ORIGINS OF COMPLEX SYNTAX IN INTERLANGUAGE DEVELOPMENT

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Abstract

Functionalist analyses of interlanguage (IL) development have been concerned to establish the discourse-pragmatic foundations of morphosyntax. A number of domains have been investigated in such work, including referentiality, topic-comment encoding, and temporal reference. The present study extends the focus to the encoding of simple and complex propositions in IL.

Through a longitudinal analysis of conversational data from two Vietnamese learners of American English, the study examines propositional syntax with direct reference to discourse-pragmatic factors in face-to-face interaction, in particular, to learners' reliance on the collaboration of their (English-speaking) interlocutors. Syntacticization - movement from highly context-dependent, "paratactic" speech to more explicit, morphosyntactically encoded speech - is observed in (1) high proportions of propositional utterances in both learners' speech, (2) a tendency to distribute propositional content over single utterances, and (3) little interlocutor collaboration in the encoding of complex propositions. Parataxis is found in the encoding of complex propositions: a low rate of multipropositional utterances (MPUs) is observed throughout the study, as well as a preference for juxtaposed rather than morphologically bound MPUs. Of note is a difference in the developmental paths of complementation and modification. Production of the former but not the latter appears to be facilitated by the existence of specific lexical entry points.
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1. Introduction

Any approach to the development of second language learners' interlanguage (IL) which assigns a primary role to conversational interaction involves functional analysis at some level. Its scope may be the social functions of speech, the illocutionary functions of speech acts, the discourse functions of morphosyntax, or even the semantico-grammatical case functions of nominals. In recent years, the last two areas have attracted serious attention, with studies conducted on such topics as referentiality (Huebner 1983), topic-comment encoding (Givón 1984; Rutherford 1983; Schachter and Rutherford 1979; Schumann 1984, to appear; Stauble and Schumann 1983), and temporal reference (Kumpf 1983; Meisel 1987; Sato, 1986; Schumann 1983).

The present study describes the relationship between discourse-pragmatics and morphosyntax, applying functionalist analysis to the encoding of simple and complex propositions in longitudinal, conversational IL data from two Vietnamese learners of English. Its findings offer a preliminary test both of the utility of the Givón model in SLA studies, and of claims by Hatch (1978) and others to the effect that "syntax develops out of conversation."

2. A functionalist analysis of IL development

to the study of IL development. Originally formulated in the study of diachronic syntax, FTSA now purports to account for synchronic variation within a language, the genesis of pidgin and creole languages, and first and second language acquisition. Its basic claims are that "syntax cannot [emphasis in original] be explained or understood without reference to its use in communication" and that syntactic structure can be shown to "emanate from the properties of human discourse" (Givón, 1979b, p. 49).

Givón posits the discourse-pragmatic origin of syntax in all situations of language change, phylogenetic and ontogenetic. In his view, discourse-pragmatics gives rise to syntax, certain lexical items turn into morphological markers, and some of these markers subsequently erode through phonological attrition.

An example from Tok Pisin (a creole spoken in Papua New Guinea) nicely illustrates the first two phases of the cycle. Sankoff and Brown (1980) report that *ia* (from English 'here'), originally a locative adverb, has now acquired both a deictic function — example (1) below — and a relative clause bracketing function — example (2) below:

(1) Disfela ia, ol ikosim em haumas? (Lita T.)
   'This one, how much do they charge for it?'
   (Sankoff and Brown, 1980, p. 223).

(2) Na pik ia [ol ikilim bipo ia] bai ikamap olsem draipela ston (Elena Z.)
   'And this pig [they had killed before] would turn into a huge stone' (Ibid., p. 213).
The focus of the present study, syntacticization, is defined as a tendency for "loose, paratactic, 'pragmatic' discourse structures [to] develop over time into tight, 'grammaticalized' syntactic structures" (Givón, 1979b, p. 208).

While the term parataxis is usually used to refer to the relationship holding between clauses - "a looser syntactic association of the constituents of a sentence than coordination" (Lyons, 1977, p. 782) - Givón clearly employs the term in a broader sense. He proposes "pragmatic" and "syntactic" modes of communication, the modes being characterized by pairs of contrasting features:

<table>
<thead>
<tr>
<th>Pragmatic Mode</th>
<th>Syntactic Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. topic-comment structure</td>
<td>subject-predicate structure</td>
</tr>
<tr>
<td>b. loose coordination</td>
<td>tight subordination</td>
</tr>
<tr>
<td>c. slow rate of delivery</td>
<td>fast rate of delivery</td>
</tr>
<tr>
<td>d. small chunks under one intonation contour</td>
<td>large chunks under one intonation contour</td>
</tr>
<tr>
<td>e. lower noun/verb ratio discourse, with more simple verbs</td>
<td>higher noun/verb ratio in discourse, with more complex verbs</td>
</tr>
<tr>
<td>f. no use of grammatical morphology</td>
<td>extensive use of grammatical morphology</td>
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</table>

Of these features, the present study examines (b) and (d) in IL development.

