finite verbs can move. In this way the general structure in (8) accounts for all the relevant properties of verb placement in German.

Next, note that in the grammatical literature there is a general consensus that verb movement is an instantiation of 'move alpha'. The verb can only move into the COMP of its own clause, so that the relation is local in the sense of Koster (1983). Moreover the fronted verb asymmetrically commands the empty trace, as is clear from (8). These properties of verb movement, we feel, make it particularly interesting as an object of study. There is a great deal of data available in the input any piece of which is sufficient for postulating verb movement: in fact, its effects can be studied for almost every utterance as is clear from (1) through (7), so that it can be analyzed for early as well as for advanced learners. At the same time it is without a clear direct semantic or pragmatic function, only statable in terms of rather abstract structures, and not confined to a specific string length (although local in the grammatical sense).

### II Word order in L1 acquisition

Given our claim in the previous section that German verb movement is an instantiation of move alpha, we expect that children learning German as their first language would have little trouble acquiring the correct abstract underlying structure and the movement rule. This claim is borne out by the German studies of L1 acquisition, we will argue.

From the early diary studies on, word order has been a focus of research on German first language acquisition. During the last few years, a considerable number of empirical studies have been published concentrating on the development of verb placement (cf. Roeper, 1973; Miller, 1976; Park, 1981; Clahsen, 1982). Applying the standard methodology of language acquisition research, these authors studied only a small number of children longitudinally. As there are a number of case studies, it will be useful to try to summarize them with the aim of establishing a generalized developmental sequence for the acquisition of German word order rules.

As a starting point, we will briefly summarize some of the results of Clahsen (1982). This study deals with male twins (age: 1;6, MLU: 1.0 up to age: 3;7, MLU: 4.53) and their younger sister (age: 1;2, MLU:
1.0 up to age: 2;5, MLU: 2.94). The children were recorded with video equipment at regular intervals of two to four weeks. The method of implicational scaling (cf. Meisel/Clahsen/Pienemann 1981) was used to establish a set of developmental sequences for various areas of syntax. Leaving out some of the details, the developmental sequence for verb placement consists of four stages, simply meant as descriptions of developmental changes that are evident from the data. The sequence is based on a distributional analysis for the whole period of observation (Clahsen, 1982). A description in terms of a sequence of grammars will be presented in section IV.

Stage I

There is no fixed linear order of constituents: all verbal elements appear in sentence-second and in sentence-final position; preference; however, is given to final position.

1) ich bau ein mast
   ‘I build a mast’
   (M is building a mast on a ship)
2) der teddy zu dick ist
   ‘the teddybear too thick is’
3) ich schaufel haben
   ‘I shovel have’
   (D has the shovel in his hands)
4) rauscholt hier
   ‘outpick here’
   (M picks kricks out of the cupboard)

Stage II

Verbal elements containing non-finite parts such as particles appear regularly in final positions; finite verbs are still placed in final as well as in second positions. Preference is still given to final position.

5) deckel drauftun
   ‘cover onput’
   (the child puts on the cover)
6) purzel pierkorb rauratun
   ‘Purzel paper basket remove’
   (looking at a picture book, M. points to a dog ( = Purzel), who has removed the paper basket)

Whenever there was no overt subject, it was assumed that it was phonologically null and counted as the first position element for the placement of the verb. Thus, when the verb overtly appears in first position, like in examples (4) and (9), this counts as a second position if the subject is missing.
Stage III

All finite verbs occur in sentence second position and verbal elements containing finite and non-finite parts now appear in discontinuous word order.

7) die schere hat Julia
   ‘The scissors has J’
8) ein schiff muss du erst jetzt bauen’.
   ‘a ship must you firstly now build’
9) hab ein wurst macht
   ‘have a sausage made’
   (M is pretending to be a butcher; he offers a sausage to his mother)

Stage IV

As soon as the first embedded clauses are used, the finite verb appears in sentence-final position.

10) guck was ich in mein tasche hab
    ‘look what I in my pocket have’
11) ich will mal sehen ob das schwarz ist
    ‘I want see whether this black is’
    (M wants to look through the video camera)

Although verb placement during stage I is variable, the children do not use all of the logical possible patterns. Sentence-initial positions of verbal elements with the finite verb appearing before the subject are not productive. Rather, verb placement is restricted to second and final positions from the beginning of the acquisitional process. The extent to which both these patterns are used differs from child to child, but the verb-final patterns are dominant for all the children, lying around 60–70%. During stage II the children acquire a restriction which has the effect of constraining the class of word-order patterns which were used at I. Note that the following four positions of verbal elements are possible at stage I:

i) X Vf Y
ii) X Y Vf
iii) X Y Vi
iv) X Vi Y

The positions (i) to (iii) are also possible in standard German, but no syntactic context requires sentence-second position of non-finite elements in both final and second position.
verbal elements (iv) in standard German. The constraint which the children acquire during stage II restricts the position of verbal elements to the structures (i), (ii) and (iii). Thus, in stage II the children use only those word orders which are also possible in the target language. The children do not, however, consider the specific contextual restrictions for the position of verbal elements in standard German. Verbal elements still occur predominantly at the end of the clause, though German allows placement of finite verbs at the end only in embedded clauses.

