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WRITTEN DISCOURSE MARKERS IN SECOND LANGUAGE READING

by

Patricia M. Raymond

A Thesis submitted to the School of Graduate Studies
And Research in Partial Fulfillment of the Requirements for the
Degree of Master of Arts

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CONTENTS

A B S T R A C T

This study explores the hypothesis that second language readers have more difficulty with semantic information than with syntactic information. The semantic difficulty investigated is based on the cohesive tie of 'conjunction' as given in Halliday and Hasan's COHESION IN ENGLISH (Longman, 1976).

Conjunction is a semantic relation holding between two elements that occur in succession but are not related by other structural means. Overt conjunctive markers like 'however', 'therefore', 'yet', 'but', etc. signal the presence of an intersentential relation between two sentences. Overt conjunctive markers presuppose that two sentences are semantically related.

It is shown that non native speakers of English as a second language, as well as native speakers, have difficulty with the cohesive tie of 'conjuction' in reading. It is concluded that non natives do not understand the semantics of the intersentential relations used in the pilot study. Native difficulty is attributed to poor reading strategies.

ACKNOWLEDGEMENTS

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A very special thanks to my husband, Dr. Jacques Raymond, for his patience, his support, and his help with computer facilities.

GENERAL INTRODUCTION

The field of second language reading has attracted more and more attention in the last several years. The great influx of foreign students from the elementary through to the university level has created the need for more research in this field.

The purpose of this thesis is to study in detail one aspect of the semantic difficulty in second language reading. Furthermore, that some native English speakers have semantic difficulty in reading is also investigated.

The first chapter presents a review of current theories of first language reading. Due to the complex processes involved, there is a lack of agreement as to how people read. The discussion centers on the application of information processing theory to current reading theories and then describes each theory in detail. A historical perspective of the relationship between syntax and reading is briefly given.

Chapter Two examines current theories which explain in detail the process and the characteristics of the second language reader. First language theories of reading are extended to second language reading. A historical perspective of second language reading and syntax is given. Finally, second language reading and semantics is examined.

Chapter Three looks at written discourse analysis in both first and second language reading. The Halliday-Hasan model for the analysis of discourse is presented. The cohesive tie of 'conjunction' is explained, and the development and frequency of certain markers of conjunction in first language reading are given. Second language re-

search in discourse analysis using both specially prepared texts in English as a second language and native texts is examined.

Chapter Four discusses the design, construction, administration, and correction of the pilot study.

Chapter Five analyzes the data from this study and presents the results.

Chapter Six offers certain conclusions, evaluates the pilot study, and indicates areas of further research.

1 REVIEW OF THE LITERATURE ON FIRST LANGUAGE READING

1A Introduction

Today there are a number of researchers in both first language and second language (hereafter L1 and L2) reading who have borrowed terms from information processing to describe current reading theories. Cziko (1980), Ulijn (1980), and Wildman and Kling (1978) represent a small group of such theorists who apply to reading theories terms such as bottom to top and top to bottom. A glimpse of these terms will give insights into just why they are now used in reading.

A computer program is a realization of a function. When a program is needed, functional specifications are given for this program. The programmer starts with the specifications of some function F and then constructs a program P which realizes these specifications.

There are two classic ways in which programmers have approached their task (McGowan and Kelly 1975:41):

BOTTOM UP - starting with simple functions (programs) and building up more complex functions until finally constructing F,

TOP DOWN - starting with F's specifications and repeatedly breaking down functions into

simpler functions until reaching easily coded functions .

The bottom up approach is a synthesizing activity. The lowest level program components are coded first. Then intermediate components are coded and subsequently tested together with the completed lower level components. The top down approach is an analytic activity. Higher level routines are integrated before lower level routines. In short, bottom up and top down approaches differ in the way they sequence.

The bottom up approach is extended to those reading theories in which a reader proceeds from letters, to sounds, to words, to sentences. The smallest elements, letters, are processed first, and only after are words and sentences built up out of them. The Gough (1972:345) reading model will be used to illustrate this approach.

The top down approach is extended to those reading theories in which an attempt is made to break down meaning. Meaning is both input and output. In such reading theories, it is possible for a reader to identify meaning partially, to proceed to word identification and even to letter identification if necessary. Meaning can not be completely broken down, however, as it is generally considered to be greater than the sum of its parts. Both Goodman and Smith are the major theorists included in this approach although Smith is more representative of it. The Goodman (1970:30-1) model will be used for this approach.

Interactive reading theories represent a combination of bottom up and top down approaches. (1) Rumelhart (1977) is the leading theorist in this group.

The extension of the information processing terms bottom up (or bottom to top) and top down (or top to bottom) to reading theories is a description of the way in which elements are processed in reading. Reading itself is sometimes termed an information processing activity (Goodman 1968).

1B THEORIES

Theories of how fluent readers derive meaning from print can be classified into three groups (Cziko 1980, Ulijn 1980, Wildman and Kling 1978):