3. Complex syntax in interlanguage development

While there are a number of studies of the development of complex syntax in second language acquisition (SLA), they have focused on instructed learners, employed a cross-sectional
design, studied learners' comprehension of complex syntax (e.g., D'Anglejan and Tucker 1975, Ioup and Kruse 1977), and/or have used written language data (Frawley 1981, Gass 1982, Ioup 1983, Schachter and Hart 1979, Schachter and Rutherford 1979). What is somewhat problematic is that these studies have been oriented to L2 forms, i.e., complex syntactic constructions such as relative clauses and clausal, infinitival and gerundive complements. However, it is reasonable to argue that SLA research should determine how these structures are acquired, i.e., when the different types of complex syntactic structures emerge and what paths of development they follow. The present study addresses these questions through a closer examination of the discourse-pragmatic dimensions of learners' production of complex syntax over real time, in natural face-to-face interaction.

The analysis incorporates features of natural conversation, in particular, learners' recourse to the collaboration of their (native speaker) interlocutors. Complex syntactic constructions are operationalized as multipropositional utterances, i.e., speech production units consisting of more than one simple proposition (involving a single predicator and at least one argument). In this way, Givón's claims concerning movement from loosely coordinated to subordinated syntax and from less to more information under a single intonation contour are tested in this study. The question being addressed here is, to what extent can progress in second language acquisition be described in terms of the degree to which learners grammaticalize their messages with increasing efficiency over time? In other
words, to what extent are learners' ILs characterized by parataxis in the encoding of simple and complex propositions, and what evidence is there of syntacticization over time in the encoding of simple and complex propositions?

4. Methodology

4.1. Subjects

The subjects of this study are brothers, Tai and Thanh, who were about ten and twelve years old upon arrival in the U.S. in late March, 1981. Boat refugees who were somehow separated from their family during their departure from South Vietnam, they were placed in a Malaysian refugee camp for two months before relocation to Philadelphia, Pennsylvania. Since their arrival, they have lived with American foster parents, a white couple in their late thirties who have provided a home for other Southeast Asian refugees over the last several years. It was arranged that weekly conversation sessions would be provided in exchange for data on the boys' acquisition of English. It was agreed that no instruction would be provided, although some help with homework tasks would be given. This condition was maintained throughout the ten-month period of study.

By the end of this period, it was apparent that Thanh and Tai were adjusting satisfactorily to American life. They got along well with their foster parents and had become especially attached to Mary. It is interesting to note that their entrance into the life of the community was eased mainly through their participation in organized soccer. Both are excellent soccer
players and were much sought after by neighborhood and club teams.

In fact, their athletic ability probably facilitated Thanh and Tai's adjustment to the public school system as well. They were enrolled in a local public school in a predominantly black, working/middle-class community outside Philadelphia. They were placed in grade levels according to their apparent ages, Thanh, in the sixth grade, and Tai, in a third/fourth grade mixed class. Neither received any ESL instruction during the observation period since there were no ESL classes or teachers available in their school.

Although both learners began attending school a few weeks after moving to Philadelphia, they and their teachers report that they remained quiet and participated very little in class activities for most of their first term (Spring 1981). Because of a prolonged teacher strike in the fall of that year, they did not return to classes until November, roughly a month after data collection for this study began.

As for their education in Vietnam, both boys had attended school regularly, although it was not clear what grade level Tai had reached when they left. Thanh had been in the equivalent of the fifth grade in the U.S. While Than was literate in Vietnamese upon arrival, Tai was not and therefore received tutoring in Vietnamese reading and writing once a week for most of the period of observation. Neither learner had had any English instruction before leaving Vietnam, although Thanh reported having had at least a year of classroom instruction in French.
4.2. Data

The data for the larger study consisted of approximately 60 hours of conversation collected through weekly audio-taping of visits, about 1-1/2 hours per visit, between the subjects and the researcher, primarily in the home context. The boys' foster mother was present during most of these visits, and other occasional participants included their foster father, their peers, family friends and friends of the researcher.

The analysis reported here utilized a corpus of nine samples of conversational speech, each of about 90 minutes, taken at roughly one-month intervals, for a total of approximately 13.5 hours of data. Some of the samples consisted of the entire transcript from a data collection session, while others were composed of excerpts from two or three adjacent sessions. Table 1 lists the tapes from which the data were taken.

Table 1 about here

4.3. Analysis

Learner speech on the tapes was transcribed in a modified version of the International Phonetic Alphabet (IPA), and their native English-speaking interlocutors' speech in standard English orthography. The data were then segmented into utterances and propositions. An utterance was defined as a production unit consisting of a sequence of speech by a single speaker under a single intonational contour bounded by pauses. A proposition was defined, following Ochs, Schieffelin and Platt
(1979), as a semantic unit consisting of at least one major argument and one or more predications about the argument.

Quantification of utterances and propositions yielded the following information for each sample for each learner:

1) Number of utterances and number of propositions
2) Proportion of propositional utterances, i.e.
   \[ \frac{\text{number of propositional utterances}}{\text{total number of utterances}} \]
3) Proportion of collaboratively produced propositions, i.e.
   \[ \frac{\text{number of collaboratively produced propositions}}{\text{total number of propositions}} \]

Non-propositional utterances were further examined for patterns of ellipsis.