At stage III the children acquire the verb fronting rule. The rule is learned very quickly for all the relevant contexts. It is significant that the frequencies of use of verb second patterns increase from about 40% to 90% within an extremely short period of time (viz. one month). The acquisition of verb fronting has the effect that the children now regularly place the finite verbal element in sentence-second position in main clauses, even with complex verbal elements.

Stage IV is characterized by the use of embedded clauses. It is striking that we could not find any word-order error in subordinate clauses. Rather, the children always place the finite verbal element correctly in sentence-final position. This observation even holds for complex verbal elements. The result that children obviously do not have any difficulties with the placement of verbal elements in embedded clauses provided the impetus for writing this article. Since the position of verbal elements in embedded clauses is different from the order in main clauses, it could be expected, for example, that the children would initially overgeneralize the word-order rules for main clauses which they had acquired during the previous stage. The data on German L1 acquisition currently available shows that such a prediction is clearly false. Rather, it has become evident that the children do not have problems using verb-final patterns in embedded clauses.

In what follows, we will compare the suggested developmental sequence with the results of other studies on German L1 acquisition. In order to check the validity of the suggested sequence, the study of Mills (in press) is most useful. As an attempt to establish a generalized developmental pattern of the acquisition of German, Mills reanalysed all the diary studies (cf. Scupin and Scupin, 1910; Stern and Stern, 1928, among others). She found that initially, during the two-word phase, verbal elements are predominantly sentence-final, with approximately 70% of all the verbs appearing in sentence-final position (p. 23). Thus, stage I which is characterized by variable verb placement with preference for verb-final patterns is confirmed by the results of Mills (in press). Around the age of three, Mills reports a sudden change in the children’s grammar: the verb-final rule is now replaced by the correct verb-second patterns (p. 26). In addition, the
children can now be seen to use complex verbal elements (in correct order) and subject-verb inversion in interrogatives and after preposed complements. These developments confirm the characteristics of stage III where the children acquire verb fronting; even the age limits given by Mills are approximately the same for the children studied by Clahsen. The last stage of the suggested developmental sequence is also confirmed by the observations collected by Mills (in press). She found that word-order errors in embedded clauses are practically non-existent (p. 26). Only for complex verbal elements in main clauses, a few mistakes are reported in which the finite verb does not occur in sentence-second position (p. 45f.).

The remaining studies on the acquisition of German syntax do not cover the whole developmental period in which the acquisition of word-order rules takes place. Hence, these studies can only be considered for verifying certain parts of the suggested sequence.

Grimm (1973) carried out a cross-sectional study with 115 children from age 2;7 to age 5;12. The youngest children, Grimm’s Group O, confirm the characteristics of stage II. Simple verbs are used with variable word-order; preference is given, however, to verb-final patterns. In addition, Grimm (p. 93f.) mentions that verbal elements containing non-finite parts are used with fixed order; these verbal elements are placed in sentence-final position. Grimm (p. 93) observes that there is only one example in which a non-finite verbal element appears in second position. Unfortunately, Grimm does not present a detailed analysis of the verb-second patterns, and the number of examples quoted by her do not allow a reliable reanalysis. The use of embedded clauses, however, is studied in some detail; thus it is possible to test the characteristics of stage IV. Throughout the book, Grimm quotes 69 embedded clauses. In all these cases the verb appears in final position. There are no clear counterexamples. Therefore, the results of Grimm (1973) confirm our stage IV.

Two of the most extensive longitudinal studies on German LI acquisition have been carried out by Miller (1976) and Anders (1980). These authors studied the acquisition of German by three monolingual children from age 14 months (MLU: 1.0) up to age 25 months (MLU: 1.96). Their description focuses on the initial phases and we can only test stage I in Miller’s and Anders’ data. The tables and examples presented in Miller (p. 171–196) show that the position of verbal elements is initially variable with a preference of verb-final patterns. In addition, Miller indicates that his children still use verb-second patterns even for verbal elements which contain non-finite parts (cf. tables 9–24). These observations are consistent with the characteristics of stage I.

Another longitudinal study has been carried out by Park (1971). He
studied two children from age 25 months to age 41 months. Park’s analysis focuses on the position of discontinuous verbal elements, especially auxiliaries and modals. He found that, as soon as the children start to use auxiliaries and modals, these elements are correctly placed in sentence-second position. This observation confirms one aspect of stage III of the suggested developmental sequence. Roeper (1973) reanalysed Park’s data on the initial phases of verb placement. Roeper found that the position of verbal elements is variable during the two-word phase. In addition, the statistics presented in Roeper (p. 193) shows that the children initially prefer verb-final patterns. Again, these observations may be seen as confirming the characteristics of stage I.

The typical word-order pattern of stage I has also been described by Stephany (1976) in her cross-sectional study with four children (age 22 months, MLU: 1.5–1.7). Stephany’s Table 2 (p. 238) shows that the verb-final patterns are dominant; however, verb-second patterns are also used to a certain extent.