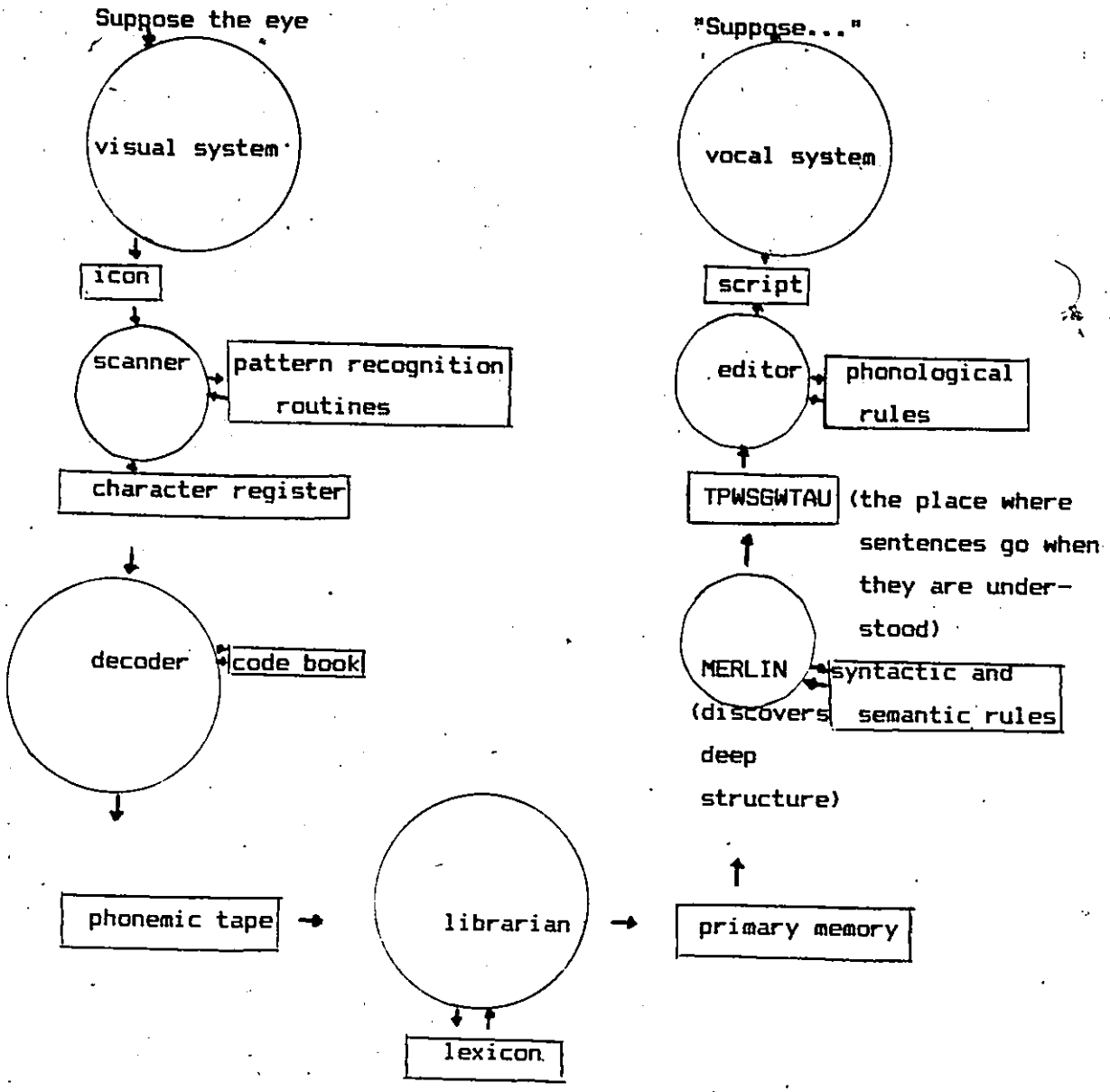
1 bottom to top
2 top to bottom
3 interactive.

1.1 Bottom to top theories

The bottom to top theories usually have models which show a one way flow of information starting from graphic cues and proceeding to a series of higher order processing stages until meaning is derived. Bloomfield and Venezky (quoted in Wardhaugh 1974) and Gough (1972) can successfully be placed into this first group. The Gough model (1972:345) in Figure 1 will be used to illustrate general bottom to top processing.

FIGURE 1

THE GOUGH MODEL OF READING



According to Gough, the reader goes from print to sound to meaning (to reading aloud) in a bottom to top fashion. There is an intermediate speech code.

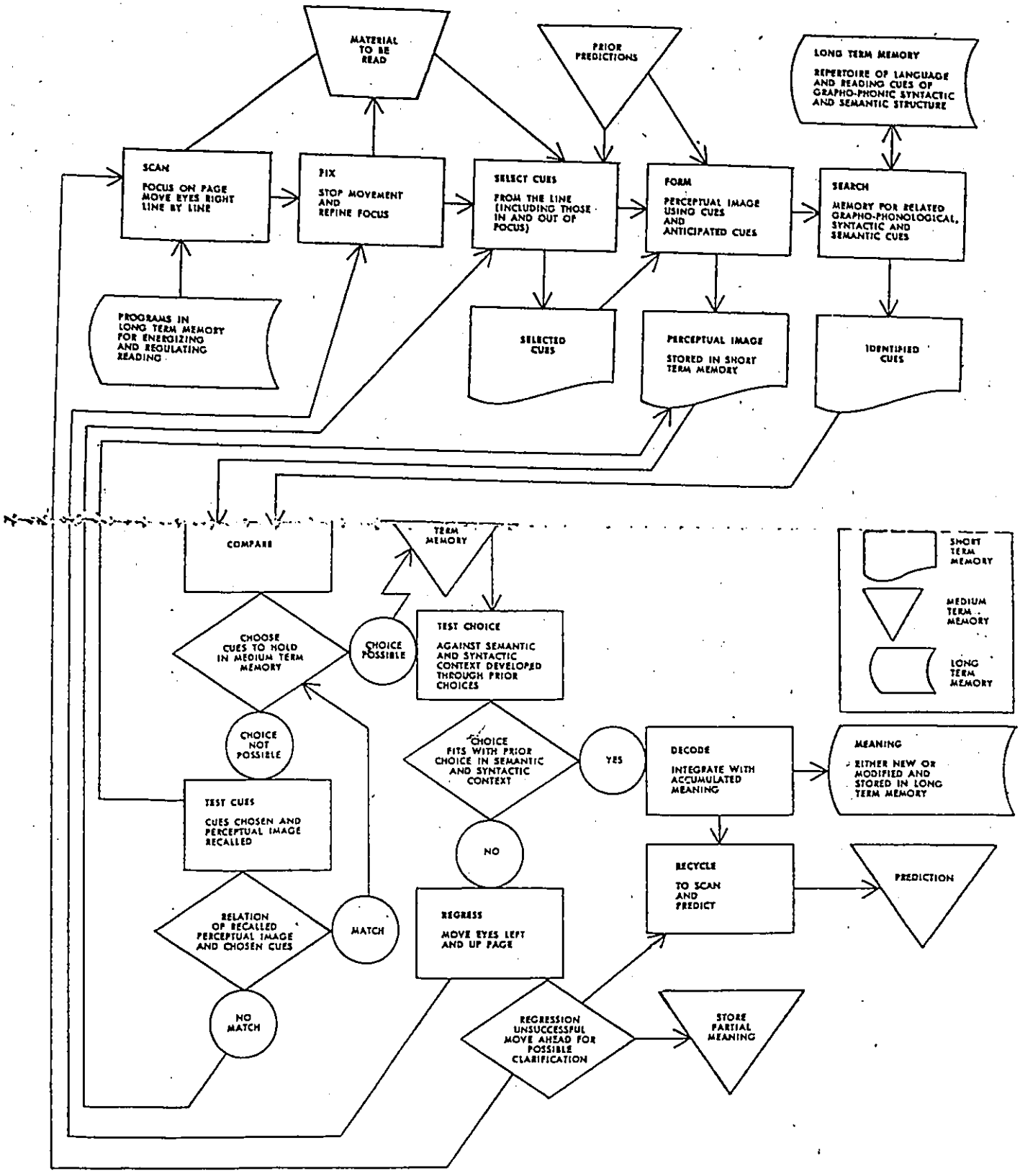
The procedure is primarily visual. The reader reads letter by letter, word by word, serially from left to right. Characters are recovered from the icon, and character representations are transformed to phonemic representations, to lexical level representations and then to deep structure representations. From bottom level sensory information, the reader proceeds to higher level encodings. The reader is passive; he is not a guesser because there is no need to anticipate what comes next. No higher level can affect any lower level; no level can be bypassed; there is no interaction. Gough's model is a totally bottom to top view. It is a strict letter by letter analysis of the input string. Furthermore, this model can not account for the effects of prior semantic context, nor for proofreader's error.