The next stage of the analysis focused on complex propositions. All multiple-propositional utterances (MPUs), all conversational sequences which seemed to involve complex propositions, and all collaboratively produced complex propositions were identified and quantified. MPUs were then coded for three kinds of interpropositional relations: coordination, complementation, and modification, as well as for type of interpropositional "binding": juxtaposition or the use of connective morphology. Finally, the sequence of emergence of syntactic connectors was noted for each learner.

Parataxis was expected to emerge as (1) a predominance of non-propositional speech (i.e. a large proportion of non-propositional utterances), (2) low proportions of multi-
propositional utterances (MPUs), (3) extensive reliance on interlocutor collaboration in the production of propositions, and (4) little use of connective morphology in expressing interpropositional (i.e. semantic) relations. Developmentally, syntacticization was anticipated in terms of (1) an increase in propositional speech, (2) an increase in MPUs, (3) a decrease in reliance on interlocutor collaboration, and (4) an increase in the use of connective morphology in complex propositions.

5. Results

5.1. Utterances and simple propositions

The data were first examined to determine what proportion of the learners' speech in each sample was propositional, i.e., expressed at least one argument and a predication about that argument in an utterance. The findings are presented in Table 2 for Thanh and Table 3 for Tai.

In Thanh's data, the proportion of propositional speech ranged from a high of .72 in Sample 2 to a low of .42 in Sample 9. The latter figure, much lower than any of the others, is puzzling since it occurred in the very last sample. Over time, a pattern of increase in propositional speech did not emerge. While a gain was made between Samples 1 and 2 - from .60 to .72 - the figures for all subsequent samples were less than .72.
In Tai's case, the highest proportion of propositional speech - .81 - was produced in Samples 4 and 6, exceeding Thanh's highest figure of .72. However, Tai's rate of production of propositional speech proved as variable as Thanh's. Coincidentally, his lowest proportion, .42, was identical to Thanh's in the last sample.

A closer look at the non-propositional utterances in the data yielded the distributions of utterances consisting of either arguments or predications shown in Tables 4 and 5.

As seen in Table 4, Thanh tended to produce more predications than arguments in non-propositional utterances after Sample 1 (33%) and with the exception of Sample 6 (48%). The percentages ranged from 51% in Sample 3 and 53% in Sample 2 to 83% in Sample 9. Put another way, Thanh tended towards ellipsis of arguments more than ellipsis of predications in most of the samples.

Table 4 about here

Table 5, with the figures for Tai, shows a slightly different pattern. Higher percentages of arguments than predications occurred in the first and second samples - 80% and 66%, respectively. In Sample 6, equal percentages of arguments and predications were produced, but in all other samples, the majority of Tai's non-propositional utterances consisted of predications rather than arguments. These figures ranged between 60% and 83%, indicating a tendency, as in Thanh's data, towards the ellipsis of arguments in conversational speech.
5.2. Multipropositional utterances

An MPU was defined as an utterance composed of more than one simple proposition. The following are examples from Thanh and Tai:

1) ǎi tĩŋ it veri ha2 (Th/2/13)
   I-think-it-very-hard
   'I think it's very hard'

2) hi it hi (laugh) go-veri bź2 (T/2/15)
   he-eat-hi-grow-very-big
   'He ate [a lot] and grew very big'

As given in Table 6 for Thanh and Table 7 for Tai, MPUs accounted for relatively small proportions of all the utterances in the data. In Thanh's case, the highest proportion of MPU's - .12 - occurred in Sample 2, and the lowest - .03 - in the last sample. Tai produced his highest proportion of MPUs - .14 - in Sample 8 and his lowest - .04 - in the first sample. As with simple propositional speech, no developmental increase in the production of MPUs was observed in either learner's data.

5.3. Complex propositions across utterances

In addition to MPUs, all of the complex propositions
expressed in more than one utterance were noted in both learners' data. The following is an example from Tai's Sample 8 data:

(1) $\text{Sam: o de$^{j}$ h$^{n}$ n no$^{x}$ nat du homwo$^{o}$} \ (T/35/34)$

some-people-they-(x)-no-not-do-homework/

(2) $\text{de$^{j}$ ga now ri$^{e}$s}$

they-got-no-recess/

'The people who don't do their homework don't get recess'

Each utterance, (1) and (2), contains a proposition. Taken together, they can easily be glossed as a complex sentence with a relative clause. This is not to say Tai intended to produce such a construction, but the semantic congruence and temporal adjacency of utterance (1) and (2) do seem to allow this interpretation. In any case, the encoding of complex propositions across utterance boundaries could prove to be an important bridging device for some learners between single propositional utterances and MPUs.

The analysis in fact found very few instances of complex propositions across utterances in these learners' TL data, however. As shown in Table 8, Thanh produced his highest number of these constructions - 4 of them - in Sample 2 and 8. There were no occurrences in Sample 4, and only 1 or 2 in the remaining 6 samples. Tai produced, in general, even fewer complex propositions across utterances than did Thanh (see Table 9). In 3

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Table 8 about here

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samples, no instances occurred, and 5 other samples yielded between 1 and 3 tokens. Only in Sample 8 was there a comparatively high number of these constructions - 11. A closer look at the Sample 8 data revealed that 8 of the 11 cases involved narrative sequences in the conversation. Specifically, the cross-utterance complex propositions consisted of two simple propositions, linked with *and*, which encoded events in temporal sequence.