The attempt to establish a descriptive synthesis from the different studies on German LI acquisition is not yet complete. We have, for example, not considered the studies by Park (1981) and Leopold (1949). These authors studied bilingual and trilingual children, and it could be expected that the acquisition process of these children differs, in certain respects, from monolingual children.

Nevertheless, the similarities between the results of the different studies are striking and, in conclusion, we would like to claim that the proposed developmental sequence represents the way in which verb-placement rules are acquired by monolingual German children3.

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3 We should point out that the Dutch word-order facts are quite similar to those of German. This is reflected in the acquisition data as well. Data presented by Klein (1974) and Stevens (1977) show that children discover the verb-final character of Dutch quite early. In table A the relevant data from the studies mentioned are presented schematically:

### Table A

<table>
<thead>
<tr>
<th>name</th>
<th>age</th>
<th>MLU</th>
<th>% XV</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1.1</td>
<td>1.51</td>
<td>53</td>
</tr>
<tr>
<td>H</td>
<td>1.1</td>
<td>1.80</td>
<td>45</td>
</tr>
<tr>
<td>T</td>
<td>1.1</td>
<td>1.60</td>
<td>71</td>
</tr>
<tr>
<td>Esther</td>
<td>2.0</td>
<td>2.20</td>
<td>71</td>
</tr>
<tr>
<td>Basje</td>
<td>2.3</td>
<td>1.76</td>
<td>92</td>
</tr>
</tbody>
</table>

For Basje and Esther data are given as well for sentences with both an auxiliary (A) and a verb, as in Table B:

### Table B

<table>
<thead>
<tr>
<th>name</th>
<th>SAOV</th>
<th>SAVO</th>
<th>AOV</th>
<th>OAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esther</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Basje</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
The sequence shows that L1 acquirers discover the structure of the target language quite early. Even during stage I, verb placement in the children’s utterances is in accordance with the fact that verbal elements are restricted to second and final positions in German; verb-initial patterns are practically non-existent in standard German and in the children’s utterances. The developments of stage II may be regarded as another step making children’s grammar even more similar to that of the adult language; from now on verbal elements can only occur in those positions in which they also appear in standard German.

Another argument supporting the claim that the children are on the right track is the fact that the SOV base order and the rule of verb fronting is acquired quite early for all the relevant contexts. In the following paragraphs, it will be shown that adults have considerable difficulties acquiring this rule and that they pass through several stages until they finally produce word-order patterns which are consistent with the underlying SOV order of German and the structural output of verb fronting. The most striking observation, however, concerns the last stage of the suggested developmental sequence. The fact that L1 acquirers do not produce any word-order errors in embedded clauses supports our claim that children, in postulating an underlying verb-final order, make use of learning strategies specific to the language acquisition device. More particularly, we regard the whole developmental sequence as evidence confirming the claim that children have access to the constraints imposed by the configurational matrix for ‘move alpha’ (Koster, 1983) when constructing a grammar for German.

III Word order in L2 acquisition

We will now contrast the L1 data reported on in section II with various types of data on the acquisition of German as L2. Our main conclusion from the survey of the L2 literature is that second language learners at some stage in the acquisition process tend to hypothesize that German is like English in having an SVO system as in (1):

1) a. S → NP (AUX) VP
   b. VP → V . . .

They will tend to leave the verb in immediate post-subject position,

Only the circled SAVO is incompatible with the Dutch order as described in section I, but for the rest the orders in Table B suggest that the children catch on the correct system quite early. Furthermore, the percentage of infinitives of the OV orders are given for both children: 85% for Basje and 80% for Esther. This again is in accordance with Dutch grammar. These data parallel the German data exactly.
even when other constituents precede the subject. As we have shown in section I, this is ungrammatical in native German. The generalization in (1) characterises the early stages in the L2 acquisition process of learners whose native language has SVO order, such as Italian and Spanish. Turkish learners may perhaps postulate an OV order in early stages, but surprisingly enough more advanced Turkish speakers show the pattern in (1) as well4, and below we will argue that the evidence for an OV (or XV) order in the early stages is ambiguous.

Now we will summarize in more detail some of the results of studies dealing with the acquisition of German as L2. In this survey we will leave out studies on tutored L2 acquisition (cf. Nicholas, 1984; Kohn, 1979; Hahn, 1982) as well as studies on child L2 acquisition (cf. Felix, 1982; Pienemann, 1981). Our focus will be the unguided acquisition of German word order by adult foreign workers.

In a recent paper, Nicholas and Meisel (1983) presented a detailed survey of research projects on natural L2 acquisition of German. Three major studies investigate the development of word order:

i) the ‘Heidelberger Projekt Pidgin-Deutsch’ (cf. HPD, 1975; Klein and Dittmar, 1979)

ii) the ‘ZISA cross-sectional study’ (cf. Clahsen et al., 1983)

iii) the ‘ZISA longitudinal study’ (cf. Clahsen, 1984).

These projects deal with learners from a Romance language background. In addition to these projects, there is only one study in which the development of German word order by adult learners with a different language as L1 has been explicitly analyzed: Dittmar (1981) dealing with adult Turkish workers. We will come back to that. First, some of the results of the ‘Heidelberger Projekt’ should be summarized.