1.2 Top to bottom theories

One of the most famous models of the top to bottom group is that of Goodman. Cognitive processes generate initial hypotheses on what is to occur in the text based on contextual and extratextual information. There is no intermediate speech code. According to other top to bottom theorists, the procedure is only incidentally visual (Kolers in Goodman and Fleming (1968:8)). Smith (1971), Huey (1968), and Hochberg (in Singer and Ruddell (1976:247)) can successfully be placed into this second group. The Goodman model of reading (1970:30-1) in Figure 2 will be used to illustrate general top to bottom processing.

FIGURE 2

THE GOODMAN MODEL OF READING



According to Goodman,the reader scans along a line of print. He fixes at a point to permit eye focus. Some print will be central and in focus; some will be peripheral. His perceptual field may even be a circle (Hauptman,personal communication). The selection process begins. He picks up graphic cues guided by his prior knowledge, his language knowledge, his thought development, his cognitive style, and the constraints established through prior choices. Goodman's model implies all of this. The reader forms a perceptual image guided by these cues and also his anticipated cues. This image is partly what he sees and partly what he expects to see. The power of expectation is very important here. A person uses his knowledge of the world to predict and interpret relationships regarding new information, events, and experiences. (2) The reader then searches his memory for related graphic, syntactic and semantic cues. He chances a guess. Semantic analysis leads to partial decoding. This meaning is stored in short term memory. If no guess is possible, or if he has formed an incorrect hypothesis, he checks his recalled perceptual input and tries again. If there is still no guess, he goes back to the text. He then tests his choice for syntactic and semantic acceptability. If it is not acceptable, he regresses to a trouble point and starts over at this point. If his choice is acceptable, decoding is extended, and meaning is stored in long term memory.

One aspect of top to bottom theories is analysis by synthesis i.e., " one makes a hypothesis about the original message,applies rules to determine what the input would be like if the hypothesis were true, and checks to see whether the input is really like that" (Neisser 1967:194). The reader is a very active guesser, and reading itself is a psycholinguistic guessing game (Goodman). In fact, top to bottom theories are often referred to as guessing game or hypothesis testing theories.

A reader pretends that he is engaged in a reciprocal dialogue with the author of a written text. This author will stimulate the reader to construct ideas out of his own experience. The meaning is not in the text. It is reconstructed by the reader in his own mind. Thus, reading can never be an exact process.

According to Goodman (1976:269-284), the reader uses three cue systems which function as verification strategies. "Cue systems within words" (graphic/phonological cues) include affixes, letter-sound relationships, recurrent spelling patterns, word shapes etc. " Cue systems within the flow of language" include word patterns, word order and word positions; inflections and inflectional agreement; function words; the contextual meaning of prior and subsequent words, and dictionary meanings. "Cue systems within the reader" include his language facility, his learned responses to cues, his personal and conceptual backgrounds, and his ability. Redundancy--information which is duplicated by more than one source--operates on all three cue systems (Goodman 1968:23, Smith 1971: 18). Goodman (1969:137) specifically states that these cue systems are used interdependently and simultaneously. No reader uses all the cues available to him. In fact, he selects the fewest, most productive cues. The skilled reader has very efficient cue sampling strategies. He does not see more than a less skilled reader; he simply reacts differently to what he sees.

According to top to bottom theories, processing is not letter by letter unless there is a problem. Goodman (1973:50) states: "Memory and visual information processing constraints preclude the prior identification of individual letters or words if comprehension is to be achieved". Smith (1971), however, details this point in his feature analytic theory of reading. Every aspect of reading is a process of categorization. Readers establish feature lists for sound, for letters, for words and for meanings. Then these lists are arranged into categories. Letter, word, and meaning identification all have an immediate

(direct) and a mediated (indirect) version. A description of word identification for Smith (1971:160) is presented in Figure 3.

FIGURE 3

SMITH'S WORD IDENTIFICATION

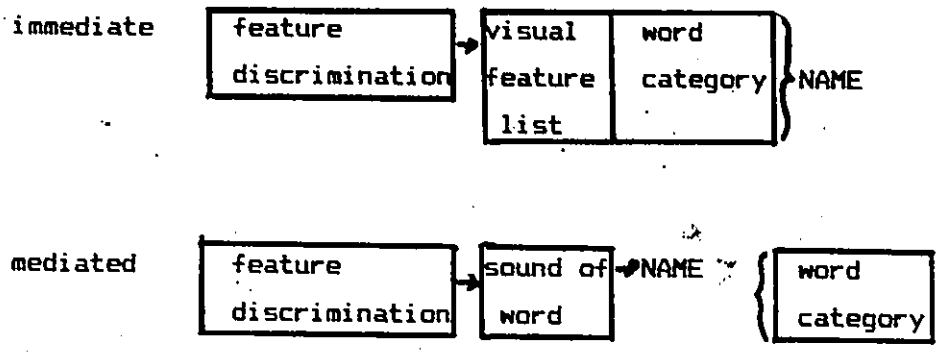
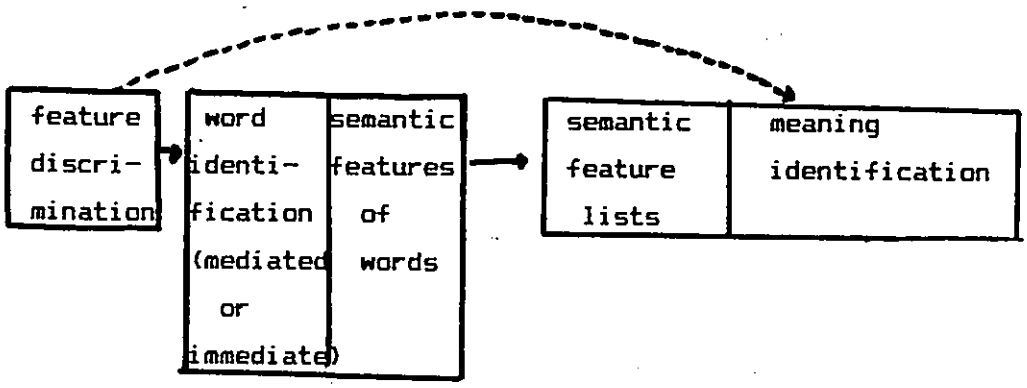


Figure 4 illustrates Smith's (1971:205) explanation of meaning identification.