5.4. Collaborative complex propositions

Collaboration between the learners and their interlocutors also proved rare in the data. For Thanh, 6 collaborative sequences were observed, and twice as many such sequences were found in Tai's data. The following are examples:

(1) Thanh, in conversation with researcher, C:

Th: *v*í*t* *n*am dêj (bí) kô: (Th/12/2)

' [In] Vietnam they (play) cards'

C: They what?

Th: *plej* kô:

'Play cards'

C: They play cards?

Th: *y*à*w* *w*en *w*en *k*r*ísmes

'Yeah, when [it's] Christmas'

(2) Tai, in conversation with Thanh and others:
'He's looking, um'

'At [the] man'

'At the man [who is] smoking'

It is important to point out that 4 and 10 of these sequences in Thanh's and Tai's data, respectively, might be considered marginal cases since they consisted of question-answer pairs, that is, a question from the interlocutor was followed by a simple propositional response from the learner which began with because or when in Thanh's case, and with because and and in Tai's, as in the following:

(1) Thanh, in conversation with researcher, C:

C: Why doesn't he just take your car?

Th: biko hi wo2/ hi- (Th/22/11)

'Because he works. He-

(2) Tai, in conversation with foster mother, M:

M: How do you know it's Charlie?

T: biko dis (T/7/10)

'Because [of] this'
5.5. Interpropositional relations

The three general types of interpropositional relations examined were complementation, coordination, and modification, exemplified in the following:

Complementation:
(1) \( \text{tan hi se} \begin{array}{l} \text{hav fai} \end{array} o - o sI2 - sIk \) (T/7/29)

Thanh-he-say-have-five-or-or-six-six
'Thanh says (that) there are five or six'

Coordination:
(2) \( (\text{i}) t\text{cik} \begin{array}{l} \text{zen hi rai} \end{array} \) (Th/12/22)

(she)-talk-and-he-write
'She said (the words) and he wrote (them)'

Modification:
(3) \( \text{wen yu rai} \text{d a: zos tlnln yu rai} \text{d lef sa} \) (Th/22/17)

when-you-ride-at-England-you-ride-left-side
'When you ride [i.e., drive] in England, do you drive on the left side [of the road]?'

The results of the frequency analysis are displayed in Table 10 for Thanh and Table 11 for Tai. For both learners, complementation was most frequent, followed by coordination and modification. Thanh tended to produce more instances of modified than coordinated propositions after Sample 4, whereas Tai consistently used higher proportions of coordinated rather than modified propositions throughout the study.
5.6. Propositional binding in MPUs

When all of the MPUs were analyzed in terms of propositional binding, it was found that both learners were only beginning to encode complex propositional relationships overtly, Thanh more so than Tai. The differences between them are indicated in Tables 12 and 13, which contain the figures for juxtaposed and marked MPUs.

In Thanh's case, a higher proportion of marked MPUs was produced in six of the nine samples; only Samples 1, 3 and 6 were the proportions of juxtaposed MPUs greater. Developmentally, a shift from juxtaposed to marked MPUs seemed to occur, as indicated in the higher proportions of the latter in the last three samples. Prior to Sample 6, however, Thanh's production fluctuated.

Unlike Thanh, Tai initially showed a greater preference for juxtaposed MPUs. Higher proportions of juxtaposed than marked MPUs occurred in five of the nine samples. However, juxtaposition predominated from Samples 1 through 5, while marked MPUs did so in the remaining four samples (6 through 9), indicating a clearer developmental shift than in Thanh's data.

There were also differences between the learners with respect to propositional binding, although they both showed a similar acquisition sequence of connectors. Analysis of the use these connectors in coordinating and modifying propositions yielded the following sequence of emergence (Figure 1):
As shown in Figure 1, by Sample 2, both learners produced at least a few tokens of and, or, and because. Tai began to use when and but some time after Thanh did, and Thanh used some connectors not observed in Tai's data: who as a relative pronoun, if, and then and so.

Propositional binding in the form of non-finite verbal complements in complex propositions—infinitival and gerundive phrases—was minimal in both learners' data. A few target infinitival phrases were produced in later samples (see examples (1) and (2) below), but no instances of gerundive phrases occurred.

(1) hi do wan tu tok
   'He doesn't want to talk'
(2) no gi ge mi samor tu" duw
   'No, she gave me some more to do'

5.7. Chunks

An interesting finding in the analysis of MPUs involved "chunks"—frequent, phonologically unitary, apparently memorized phrases. The phrases /ai dono, hi dono, ai tin, hi sei/ and /yu sei/ accounted for about one fourth of the MPUs in over half of the samples for both learners (see Tables 14 and 15). This occurred in Samples 2, 3, 4, 6, 7, and 9 for Thanh and in Samples 1, 3, 4, 5, and 6 for Tai. The chunks appeared to serve as matrix propositions, such that MPUs were created through juxtaposition of a chunk and another proposition.
5.8. Paratactic precursors

The final aspect of the analysis identified propositional sequences which seemed to be precursors to syntacticized target constructions such as relative clauses, adverbial clauses and infinitival complements. Such sequences were so designated because of (1) their appearance prior to target counterparts in later samples, and (2) the ease with which syntacticized variants of the sequences could be posited.