'HPD'

In this project 48 Italian and Spanish foreign workers were studied.

4This is confirmed by data from the L2 acquisition of Dutch. There are no published longitudinal data, and the only Dutch cross-sectional data are found in Lalleman (1980), which contains a re-analysis of some of the data in Jansen, Lalleman & Muysken (1981). Lalleman tries to determine for each of eight Turkish and eight Moroccan acquirers of Dutch what would be their most plausible underlying word order in the second language. Beginning Turkish speakers used some OV patterns consistently; at the same time, however, most verb-final structures were subjectless and tenseless. More advanced Turkish speakers did not have underlying SOV orders, however, which would have been the case if their L1 structures really had helped them with the acquisition of Dutch. Rather, five out of eight Turkish speakers have a dominant SVO pattern, one a pattern VSO/SOV. Most beginning Moroccan learners settled on SVO as well, and intermediate Moroccan speakers show SVO order even in subordinate clauses, in addition to allowing VSO as a stylistic option. The data confirm the German data, and suggest that L1 influence is not by itself responsible for the difference between L1 and L2 acquisition.
The data consist of cross-sectional interviews. Although the discovery of the speaker’s word order was not one of the major objectives, a certain amount of attention was paid to the placement of the verb as “the rules for the position of the verb makes possible a rather precise differentiation of all the varieties of learning” (Klein/Dittmar, 1979: 150). The word-order analysis is restricted to complete sentences only, which contain at least a subject, in addition to a verb. For the beginning learners, the authors found that the position of the verb varies greatly: “It is more or less by chance that the subjects in the lowest groups place the verb in second position” (p. 154). With respect to the advanced learners, all we know is that almost all of the occurrences of the verb are acceptable, i.e., we have respectively 83% and 92% of all the verbs in a correct position for these groups.

We would like to suggest that it is simply the method of analysis of the position of the verb which makes it hard to interpret the HPD study. Everything is classified according to whether the verb occurs in first, second, third or fourth position, regardless of the context in which these positions are found. Klein and Dittmar (p. 151) come to the conclusion that it has not been possible to describe the word-order variations in a systematic manner; the major reason for that might be that these authors restrict themselves to a rather superficial description of the linear order of elements in the learners’ utterances. Nicholas (1984) and Clahsen (1984) reanalyzed parts of the Heidelberg corpus using a more adequate description procedure. Nicholas shows that one of the learners belonging to the lowest group (= ‘Battista’, IT-23) regularly placed the verb after the subject in all the sentences listed. This does not, however, appear as a regular positioning rule according to the criterion ‘linear order of constituents’ since an adverbial is frequently placed before the subject, thus introducing a superficial third position for the verb. Thus, Battista can be seen to use a regular SVO word order together with an optional rule which has the effect of preposing a complement to clause-initial position. The fact that the verb superficially occurs in third position simply follows from Battista having not yet acquired subject-verb inversion, but hypothesizing the SVO order sketched above in (1).

Clahsen (1984) reanalysed a whole transcript (kindly made available by N. Dittmar) of ‘Lucia’ (= IT 13), who also belongs to the lowest learning group. With regard to the position of the verb in Lucia’s utterances, Clahsen found that:

i) most of the utterances can be described as base-generated SVO structures;
ii) there are no examples which can be unequivocally attributed to a base-generated SOV structure;
iii) most of those verbs which appear in sentence-final position do so only after preposed complements and adverbs:

   2) vielleicht andere kollege sagen . .
   'perhaps other colleague says . . '

Similarly to the results of Nicholas' reanalysis, these observations show that Lucia dominantly uses SVO order with the additional rule of complement preposing. Thus, we may tentatively conclude that word order even in the lowest learning group is far from being chaotic or unsystematic.

The ZISA cross-sectional study

The most detailed work carried out on German L2 word-order acquisition has been done in the ZISA projects (Clahsen, Meisel and Pienemann, 1983). The ZISA ("Zweitspracherwerb italienischer, spanischer und portugiesischer Arbeiter") project gathered natural language data in its combined cross-sectional and longitudinal study of the acquisition of German as a second language by Italian, Spanish and Portuguese foreign workers. The cross-sectional data consist mainly of informal interviews and unstructured conversations with 45 adult learners from age 15 to age 65. Occasionally, additional formal elicitation techniques and language proficiency tests were used.

In the cross-sectional study the use of certain German word-order rules by the 45 learners was represented with the aid of implicational scales, a valid technique for determining developmental sequences (cf. Hyltenstam, 1977; Dittmar, 1980; Clahsen, Meisel and Pienemann, 1983). This method was then applied to the description of the learners' use of certain rules of German word order (cf. Clahsen, 1980). The analysis reveals a developmental sequence, which can be divided into the following six stages:

Stage I. SVO: None of the German word order rules is applied. The constituents appear in a fixed linear order:

\[
\text{NP (} \begin{array}{c}
\text{AUX} \\
\text{MOD}
\end{array} \text{) V (NP) (PP)}
\]

Stage II. ADV-PREP: Adverbials (= adverbs and prepositional phrases) are optionally moved into sentence-initial position, without affecting the order of subject and verb.