FIGURE 4

SMITH'S MEANING IDENTIFICATION



mediated————————

immediate————————

According to Smith,skilled readers can demonstrate both mediated and and immediate word identification. Mediated word identification is used only when it is necessary. A fluent reader identifies meaning immediately, but if he can not get at it, he proceeds to word identification. Thus he tries to break down the whole in a top to bottom fashion.

Smith stresses the importance of the trade off between visual information,print, and non visual information,what is stored in long term memory. Since there is a limit to the amount of visual information the brain can process, there is a trade off between it and non visual information. The more non visual information you know, the less visual information you need. But we are not in a position to measure the amount of non visual information that a reader has available to him. Nevertheless, we can try to approximate his level of language knowledge, his conceptual development, and his cognitive style.

Like bottom to top theories, guessing game theories present certain problems. The time necessary to form a hypothesis, to generate critical features, and to match this with the sensory input must necessarily be shorter than that needed to proceed through a text letter by letter. Predictions would have to be correct on the first or second attempt; otherwise, many mismatches would hamper processing. Are predictions made on the basis of general context, of letters, of sounds, of words, of preceding grammatical structure? How does a reader check his predictions? Wildman and Kling (1978:159) state:

"The hypothesis test model survives as a viable theory of reading only under conditions of highly predictable semantic content, at terminal clause positions, and without regard to reasonable time constraints. Specific prediction, necessary for the generation of sensory cues, is precluded under other conditions because of either too large a hypothesis set or too great a likelihood of error. It seems reasonable to assume that most of our reading material is neither redundant nor predictive enough to allow advance production of a significant number of words. Wholly predictable material would hardly be worth reading. Normal syntactic and semantic context could not support a hypothesis test method of reading".

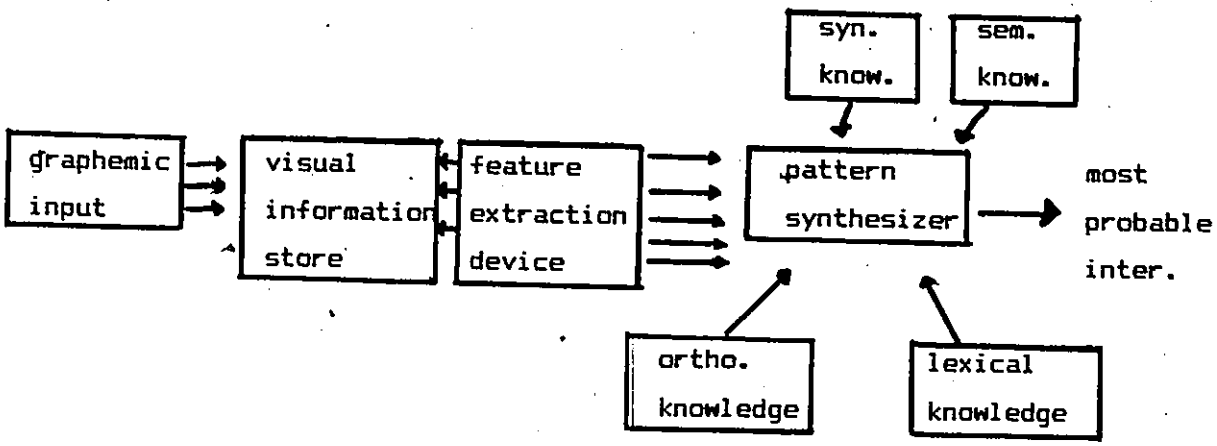
1.3 Interactive theories

These theories are a composite of bottom to top and top to bottom theories. The highly active reader integrates both graphic and contextual information at the same time. There is no analysis by synthesis nor letter by letter reading. Adams and Collins (1979), Gibson and Levin (1975), Wildman and Kling (1978), and Rumelhart (1977) can successfully be placed into this third group.

Rumelhart is one of the leading proponents of an interactive theory of reading. He emphasizes that orthographic, lexical, syntactic, and semantic knowledge operate simultaneously in a bottom to top and top to bottom mode to give us the most probable interpretation of the input string. Rumelhart's model (1977:588) is reproduced below in Figure 5.

FIGURE 5

THE RUMELHART MODEL OF READING



Each independent knowledge source has specialized knowledge about some aspect of the reading process. All of these knowledge sources come together at one place: the pattern synthesizer. The reading process is a result of the simultaneous, joint application of all of them. The pattern synthesizer acts as a message center, a data storage device. Each knowledge source scans this message center for a hypothesis relevant

to its knowledge. Knowledge sources know exactly where to find relevant hypotheses. A hypothesis set is much smaller than one in a top to bottom model which leads to more rapid identification. A hypothesis can be generated at any level--featural, letter, letter cluster, lexical, syntactic or semantic, and may have pointers to hypotheses at higher or lower levels. A hypothesis can be confirmed or disconfirmed. An example is provided from Rumelhart (1977:593-6) to illustrate how the words THE CAR are read by a reader. Notice how hypotheses are entered top down and bottom up at the same time. (3)

FIGURE 6

READING THE WORDS "THE CAR"

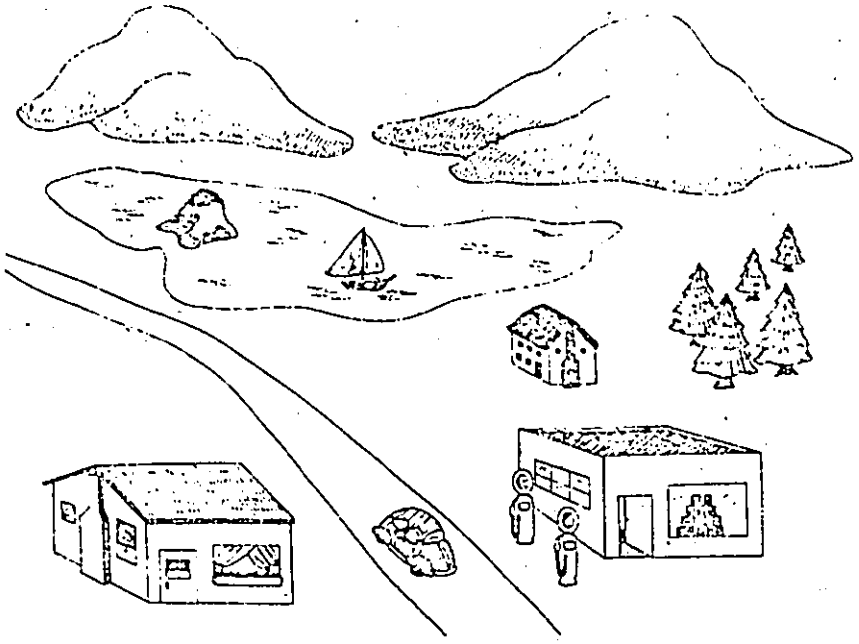


FIGURE 7

MESSAGE CENTER SHORTLY AFTER PROCESSING HAS BEGUN ON "THE CAR"