Fourteen paratactic precursors were identified in Thanh's data, the following examples illustrating each of the five types observed:

**Infinitival complement**

- hi want go bathrum (Th/7/15)
  - he-want-go-bathroom
  - 'He wanted to go to the bathroom'

**Gerundive complement**

- hi di'3 a'ay: wi yus zi tes zo' n taj (Th/11/16)
  - he-teach-about-we-use-'e'-'s'-
  - and 'i'-'e'-'s'

  - 'He taught [us] about using 'es' and 'ies' '

**Infinit. or Gerun. comp.**

- a' laik it yon mangs2 (Th/35/42)
  - I-like-eat-young-mango

  - 'I like eating young mangoes' (to eat)
Relative clause

hi meik abaut mne ki it banana (Th/25/13)
he-make-about-a-monkey-eat-banana
'He's making up [a story] about a monkey who eats bananas'

Adverbial clause

yaa hi vietnam hi: plei goom veri goh? (Th/7/11)
yeah-he-Vietnam-he-play-goalie-
very-good
'Yeah, [when] he [was in] Vietnam,
he played goalie very well'

Table 16 about here

As shown in Table 16, the majority (8) were preinfinitival complements and the others were distributed among three other construction types (with one overlapping case).

In Tai's data, 23 paratactic precursors were identified, many more than for Thanh. Examples are the following:

Infinitival complement

hi wan mi go fotback? (T/8/1)
he-want-me-go-fullback
'He wanted me to [play] fullback'

WH-complement

nowai pakday2 wat stori ai wa
aen bi yi rid mi (T/35/26)
no-I-pick-it-out-what-story-
I-want-and-she-read-me

'No, I pick out which story I want and she reads it to me'
Table 17 presents the distribution of the precursors across the types listed above. As in Thanh's case, pre-infinitival complements accounted for a large portion of the tokens: 11. Unlike Thanh, however, Tai also produced many pre-adjectival modifiers (i.e., pre-relative clause constructions): 8. He did not produce any precursors of gerundive complements.

6. Discussion

Discussion of the findings for propositional encoding first centers on the relationship between parataxis and syntacticization. Further discussion relates the findings to the process of IL development and the role of conversational interaction in this process. Finally, methodological points are
raised concerning function-to-form and multi-level analysis of propositional encoding.

6.1. Parataxis and syntacticization in propositional encoding

The research questions addressed in this study were:
(1) To what extent are learners' ILS characterized by parataxis in the encoding of propositions, both simple and complex, and
(2) what evidence is there of syntacticization over time in the encoding of propositions? The answers to these questions can be summarized as follows.

Parataxis was not observed in terms of (1) high proportions of non-propositional speech, (2) large numbers of complex propositions across utterances, or (3) extensive reliance on interlocutor collaboration in the production of propositions. Parataxis was evident, however, in (4) the distribution of multipropositional utterances (MPUs) and (5) interpropositional binding. In developmental terms, then, both learners could be described as syntacticized vis-à-vis (1), (2) and (3) but not (4) and (5). From the beginning of observation, they seemed to have little problem encoding simple propositions, i.e., they did not produce high proportions of fragmented, non-propositional speech. Moreover, by the end of the study, they were producing, albeit in low numbers, complex sentences and syntactic connectives.

The fact that both learners produced high proportions of propositional speech and did not tend to "spread" propositional content across either utterances or speakers provides an interesting contrast to the findings of previous research on these features. Because discourse collaboration has
been well attested in research on first language acquisition (e.g., Clark 1974; Ochs, Schieffelin and Platt 1979; Scollon 1976) and child second language acquisition (e.g., Huang and Hatch 1978, Wagner-Gough 1975), evidence was sought of a similar feature in Thanh and Tai's data. However, such evidence was not obtained.

The most plausible explanation for the different findings involves the relative cognitive and social maturity of the learners being compared. Thanh and Tai were 12 and 10 at the beginning of the study, whereas earlier studies have used young children roughly 2 to 5 years old. Thanh and Tai were not noticeably hindered by constraints on, for example, memory and motor control, at least not to the extent that younger children are. Further, they were accustomed to participating in a variety of discourse tasks with a number of interlocutors, whereas young children's verbal interaction tends to be more restricted with respect to these factors. In short, due to their cognitive and social maturity, Thanh and Tai did not find the independent production of complete propositions, albeit simple ones, of great difficulty.

In future work, it would be reasonable to expect this age-related pattern to hold, with interactional data involving younger children - up to preadolescents - yielding more collaborative encoding of propositions than discourse involving older children and adults (cf. Scarcella and Higa 1982).