Stage III. particle: Non-finite parts of discontinuous verbal
elements are moved to sentence-final position. This rule applies to the following types of constituents:

- separable prefixes
- participles in AUX – V structures
- infinitives in MOD + V structures.

**Stage IV. (subject-verb) inversion:** Following preposed complements and in interrogatives the subject appears immediately after the finite verb.

**Stage V. ADV-VP:** Adverbials can be placed optionally between the finite verb and the object.

**Stage VI. V end:** In embedded sentences the finite verb appears in clause-final position.

The results of the cross-sectional study led us to the conclusion that all the learners passed through the sequence mentioned above in much the same order. Since this sequence is based solely on cross-sectional data, it is necessary to examine its validity with data from a longitudinal study.

**The ZISA longitudinal study**

The only longitudinal study, currently available, in which the acquisition of German word order by adults has been investigated is the one done in the ZISA project. The major objective, as far as the word-order analysis is concerned, was to test the developmental sequence hypothesized in the cross-sectional study. The distributional analyses presented in Clahsen (1984) show that the supposed stages can be confirmed in the majority of cases. The fact that the learners initially prefer a strict SVO word order can be seen from the high relative frequencies of the (S) V X patterns (app. 90% to 100%). Consider, just as an illustration, the following utterances from two learners, Ana and Zita:

3) ich studieren in Porto
   ‘I study in Porto’
   Z(19)

4) ein herr verkau­fen blumen
   ‘a master sell flowers’
   A(19)

5) das er kaufen in de strass
   ‘this he buy in the street’
   A(19)
   (= He sells these. A points to the flowers in the picture.
   Note: in German kaufen = buy, verkau­fen = sell)

The numbers in brackets indicate the number of weeks the speakers
have been in Germany. Examples of this sort are typical of the initial interviews.

The last stage of the suggested developmental sequence can also be confirmed with the available longitudinal data. The learners do not have final placement of finite verbal elements in embedded clauses, before they have mastered the syntactic rules of the main clause. Before, the learners use SVO order in embedded clauses:

6) wann wir fahren hier in deutschland drei feuer gesehen
   'when we drive here in Germany three fires seen'
   (When we came back to G, we saw three fires by the roadside).

The order of stages III, IV and V is much less clear and we do not want to go into that matter here (cf. Clahsen 1984 for discussion).

Dittmar/Von Stutterheim

The previous discussion centred on learners from a Romance (= SVO) language background. Some parallels in the acquisition process of these learners have been made explicit, for example the use of a strict SVO word order during the initial stages. In order to show that this observation holds regardless of the learners' L1, it is necessary for us to consider some second-language data from adult learners with a different language background. There is only one study relevant to this point: Dittmar (1981), based on Von Stutterheim's dissertation research (cf. Von Stutterheim, in press). The data consists of interviews with nine Turkish adults. The main result is that more than half of the sentences have the verb at the end and that the rest of the sentences are verb-second. A closer look shows that most of the verb-final structures belong to one of the following patterns:

(i) X V
7) vor Personalrat auch hier meine helfen
   (A Turkish colleague (= deleted) helped me in the personal office.)
8) warum türkin schwester helfen?
   (Why do you (= deleted) help the Turkish nurse?)

(ii) X S V
9) dann kinder frau alles hier kommt
   (Then the children of my wife came here)
10) meine bruder er helfen
    (He helps my brother)

Dittmar interprets such utterances as 'clear examples for apparent transfer from L1' (p. 19), given the fact that Turkish is a verb-final language. If, however, this was the only relevant factor determining the word order used by Turkish learners, then we would expect SXV patterns to be the most frequently used type. Clearly, this is not the case. In the data presented in Dittmar (1981) there are only two
examples which could be interpreted as clear SXV patterns, whereas most of the verb-final structures belong to the patterns (i) or (ii). These cannot be regarded as clear cases of verb-final structures, since they could be equally well described by a complement preposing rule, leaving the verb in a superficial final position.

Even learners with a Romance language as L1 very often produce utterances of this type, especially during the initial stages. As these learners dominantly use SVO structures, we concluded that the XV and the XSV patterns could be regarded as derived from SVO together with a complement-preposing rule. A similar description appears to be valid even for Turkish learners. The decisive argument again comes from the use of true SXV patterns. SXV is practically non-existent in the data on the L2 acquisition of Dutch by Turkish speakers (cf. note 4) as well as in Dittmar’s study. Rather, SVX seems to be the dominant pattern, if we consider only the basic forms as in Lalleman’s analysis for Dutch (1980). Thus, our initial hypothesis that L2 learners tend to hypothesize that Dutch and German have SVO order appears to be confirmed by the data currently available. Further research will have to indicate to what extent object preposing is applied as a strategy by Turkish L2 learners to stimulate Turkish OV order (cf. Muysken, 1984, on the acquisition of Spanish by Quechua speakers).