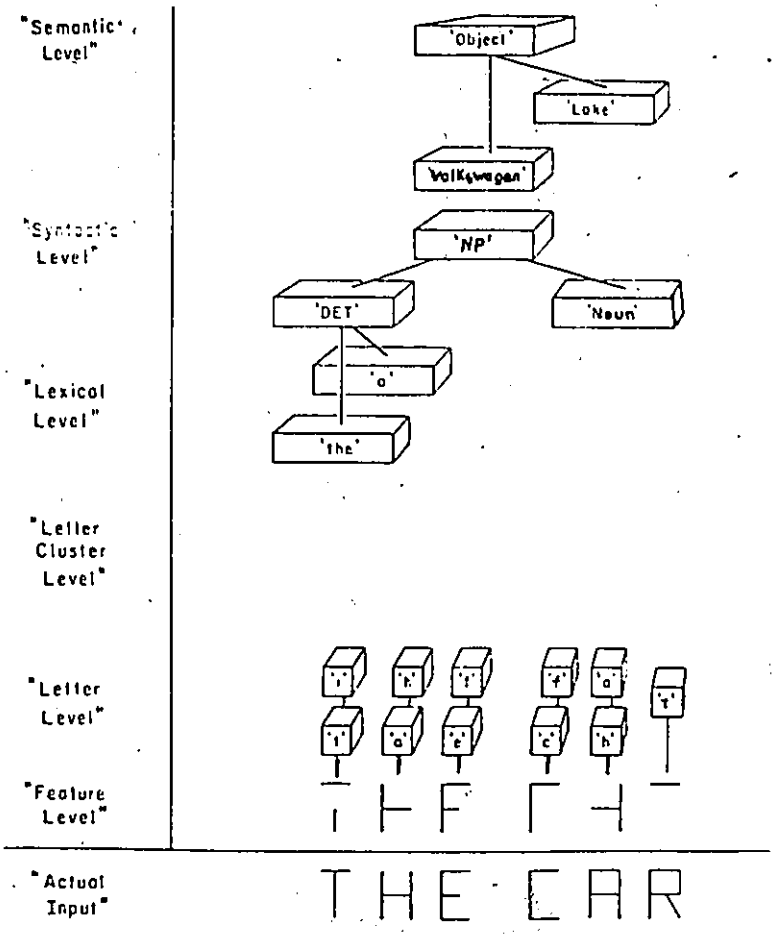


FIGURE 8

MESSAGE CENTER SLIGHTLY LATER IN THE PROCESSING SEQUENCE

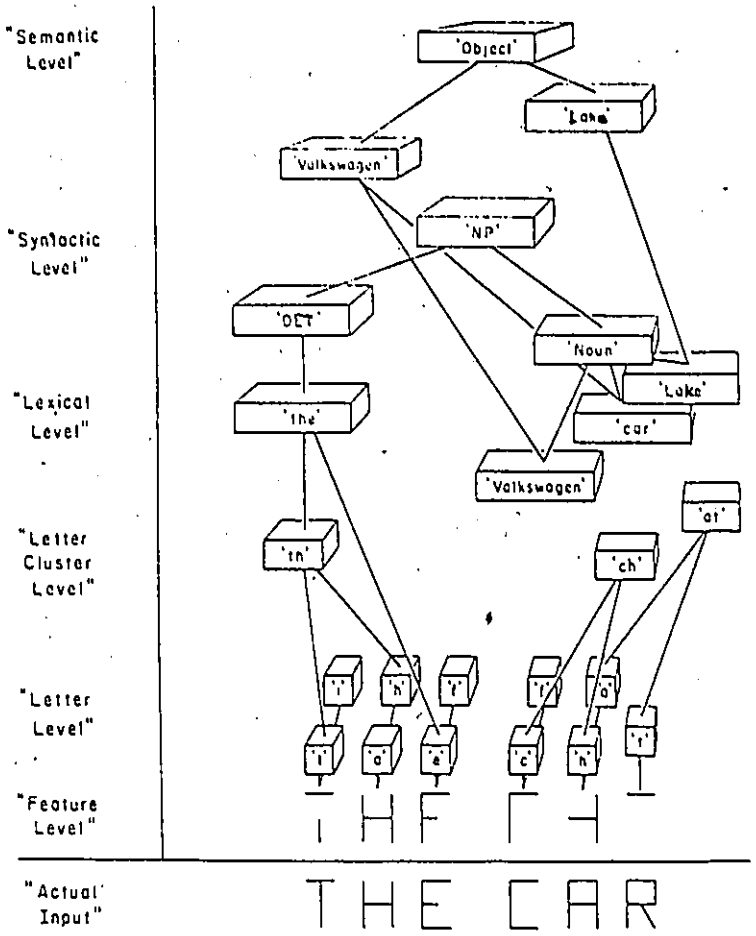
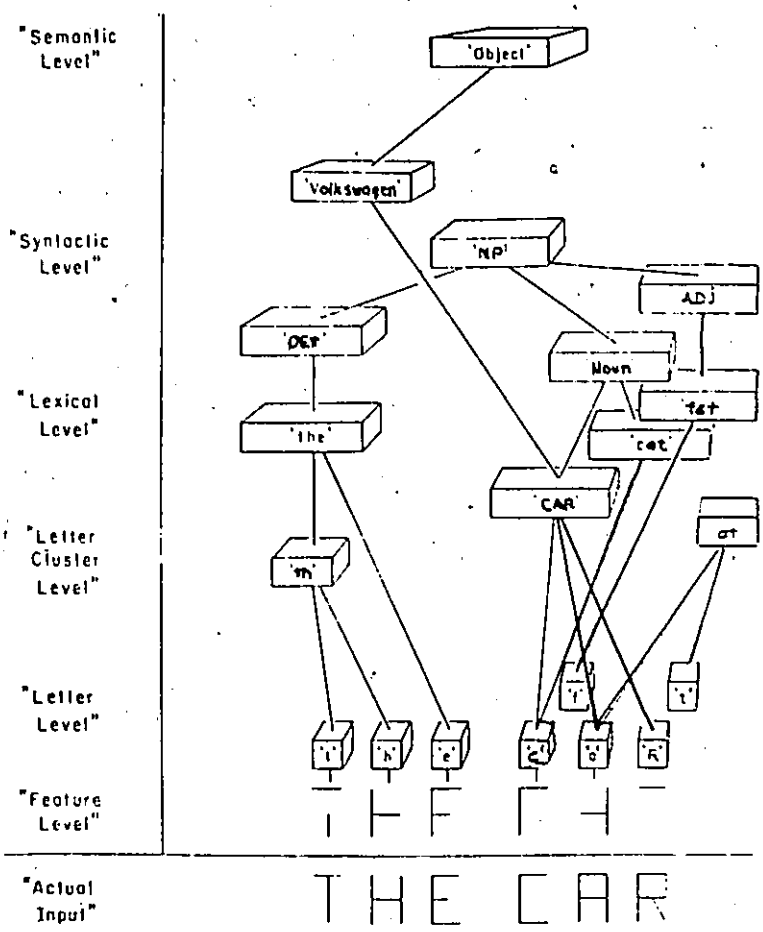