While Thanh and Tai's ILs were characterized as syntacticized with respect to propositional "spreading" i.e., across utterances and speakers, they remained paratactic with
respect to other features, namely, the encoding of MPUs and interpropositional binding. Put in terms of Givón's (1979b, 1984) distinction between pragmatic and syntactic modes of communication, the present findings lend support to two of the proposed feature oppositions: (1) "small chunks" under one intonation contour and (2) "loose" coordination vs. "tight" subordination.

Regarding the former, it was shown that both learners produced very low proportions of MPUs. They tended to limit their utterances to "small" rather than "large" chunks of information, i.e., to simple propositions or, less often, to single predications or single arguments. Given the problem of establishing precisely what is meant by a small or large chunk, support for this distinction is argued only in terms of this study's quantifications of arguments, predications, simple propositions, and MPUs. Stronger evidence would be obtained from a comparison of these figures with those of native-speaker baseline data.

The second feature opposition entails the developmental claim that loose coordination - the juxtapositioning of clauses or the surface linking of clauses with connectors, such as and, or and but - should precede subordination, e.g., the appearance of relative clauses and various complement structures. If this claim is taken to refer to the sequence of emergence of target syntactic structures, then it is confirmed by the present findings (Figure 1). Both Thanh and Tai produced coordinate constructions with and and or early on, infinitival complements
only toward the end of the study, and no gerundive complements at all. Also, very few relative clauses were observed for either learner.

A different view of the communicative mode distinction between coordination and subordination emerges from the analysis of MPUs undertaken here. It should be recalled that the analysis dealt with semantic relations between propositions rather than clauses. Thus, surface morphological marking such as verb form (finite or non-finite) and connectors (e.g., clause-initial that and relative pronouns) were not used to classify MPUs. Further, subordination was treated as (1) complementation, where one proposition served as a semantic component in another, and (2) modification, where one proposition modified another by providing additional background information about an argument or predicator.

It was found, for both learners, that complementation occurred more frequently throughout the study than coordination, and that modification was rare. Where the contrast arose was between complementation and modification rather than between both types of subordination or coordination. It seems, then, that the treatment of subordination as a unitary syntactic phenomenon misses a semantic distinction relevant to the development of complex syntactic structures in ILs.

6.2. Process in the development of propositional encoding

The most interesting findings related to process concern the distribution of MPUs, the role of "chunks" in the encoding of a particular type of MPU, and paratactic precursors
It is important to note that both learners produced MPUs as well as simple propositions from the very beginning of observation. Moreover, they did not refine the surface form of simple propositions with obligatory L2 morphosyntactic features (e.g., determiners, nominal and verbal inflections) before attempting complex propositions. This indicates that, prior to mapping the details of surface structures, they were encoding semantically well-formed utterances, i.e., the MPUs identified in the data.

While grammatical morphology was generally absent, the learners appeared to rely on at least one coding device to indicate MPUs: prosody. It should be recalled that MPUs were identified partly on the basis of semantic content - the expression of two or more propositions - and partly because of their phonological integrity. That the learners chose to encode a sequence of propositions as a single utterance, in other words, was taken to reflect their intention to produce what might well be realized as a complex syntactic structure in the L2. The learners' use of intonation and rhythm can thus be viewed as a step in the syntacticization of complex propositions.

Beyond the consistent prosodic marking of MPUs, however, the syntacticization process of different L2 structures (e.g., that-clause complements, relative clauses) showed signs of variability. The learners seemed to be developing complex syntactic structures through different "entry points." Since the present study did not pursue a detailed form-to-function analysis of individual L2 structures, evidence for such an interpretation
here is drawn from the analysis of "chunks" in propositional coding.

It was observed that MPUs involving complementation accounted for a majority of the MPUs produced by both learners. A closer examination then revealed that many of these tokens involved the predicators /tin/ 'think,' /sei/ 'say,' /dono/ 'don't know' and pronominal subjects (I, he, she) in what appeared to be "matrix" propositions. These constructions were called "chunks" because of their phonological unity, frequency, and minimal morphological variation. What is interesting is the possible function of such chunks as entry points into complex syntactic structures. Using a very small set of monosyllabic, semantically basic predicators, learners can produce a large number of MPUs by juxtapositioning. With respect to semantic content and syntactic form (simply, linear sequencing at this stage), learners can encode the basic features of certain L2 complex structures, e.g., that-clause complements (where that is often omitted in native speaker discourse), as in the following:

Th: aj 't'n lj veri ha2 (Th/2/13)
'I think [that] it's very hard'

In contrast, the early stages of development for structures such as relative clauses seemed quite different. The present analysis found no target relative clauses for Tai and only a few for Thanh. This coincides with the reported scarcity of relative clauses in natural speech data from other ESL learners (see Schumann 1980 for review) and first language learners (Bloom et al. 1980; see Bowerman 1979 for review), and
points to underlying discourse-pragmatic constraints on the use of relative clauses in conversational speech. To the extent that topics are maintained in such speech and relative clauses are therefore unnecessary, and to the extent that referent specification can be accomplished more easily with devices other than relative clauses, it is not surprising that such constructions occur infrequently.

In addition to these constraints, however, it must also be noted that relative clauses do not have convenient lexical entry points corresponding to, for example, the small set of predicicators which allow the production of many MPUs involving complement structures. Together, these factors undoubtedly contribute to the differential rates of development of various L2 complex syntactic structures.