As far as the more advanced stages of the developmental sequence suggested in the ZISA study are concerned, it is not possible to compare the Turkish subjects studied by Dittmar with the Romance learners, because his subjects are all beginning learners. In order to look at some of the more advanced stages, Clahsen collected data from a group of 10 Turkish adolescents (age: 14 years to 16 years; duration of stay: 2 months to 3 years). A striking similarity between these learners and the Romance learners studied in the HPD and ZISA projects concerns the use of word order in embedded clauses. Consider the following examples from the Turkish learners:

11) er macht grammatik so dass wir kann nicht verstehen
   'he teaches grammar so that we cannot understand'
12) wenn sie will gehen
    'when she wants to go'
13) ich will nicht heiraten, weil diese jungen sind nicht nett
    'I don't want to marry, because these boys aren't neat'
14) wenn ich geh zurück ich arbeit elektriker in türkei
    'If I go back, I work as an electrician in T'

The data consist of spontaneous speech samples; the interviews were made in connection with a seminar on ‘Second Language Acquisition’ at the University of Hamburg in 1981. The present authors want to thank the students of this class for having made the interviews and for providing us with the transcripts. Since the data have not been completely analysed yet, we can only present some preliminary observations.
These examples are very similar to the subordinate clauses used by those Romance learners who have not yet reached stage VI. It could be argued that Romance learners using SVO in embedded sentences are applying a strategy of language transfer. However, this explanation clearly turns out to be false as far as Turkish learners are concerned. Turkish requires final placement of the lexical verb in subordinate clauses (similar to German). Thus, these observations may tentatively be interpreted as providing against the role of transfer in word-order acquisition and as supporting our claim that L2 learners make use of SVO order irrespective of their language background, even in those cases in which SOV is suggested by the target and the source language.

The use of word order in embedded sentences is an excellent test case to illustrate the differences between L1 and L2 learners. Recall that verb-position errors in embedded clauses are practically non-existent in German child language. Considering only the L2 data, it could be argued that the use of SVO might be the result of overgeneralization: having already acquired the verb-position rules for main clauses, the learners simply extend the domain of application of these rules to embedded sentences. If, however, this explanation was correct, why then do German children acquiring their mother tongue not overgeneralize the syntactic rules for main clauses? Again, the differences between L1 and L2 acquisition remain to be explained. In the following section we will try to provide an explanation for these differences.

IV Explaining the difference between L1 and L2 acquisition

Our main conclusion from the study of the acquisition of German word order by children and by adults is that there are essential differences between L1 and L2 learning as far as the acquisition of German word order is concerned. This conclusion is confirmed by the existing data on the acquisition of Dutch word order, presented in footnotes. In order to explain these differences, we assume that children possess...
learning capacities specific to language, particularly the capacity to postulate an abstract underlying order, related to the surface order through ‘move alpha’, whereas adults use acquisition strategies which may be derived from principles of information processing and general problem solving strategies.

Let us first turn to L1 acquisition. In recent work, Slobin and Bever (1982) have analysed word order acquisition of Turkish, Italian, Serbo-Croatian and English using the notion of canonical sentence schemas. These schemas are derived from the so-called neutral sentence type, which is defined, among other things, as ‘simple active affirmative’ (p. 230), and containing a finite verb in the dominant word order of the language (p. 231). Assuming L1 learners to be equipped with the capacity to reconstruct the canonical sentence schema of their language, Slobin and Bever try to explain why Italian and English children use SVX orders, whereas Turkish children tend to prefer verb-final patterns.

The dominant word order of the ‘neutral sentence type’ in German is SVX, according to Slobin and Bever’s definition. Thus, German children should be expected to prefer verb-second patterns during the initial stages. This prediction is false. Rather, the dominantly used word order pattern in German child language is SXV, and the data from the acquisition of Dutch as L1 cited in note 3 confirm this result. We suggest that it is the restricted selection of languages studied by Slobin and Bever which makes the acquisition data seem compatible with their theory. The authors only considered languages in which the order of elements in the ‘neutral sentence type’ reflects underlying structure. Thus, languages such as Italian, English and Turkish are not suitable test cases to answer the question whether children are using the ‘neutral sentence type’, i.e., surface structure order, or whether they are more oriented towards the order of elements at the level of underlying structure. German and Dutch are better test cases with regard to this question, because both languages are assumed to have SXV as underlying order and SVX as the order of the neutral sentence type.

Our results on L1 acquisition demonstrate that children are able to recover the order of elements at the level of underlying structure (cf. Roeper 1973), which may be seen from the fact that the children’s initial word-order hypothesis is in accordance with the verb-final character of the target language. In addition to that, the syntactic rules which are acquired during the subsequent stages are based on a verb-final phrase structure system. How then does the child go about postulating an abstract XV order for the German input?