FIGURE 9

MESSAGE CENTER NEAR THE END OF PROCESSING



Rumelhart's above model (Figure 5) appears simplistic at first glance, but this simplicity is deceptive. He is actually trying to detail what happens in the message center, and the above model does not indicate the complexities of the parallel processing involved. The representation of such processing seems an almost impossible task. Thus, Rumelhart leaves his 'black box' (message center) in very simplified form.

Rumelhart gives specific examples of processing in the message center. His discussion of the effects of orthographic structure on letter perception, of syntactic effects on word perception, of semantic effects on word and syntactic perception, and of pragmatic effects on meaning perception demonstrate that all knowledge sources operate simultaneously in a bottom to top and top to bottom mode.

Rumelhart cites evidence from an experiment with legal vowel clusters to prove the effects of orthographic structure on letter perception. His Ss transposed illegal clusters into legal ones. As a result of this experiment, Rumelhart states that our perception of a certain letter in a certain position depends on what we perceive in adjacent positions as well as on the sensory evidence we have available about that position in the string. Word and letter perception occur simultaneously. (4) Bottom to top models can not provide for this because they assume we perceive letters first and then place them into higher order units. Furthermore, top to bottom theories can not account for this either. Smith (1971:136) states that it should be impossible to identify a word and its letters simultaneously because one can not use the same featural information to make two kinds of identification. Letter and word identification involve the same featural information according to Smith.

Our perception of words depends on the syntactic environment in which we encounter the words. Rumelhart (1977:582) cites evidence from miscue analysis in that most miscues are substitution errors. Goodman (1973:13) himself states that 75% of the average reader's substitution miscues retain the

grammatical function of the text item. Gibson and Levin (1975:332) found the same results for 90% of a reader's miscues. Higher level grammatical knowledge helps to determine the word read. Bottom to top models can not provide for this.

Our word perception depends on the semantic environment in which the words are met. For example, when collocating the words BREAD-BUTTER, which are semantically related, we proceed faster than when collocating BREAD-DOCTOR, which are semantically unrelated. The first word allows the more rapid processing of the second. Of course, the first word could also slow down the processing of the second in other examples. Higher level semantic knowledge modifies our word level processing. Again, bottom to top models can not account for this.

Our perception of syntax also depends on the semantic context in which the string appears. "They are eating apples" can have two deep structures depending in its context. Semantics determines which surface structure we choose.

Our interpretation of meaning depends on the general context in which we encounter the text. Rumelhart (1977:586) gives the following examples.

a. **The statistician could be certain that the difference was significant since all of the figures on the righthand side of the table were larger than any of those on the left.**

b. **The craftsman was certainly justified in charging more for the carvings on the right since all of the figures on the righthand side of the table were larger than any of those on the left.**

In a above, 'figures' means numbers, 'table' is a place to write numbers, and 'large' is equivalent to the sign >. In b above, 'figures' means statues, 'table' refers to a table with four legs, and 'larger' indicates of greater volume. No decision can be made about the meaning of a word without first considering the meaning of the sentence in which the word appears. In

addition, the meanings of sentences are dependent on the general context in which they appear. Higher level processing influences processing at a lower level.

The complexities of this highly interactive system are enormous. Nonetheless, I think that Rumelhart's model stands in advance of other reading models so far, be they bottom to top or top to bottom because it can account for proofreader's error and prior semantic context. It allows simultaneous word and letter identification and maintains a hypothesis set which can lead to rapid identification at any level.

1.4 Conclusion

I have commented on bottom to top and top to bottom theories of reading and especially on interactive theories because I feel that interactive theories can be better understood when compared to the first two. I believe that the review of the literature on L1 reading indicates that interactive theories give the most comprehensive explanation of the reading process in both L1 and L2 reading. This will be seen in detail when L2 interactive reading theorists like Cziko, Carton, and Ulijn are considered.

1C L1 READING AND SYNTAX
1.5 Transformations and reading

With the publication of SYNTACTIC STRUCTURES in 1957, syntax took firm hold as the core of a grammar. Syntax was central, autonomous, and generative. Semantics and phonology were secondary to it. Transformations (hereafter Ts) were part of the syntactic component of a grammar. They rearranged and deleted certain elements. They were often applied to readability i.e., reading ease. Written sentences were measured from kernels (active, affirmative, declarative sentences) which were considered to be the simplest as no Ts had applied, to sentences with multiple embeddings which were considered to be more complex because they had. The more Ts applying, the more complex the sentence was thought to be. Syntax was the key.

Studies by Coleman (quoted in Rothkopf (1972:317) and Schlesinger (1968:50)) found that syntactic factors had some role to play in the long term retention of sentences. Sentences with active verbs were learned 20-30% more rapidly than sentences with nominalizations of the verb. Active sentences were recalled slightly better than passive sentences, and about 10% more information was recalled about non embedded than embedded sentences. Coleman (quoted in Nilagupta (1978:90)) found that reading comprehension increased slightly when sentences were shortened, and Coleman and Blumenfeld discovered that reading comprehension increased significantly when nominalizations were rewritten as independent sentences.

Mehler (quoted in Nilagupta (1978:90-91)) found that simple, direct kernels in both the negative and the passive were recalled best, followed by sentences with single interrogative Ts, and then lastly by sentences with double Ts. Schlesinger (1968:51) found that passive and negative passive sentences took longer to evaluate and complete than affirmative sentences.