Further examination of "paratactic precursors" such as those identified in Thanh and Tai's data should yield a clearer picture of the entry points used by learners in the development of, for example, infinitival complements vs. temporal adverbial clauses. Although a large number of the paratactic constructions observed in Thanh and Tai's data seemed to be precursors of infinitival complements, their frequency may not compensate for learners' difficulty with other features of such structures, e.g., use of object pronouns and to (as in the sentence 'He wants me to write a story').

6.3. Conversation, literacy and syntacticization in propositional encoding

To recapitulate the general issue, the evidence in the
SLA literature to date strongly supports the claim that conversational interaction in the L2, to the extent that it contains negotiation of meaning by learners and their interlocutors and thereby provides comprehensible input to learners, appears necessary but not sufficient for SLA to take place (Long 1981, 1983). The present findings on syntacticization in propositional encoding address two aspects of this claim: (1) differences in the type of modifications or adjustments made by learners' interlocutors, and (2) genre or modality limitations on conversational interaction in the provision of input for the acquisition of particular L2 structures.

The finding that Thanh and Tai did not build "horizontal" constructions from "vertical" ones (Scollon 1976) or rely on the collaboration of their speech partners – features considered characteristic of child first and second language acquisition – does not invalidate the claim that conversational interaction plays a crucial role in IL development. Rather, it indicates that, in this case, cognitive and social maturity are simply two of many learner traits that evoke a variety of interactional adjustments on the part of interlocutors (Long 1983). The collaborative encoding of propositions seems a more prominent feature of interactions involving young children, whether they are acquiring a first or second language, than a feature characterizing conversations involving older child or adult learners. The question that remains for future investigations is, of course, the extent to which features of
conversation other than "propositional spreading" do promote SLA (for discussion, see Sato, 1986).

A further question arises here regarding the adequacy of conversational interaction for the acquisition of particular L2 structures, the issue being that differences between spoken and written language or even between types of oral discourse imply variation in input to learners, at least with respect to complex structures in the L2.

In the present analysis of MPUs and interpropositional binding, greater evidence of syntacticization was found for Thanh than for Tai. Thanh tended to produce higher proportions of modified that coordinated propositions, whereas Tai had higher proportions of coordinated than modified propositions throughout the study. Thanh also showed a greater tendency than Tai to overtly mark MPUs with morphological connectors. Finally, although both learners showed a similar sequence of acquisition for connectors such as and, but, and because, Thanh used a greater variety of connectors than Tai did. While age and cognitive development may seem the obvious reason for the difference between the learners, another explanation must also be considered, one involving each learner's experience with English literacy during the period of observation.

Both Thanh and Tai performed a variety of reading and writing tasks in English in school and at home. However, there were striking differences in the complexity and type of L2 literacy activities that each participated in. For Tai much more so than for Thanh, a large proportion of "language arts" activities involved spelling tests, the memorization of the words
on these tests, phonics exercises, and word-decoding in reading. Thanh's classwork and homework required much more focus on the content of fictional and non-fictional texts, through the use of comprehension (factual recall and inferential questions). In short, Thanh seemed to have far greater access than Tai to comprehensible written input, input rich in complex syntactic structures.

It must be noted that the design of the present study precludes any statement beyond a general observation about the occurrence of structures in the learners' ILs and the nature of their written language input in the L2. It remains for future work on complex syntax in IL development to more rigorously examine the influence of L2 literacy on the development of learners' spoken IL.

A strong claim evolving from this discussion would be that exposure to comprehensible written input is, in fact, necessary and sufficient for the acquisition of particular features of the L2. Such a claim is plausible in light of recent research on the differential distribution of various morphosyntactic construction across spoken and written language genres (Brown and Yule 1983; Brugman and Macaulay (eds.) 1984; Keenan and Bennett (eds.) 1977; Ochs 1979; Tannen (ed.) 1982). It is also consistent with the literature on first language acquisition by school-aged children (e.g., Karmiloff-Smith 1979, Lawton 1963, Loban 1976, Menyuk 1977, Romaine 1984).

For Thanh and Tai, at least, experience with L2 literacy has been implicated in the development of complex
syntactic structures in their oral ILs. To this extent, it appears doubtful that conversational interaction is sufficient for learners to develop the full range of morphosyntactic structures comprising the L2 system, an inference finding some support in recent work by Pavesi (1984) and Zobl (1985). (See Long, 1987, for review.)

6.4. Functions, forms and the multi-level analysis of propositional encoding

As in the case of the development of past time reference (Sato, 1986), the interdependence of different linguistic levels in IL development has been demonstrated through the function-to-form analysis of propositional encoding. The main methodological point here is that the use of a variety of analytical units proved critical in characterizing propositional encoding in IL speech.

Basic to the analysis were units not usually juxtaposed in IL studies: the "utterance," a behavioral unit, and the "proposition," a semantic unit. The value of the "utterance" is that it does not require high inference decisions by the analyst about a learner's intention to encode particular L2 morphosyntactic structures. The unit "proposition" then provides a means of representing the semantic content of utterances. Taken together, these units allow the analyst to attribute to the learner the ability to encode messages in an acoustically consistent signal.