Let us assume that universal grammar contains the following four basic principles, among others:
A study of the acquisition of German word order

a) \( \overline{X} \rightarrow \text{Spec} \overline{X}, \overline{X} \)
\( \overline{X} \rightarrow \ldots \overline{X} \ldots \) (\( X \) theory)

b) move alpha (the configurational matrix)

c) \( X \) governs \( \left< \text{left} \right| \text{right} \) where \( X = V, P, \ldots \) (theory of government)

d) a clause consists minimally of a subject and a predicate (theory of predication)

Assume also that the child is confronted with the following frequent word order data in the input:

e) an alternation \( \ldots \overline{X} V \ldots / \ldots V \overline{X} \ldots \)

f) XVS orders (derived through topicalization)

g) \([\text{Spec} \overline{N} \overline{N}] \) zwei kleine Jungen
\('two little boys'\)

\([\text{Spec} \overline{A} \overline{A}] \) sehr schöne Mädchen
\('very beautiful girls'\)

h) dominant subject predicate orders

1. We suggest that the child establishes a base configuration on the basis of (d), (g), and (h):

i) \( \text{NP}_{\text{subject}} \) VP_{\text{predicate}}

The constituency is universally given by (d), and the order follows from the input, directly from (h) and indirectly from (g), if we assume with Travis (1984) that subjects are specifiers of \( S \), and that children generalize specifier placement across different \( \overline{X} \) categories.

2. The child has to assume leftward movement on the basis of (a), (b), (f), and (i). \( X \) theory stipulates that \( V \) is the head of VP, and the move alpha configuration provides for the possibility of movement. Since in (i) the VP is to the right of the subject, and in (f) to its left, movement has to be leftward, across the subject. Notice that the alternative of having a rule moving the subject noun phrase into the VP is out, given the 'move alpha' configuration, discussed in section I.

3. The child assumes that the verb phrase is head-final, on the basis of (c), (e), and leftward movement. While (e) would allow for both \([V \overline{P} \ldots ]\) and \([\ldots V \overline{P}\) orders, (c) forces the child to fix one underlying order. Since there is an independently required leftward movement rule, the optimal grammar provides for a \( V \) at the end of VP. The same result could be derived by assuming that at this stage the child generalizes head final word order for all constituents in German. (cf. also Felix, 1984).

Let us now try to explain the empirical results on L2 German word-order acquisition within the framework developed by Slobin and Bever. Recall that these learners initially prefer SVO structures. In other words, second language learners are sensitive to the order of
elements in the ‘neutral sentence type’ as diagnostic for their initial word-order hypothesis of the target language. Slobin and Bever’s claims may be valid for L2 rather than L1 acquisition, given the fact that L2 learners are using canonical sentence schemas, which derive from the neutral sentence type. A reason for this may be that this sentence type requires ‘the least processing of implicit discourse presuppositions in addition to the basic semantic content of the sentence’ (p. 231).

In the remaining part of this paper we will compare the syntactic rules acquired by L1 and L2 learners during the subsequent stages of the suggested developmental sequences. Our main conclusion will be that L2 learners, starting out with an SVO phrase structure system, will use syntactic processes which are more complex than the rules acquired by children and which cannot be defined in terms of ‘rules of grammar’, at least in current frameworks of generative grammar. In contrast to that, we will try to show that the syntactic rules which are acquired during L1 acquisition can be regarded as being derived from the rules and principles of universal grammar.

It is of course difficult to give a precise characterization in terms of grammatical rules of the different stages in the L1 acquisition process, given the lack of cues about grammatical structure and the general problems inherent in the analysis of the two-word stage. What follows is a tentative sketch, making use of the stages outlined in section II:

Grammar 1 variable order (Stage I)
— base rule includes \( \ldots X \ldots V \)
— a generalized verb fronting rule is optional

Grammar 2 variable order, but non-finite verbal complex in final position (Stage II)
— base rule includes \( \ldots X \ldots V \)
— an optional rule of verb fronting, where the feature [ + Tense] (cf. section 1) is specified

Grammar 3 in main clauses; finite verbs in second position and in subordinate clauses finite verb in final position (Stages III, IV)
— base rule includes \( \ldots X \ldots V \)
— verb fronting has become obligatory.

In all grammars the rules are basically the same: an XV base rule and a movement rule. What changes somewhat is: (a) the degree to which the constituent that moves is specified as: i) verbal complex, in which case either tensed or non-finite verbs, and either simplex verbs or verbal complexes can move to second position, ii) verb, in which case either tensed or non-tensed single verbs can move, iii) tensed verb; (b) the optionality or obligatoriness of verb fronting. The latter specification has a very unclear theoretical status, since within grammatical theory it is assumed that all rules are optional. The obliga-
toriness of a given process is assumed to be due to independent specifications of the grammar, and in the case of verb fronting in main clauses it is unclear as yet what these are.

Notice that we have collapsed stages III and IV of the L1 developmental sequence, suggesting that they can be generated by one single grammar. The grammar of the child with regard to verb placement does not change from III to IV; the only difference is that embedded clauses come in. Summarizing, in all stages of the L1 acquisition process, the grammar of the child is fully definable within the theory of grammar.