Comparing responses for active affirmative, active negative, passive affirmative and passive negative, MacNamara (1968) found that responses to passive sentences in English (L1) took longer than for active sentences, whereas in French (L1), only responses to passive affirmative took longer than those for active affirmative sentences.

Fagan (1971) found that embeddings and deletions were correlated with reading difficulty for children in grades four, five, and six. Negatives, ing-nominalizations, appositives, pronouns, and deletions were the most difficult for them. It was not so much the number of Ts in a sentence, as the kind of T that caused the difficulty.

Ts were linguistically more complex. They were considered to be more difficult to understand and to read than grammatically simpler sentences.

1.6 Readability formulas

Studies on syntax and readability provided several formulas for measuring syntactic complexity based on the number of Ts applying. The Botel-Granowsky formula (1972) uses the frequency of syntactic structures to measure this complexity. For example, a 'zero' count is seen for sentences with S V (O) order. 'Three' count structures include absolutes. The mean syntactic complexity is obtained by adding up the count for each structure in a given sample and then dividing by the number of sentences.

Dawkins (1975) gives a hierarchy of syntactic processes starting with the concept of 'arrangement', which places words into grammatical order in simple sentences, and ending with the concept of 'agreement', the most complex, because it adjusts one word to conform to another. S V order is the basic form. Any initial elements that postpone the identification

of the subject will lead to difficulty. A string of subject modifiers between S and V will also cause difficulty. Clausal and phrasal inserts between S and V are the most difficult.

1.7 Problems with Ts and readability

In an experiment by Fodor and Garrett (1967), the complexity of a sentence as measured by the number of Ts used in its derivation was investigated. A derivational theory of complexity (DTC) was proposed. It stated that the more Ts required to convert the deep structure to the surface structure, the more complex the sentence. Fodor and Garrett increased the number of Ts applying to a given set of self embedded sentences, i.e., sentences with relative pronouns, sentences with relatives deleted and sentences with adjectives added and relatives deleted. The most Ts applied in the last group. Ss were asked to paraphrase all the sentences. It was found that the presence of the relatives had facilitating effects, but that for the last group of sentences with adjectives and deleted relatives, the addition of adjectives failed to produce an increase in complexity. The more Ts a sentence has will not necessarily increase its complexity.

Slobin (1968) studied the recall of truncated (agent deleted) passives and full passives. Truncated passives have more Ts applying to them than full passives. Accuracy in the recall of truncated passives was better than in the recall of full passives. Slobin stated that there was no uniform relationship between the syntactic complexity of a sentence and its psychological complexity.

Franks and Bransford (1976) replicated Slobin's above study and also investigated how content determines memory for syntactic form. In this second experiment, they used truncated passives in two different contexts and discovered that the memory for a set of truncated passives could be manipulated by context. When there was a lack of information about the

actor (in truncated passives), the syntactic form of the sentence was restricted. They concluded that Ss reconstruct information about syntax from semantic information.

Glazier (quoted in Nilagupta (1978:91)) found that sentence length was not a valid measure of reading difficulty. If a sentence is a result of three or more kernels connected by 'and' or 'but', it is easy to understand. Schlesinger (1968:78) found that neither reading rates nor comprehension were affected by sentence length when redundancy was kept constant.

1.8 Towards semantic decoding

Schlesinger's 1968 investigation and experiments dealing with sentence structure represent a turning point in syntactic decoding. He began by examining the effect of sentence complexity on readability. He tried to use Yngve's sentence depth measure as a measure of syntactic complexity. Yngve's sentence depth hypothesis was that left recursive structures add to the depth or psychological complexity of a sentence because recursion to the left, unlike recursion to the right, increases the amount of space taken up in the short term memory during the processing of the sentence. He was forced to abandon Yngve's depth measure as most left recursive sentences are also self embedded i.e. nested. He used the degree of nesting as his criterion of sentence complexity. This represented purely syntactic decoding. He postulated the syntactic decoding hypothesis which stated that difficulty in the syntactic decoding of a sentence increases with the degree of nesting and the length of the nested parts. When his experiments revealed that nesting had negligeable effects in ordinary reading, he was forced to admit that it was a much less powerful variable than supposed. The complete separability of syntactic from semantic processes was untenable for Schlesinger. He then proposed an alternative semantic-syntactic decoding process which stated that we filter and discard syntactic cues in favor of semantic cues. We can do so because of the

partial redundancy of syntactic structure. (5) The ordering of information was not necessary in nested sentences because it was accomplished by semantic cues.

The semantic-syntactic decoding hypothesis implies that syntactic structure is redundant to a large extent. Schlesinger concluded (p. 141):

> "The massive evidence from readability studies for a sentence structure factor in addition to a word factor in reading difficulty does not permit of any doubt as to the effectiveness of such a factor. The conclusion seems to be forced upon us that the much decried 'complexity' of sentences which makes reading difficult is in part, at least, a function of CONTENT".

Rothkopf (1972:319-322) adds to Schlesinger's findings. Factors determining the processing of written discourse are probably more important than structural factors, he states. Content features are more powerful than structural features of text as predictors of learning. Lastly, he firmly states that sentence complexity has small effects on what is learned from text.

1.9 Conclusions

Purely syntactic decoding is insufficient in L1 reading. Syntactic decoding does not proceed in isolation from semantic factors. What is evident regarding purely syntactic decoding for L1 reading should also be so for L2 reading.

Chapter Two examines the process of L2 reading, the characteristics of the L2 reader and current theories of L2 reading.

2 REVIEW OF THE LITERATURE ON SECOND LANGUAGE READING

2A The L2 reading process

I am concerned here with L2 readers who are literate in their L1 and relatively proficient in reading it i.e. c 200 wpm. I am not concerned with perceptual difficulties which are beyond the scope of this thesis.

L2 readers already know how to read; they possess the necessary visual perception skills. In a study for UNESCO, Gray (quoted in Anthony and Richards 1976:16) recorded the eye movements of mature readers from fourteen different countries. There was little variation in the basic eye movements involved whether they read up and down a page, from left to right or from right to left. Fixations, saccades, and regressions are common elements for all readers. Moreover, reading comprehension is little affected by either the writing system or the orthography (Gibson and Levin 1975:538).

Yetta and Kenneth Goodman made a recent study of Texas Spanish, Arabic, Hawaiian Samoan and Navajo children readers of English as a second language (hereafter ESL). No group had a unique reading pattern. There were no sharp distinctions in the way children read in a L2. If the reader was not yet bilingual, his reading reflected the extent to which he controlled English phonology, grammar, orthography, lexicon, and idiom. If the reader was a fluent speaker of English, he acted like a native speaker in reading English. The authors concluded that variation in reading "is constrained by the realities of the process, the psycholinguistic strategies and cue systems of reading" (1978:370).