In the present analysis, the convergent use of utterance and proposition units made it possible to identify (1)
cross-utterance and cross-speaker distribution of messages, and
(2) MPUs, communication units posited to underly complex
syntactic structures. Through the former, the relationship
between discourse-pragmatic and surface syntactic structure was
directly examined; through the latter, it became feasible to
identify paratactic precursors, the MPUs which seemed the
likeliest candidates for surface realization as complex L2
utterances.

In the analysis of chunks in MPUs, an interesting link
was also revealed between the levels of lexis and syntax. For
MPUs involving complementation (but not those involving
modification or coordination), it appears that particular
predicators such as think and say were serving as lexical entry
points into complex structures. While it remains an empirical
question whether this feature proves important in the development
of particular L2 structures such as infinitival complements, the
present analysis has at least called attention to a relationship
between lexis and the distribution of particular types of MPUs in
IL speech.

Finally, the examination of complex propositions has
delineated the importance of phonological features in the
analysis of IL speech. Given the extreme difficulty of
determining obligatory contexts for complex syntactic structures,
it was essential to rely on prosodic cues - primarily intonation
and rhythm - to identify utterances which could then be analyzed
for their semantic content. From a methodological standpoint, it
seems advisable to systematically code such prosodic features
before attempting to apply L2 morphosyntactic categories to the
data, given the rudimentary nature of most early IL speech.

7. Summary and Conclusion

In the function-to-form analysis of propositional encoding, neither learner's IL was found to be paratactic with respect to (1) the proportion of propositional to non-propositional utterances in their speech, (2) the distribution of propositional content over more than a single utterance, or (3) the occurrence of interlocutor collaboration in the production of propositions. Both Thanh and Tai were observed to encode simple propositions in relatively high proportions from the beginning of the study. Further, they did so without much direct help from their speech partners. These results were attributed to the learners' cognitive and social maturity and were contrasted with results from previous studies of young children in both first and second language acquisition contexts.

Where parataxis did emerge was in the learners' expression of complex propositions. A low rate of MPU production was noted throughout the study, and juxtapositioning was found to be an important means of binding propositions. Both learners were only beginning to use a variety of logical connectors other than and, Thanh more so than Tai. These findings were viewed as indicating a shift from coordination to subordination, although it was also argued that the semantics of MPUs warranted more explicit treatment in future research on syntacticization.

With regard to process, incipient variability was observed in the developmental paths of MPUs involving
complementation and modification. The production of complement structures appeared to be facilitated by the existence of lexical entry points, but this was not so for structures such as relative clauses. This difference called attention to the importance of lexical semantics in the analysis of complex syntactic development.

Further interpretation of the findings above centered on the role of conversational interaction in SLA. Based on a consideration of differences in the learners' experiences with L2 literacy, it was argued that conversational interaction was insufficient to ensure the acquisition of particular complex syntactic structures in English, while encounters with written language, and the more complex syntactic structures this contains, may well turn out to be crucial.

Finally, the merits of function-to-form and multilevel analysis of propositional encoding were reviewed, with emphasis placed on the importance of using both a speech production unit and a semantic unit in a convergent analysis of early IL speech. Specific instances of cross-domain influence were described for (1) prosody and semantics, (2) lexis and syntax, and (3) prosody and morphosyntax.
Notes

1. The following were excluded from the analysis: back-channeling such as 'mhm,' simple yes/no responses to questions and exact repetition of some or all of the interlocutor's immediately preceding utterance.

2. As in the case of complex propositions across utterances, it is difficult to argue with complete confidence that constructions identified as precursors directly anticipate English complex syntactic structures. However, it was considered essential to note all instances in which some link could be inferred between the learner's utterances and such L2 complex syntactic structures.
REFERENCES


TESOL.


Linguistics 5. University of Southern California.


Table 1: Corpus for Propositional Encoding Analysis

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Table 2: Propositional Utterances for Thanh

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Table 3: Propositional Utterances for Tai

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<sup>a</sup> PUs = propositional utterances

<sup>b</sup> Us = utterances
Table 4: Predicators and Arguments in Non-Propositional Utterances for Thanh

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Table 5: Predicators and Arguments in Non-Propositional Utterances for Tai

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Table 6: Multipropositional Utterances (MPUs) for Thanh

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<sup>a</sup>Us = Utterances
Table 8: Cross-Utterance Complex Propositions for Thanh

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Table 9: Cross-Utterance Complex Propositions for Tai

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Table 10: Distribution of Interpropositional Relations for Thanh

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*a Comp. = complementation

*b Coord. = coordination

*c Modif. = modification
Table 11: Distribution of Interpropositional Relations for Tai

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*aComp. = complementation

*bCoord. = coordination

*cModif. = modification
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**Figure 1: Sequence of emergence of connectors for Thanh and Tai**

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</tr>
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Table 14: Chunks in Multipropositional Utterances for Thanh

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Table 15: Chunks in Multipropositional Utterances for Tai

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Table 16: Paratactic Precursors for Thanh

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Table 17: Paratactic Precursors for Tai

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