With respect to L2 word order acquisition, let us consider the developmental sequence suggested in the ZISA study and assume that these stages correctly characterize what happens in the acquisition process of German as L2 by Romance learners. The claim we are trying to illustrate is that at least the verb position rules included in that sequence are difficult or impossible to define as 'rules of grammar'. If one wanted to describe the sequence in the ZISA research on L2 acquisition as a series of grammars it would approximately look like this:

\[
\begin{align*}
I & \quad S \rightarrow NP \quad VP \\
& \quad VP \rightarrow V \ldots \\
II & \quad \text{The PS rules in } I + \text{ Adv-Prep} \\
& \quad X \left( \begin{array}{c}
PP \\
\text{Adv}
\end{array} \right) Y \Rightarrow \left( \begin{array}{c}
PP \\
\text{Adv}
\end{array} \right) X \ e \ Y \\
III & \quad \text{The rules in } II + \text{ Particle} \\
& \text{i. } X \left( \begin{array}{c}
v' \ P \\
[+\text{ins}]
\end{array} \right) V \Rightarrow X \left( \begin{array}{c}
v' \ e \\
[+\text{ins}]
\end{array} \right) Y + P \\
& \text{ii. } X \left( \begin{array}{c}
v' \\
[+\text{ins}]
\end{array} \right) \left( \begin{array}{c}
V-\text{inf} \\
V-\text{part}
\end{array} \right) \Rightarrow X \left( \begin{array}{c}
v' \\
[+\text{ins}]
\end{array} \right) V + \left( \begin{array}{c}
V-\text{inf} \\
V-\text{part}
\end{array} \right) Y \\
IV & \quad \text{The rules in } III + \text{ Inversion} \\
& \quad X \text{ Subj } V Y \Rightarrow X V + \text{ Subj } e \ Y \\
V & \quad \text{The rules in } IV + \text{ Adv-VP} \\
& \quad X V NP \text{ AdvP } \Rightarrow X V + \text{ AdvP } NP \ e \\
VI & \quad \text{The rules in } V + \text{ V End} \\
& \quad X V Y \Rightarrow X e \ Y + V
\end{align*}
\]

In this sequence, three rules merit particular discussion. The rule Particle shifts (complexes of) particles, participles, and infinitives to clause-final position, both in main and in subordinate clauses. Since particles are generated before the tensed verb and participles and infinitives are handled as

7Supposing our argument that universal constraints on rules of grammar cannot be applied to L2 interlanguage grammars to be correct, there are numerous different ways of accounting for the observed stages. We just suggest one possible account, in order to illustrate our claim that word order patterns used by L2 learners cannot be described by rules of grammar.
nitives after the tensed verb, it cannot be stated as one rule, unless non-linear context restrictions are allowed in the statement of the rule. It cannot be a root transformation, in Emonds' (1976) terminology, since it occurs in all types of clauses. Neither can it be a structure-preserving transformation, since the phrase-structure rules do not provide a special verb/particle position at the end of the clause. Contrary to the English rule of Particle Shift, from which it derives its name, it cannot be formulated as a local rule either, since the elements have to be moved over an indefinite number of constituents. In total, it cannot be defined as a transformation in Emonds' (1976) framework, which is representative in this respect of current theory. (More recent frameworks are, if anything, even more restrictive.) The same conclusion holds for the rule of V End, which applies only in subordinate clauses and cannot be structure-preserving, nor local either. The inversion rule in stage IV is hard to formulate because the $X$ in the left context is not simply an arbitrary variable which can either be present or absent, but a preposed constituent triggering the rule. The trouble is that the class of objects here is hard to state as a natural class in terms of syntactic categories.

It should be emphasized that the developmental stages outlined above could be reinterpreted in terms of a process of continuous restructuring of the L2 grammar towards the target grammar. One possibility of how such restructuring could proceed is the following (cf. Bongaerts and Jordens, 1985):

$$
A \quad \text{SVO} \\
B \quad \text{SOV} + \text{a rule that moves the tensed verb into a post-subject INFL position} \\
C \quad \text{SOV} + \text{the rule of verb second that moves the verb into a pre-subject COMP position}
$$

One of the immediate problems with this approach, which leads us to reject it here, is that stage VI postulated above, i.e., clause-final placement of the finite verb in embedded sentences, should be concurrent with stage IV, the point at which inversion occurs. It is not. A second argument against the restructuring hypothesis is that we do not have supporting evidence in the L2 data for the transition from SVO in A to SOV in B. The restructuring hypothesis would be more plausible if there were any cases of finite verbs occurring in final position at this point, which we do not find. This is contrary, for instance, to the L1 data. Therefore we maintain the analysis here of the L2 acquisition process as presented in Stages I through VI above.

We cannot exclude the possibility that there is restructuring to underlying SOV order in the final stage of the L2 acquisition process. This restructuring would make the eventual system similar or identical
to the native German system. There is no evidence, however, either for or against this final restructuring. Notice, of course, that our hypothesis that adults do not have access to principles of universal grammar in the same way as children makes the occurrence of restructuring in the last stage entirely fortuitous.

Our conclusion then must be that acquiring German through these stages is a round about way from the point of view of grammar. By fixing on an initial assumption of SVO order, and then elaborating a series of complicated rules to patch up this hypothesis when confronted with conflicting data, the L2 learners are not only creating a rule system which is far more complicated than the native system, but also one which is not definable in linguistic theory.

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