-People only have to learn to read once during their lifetime.

Clarke (1979:121) calls this a "reading universals hypothesis". Reading in a L2 is not different from reading in a L1 but must be sensitive to the characteristics of the L2. Therefore, as corroborated by Goodman and Clarke, there seems to be a unitary reading process.

2B CHARACTERISTICS OF THE L2 READER

2.1 Speed

A L2 reader reads more slowly both orally and silently in his L2 than in his L1. MacNamara (1968:111) used eight time measures to determine the performance in English and in French of Montreal college girls. In the first experiment, 24 Anglophones with a 'school knowledge of French' were asked to read sentences like 'a hen has a wing'/ 'une poulle (sic) possede une aile'. The measures were:

1. mean perceptual thresholds for individual words
2. mean perceptual thresholds for individual sentences
3. mean reaction times to words on a screen (matching words and pictures)
4. mean reaction time to sentences on a screen (true or false)
5. time taken to read sentences silently
6. time taken to read sentences aloud
7. time taken to read scrambled passage silently
8. time taken to read scrambled passage aloud.

Each S's performance in English was compared to her performance in French. For 1 and 2 above, there were no significant differences from L1 to L2. Differences associated with perception were not significant. For 3 above, the time taken was longer for the L2. Ss also took longer to pronounce individual words in French and were less able to anticipate the order of words.

The experiment was replicated using Francophones with a 'school knowledge of English'. The results were similar. The time needed for understanding the meanings of individual words, the syntactic structure,

and the anticipation for a sequence of words (input) is less in L1 than in L2. Moreover, the rate at which individual words are pronounced (output) is faster in L1. Both input and output require more time in a L2. (6)

MacNamara stated that this slower rate does not allow the time needed to think about what has been read, and because of limits on short term memory processing, some information may be lost. More information would presumably be lost in L2 reading than in L1 reading.

The fixations of L2 readers are longer. Non native college students have the eye fixation times of native third graders (Oller 1972:314). However, as these readers become more proficient in the target language, the number of fixations, their length and the number of regressions decrease (Oller and Tullius 1973:77). Surprisingly enough, the number of regressions for ESL Ss is not high. Oller and Tullius state that this is due to the fact that in their own language, they have already acquired the necessary thoroughness as readers and they avoid rereading.

Hatch (1974) found that L2 readers read more slowly due to failure to recognize unimportant features e.g. function words. For them, all features are given equal importance. And this, of course, will slow down their reading.

2.2 Phonological interference

L2 readers have difficulty with silent reading articulation e.g., Spanish readers saw 'green' as 'grin' because there is no distinction between /i/ and /I/ in Spanish (Hatch 1974:56). Phonological interference occurs in L2 reading. There is evidence for the occurrence of silent articulation even in L1 reading as in studies measuring electrical activity through electromyography (Conrad 1972:206). Silent articulation occurs

in L1 reading through preference, even though it may not be necessary. However, since it is there, it can not be avoided--either in L1 or in L2 reading.

Kolers (1966) conducted an experiment with bilinguals (European French and American) in reading aloud. Ss were to read linguistically mixed text (French and English words haphazardly in French or in English--half of the passages favoring English word order and the other half, French word order), alternating text (alternate sentences were in French or in English), and unilingual texts. It was found that when reading linguistically mixed text aloud, bilinguals pronounced foreign words to conform to their L1 and pronounced common words of this L1 as if they were foreign words. In addition, a new accent was produced in that the pronunciation of words in both L1 and L2 was degraded when these Ss read linguistically mixed text aloud.

2.3 Local reading

Théberge (1976) found that L2 readers were more attentive to graphic information. They were more sensitive to cues within words than to cues in the flow of language (after Goodman). Local cues were used consistently by groups of lower proficiency in English whereas higher proficiency groups based their guesses on global meaning.

Cohen, Glasman, Rosenbaum, Ferrara and Fine (1979:559) also found that L2 readers read more locally.

Ganot (1980:49) stated that her ESL readers concentrated on the words preceding and following blanks but neglected sentence, paragraph, and cross-paragraph levels. They did not refer back to the beginning of a text even to look at the title. In short, they read more locally.

Cziko (1980); like Théberge, found his L2 readers more attentive to graphic information because they depended more on bottom to top strategies. Intermediate proficiency ESL groups made many oral substitution errors that graphically resembled the text and few errors in the deletion or insertion of words when compared with an advanced ESL group and a native English group. Cziko also found that L2 readers had difficulty using contextual information and discourse constraints because his intermediate ESL group relied less on contextual constraints. He stated (1978) that the development of syntactic constraints precedes the development of semantic constraints because his experiments revealed that advanced ESL groups used more discourse and contextual constraints whereas intermediate ESL groups used more graphic and syntactic constraints. In other words, reading strategies are related to the proficiency level in the L2. A high level of competence is needed to be able to use discourse constraints in L2 reading. Native readers and advanced ESL readers use an interactive strategy of relying on both graphic and contextual information, but intermediate ESL readers rely principally on graphic information.

2.4 Conclusions

Reading in a L2 is generally slower than L1 reading because of greater time needed in both input and output, of longer fixation times, and because of failure to recognize unimportant features. Phonological interference from L1 is evident. L2 reading is more local reading. There is a greater concentration on bottom to top procedures and inability to use semantic and discourse constraints. L2 reading is therefore more complex than L1 reading.

2C L2 READING AND SYNTAX

There are still some L2 reading theorists who advocate the central importance of syntax in reading. Among them are Berman, Cowan, Brownscombe,

Kolers, MacNamara, Nilagupta, and Eskey. However, none of these researchers has proven that syntax is the key to L2 reading as will be seen when each is examined below.

2.5 Berman

Berman (1975) proposed that ESL readers be made aware of nominalizations, reduced relative clauses, pronominal reference, sentence connectors, negation, punctuation etc. (7)

In 1980, Berman stated that syntactic complexity was a source of reading difficulty for foreign students even at an advanced level. She was convinced of the centrality of syntax to overall reading proficiency in a L2. "The unravelling of parts of a sentence and correct perception of the grammatical and rhetorical interrelations between them remain a major potential obstacle to reading fluency for the foreign learner" (p.23). The nature of syntactic complexity in reading texts depended on constituent structure, cohesive elements, (8) and dependency relations, i.e. elements which are interdependent but non contiguous. This last element includes heaviness i.e.the extension of N V (N) structure so that one contains embedding or modification, opacity, and scope. (9) Berman concluded (p. 34): "It thus follows that for students to be efficient second language readers they must rely, in large part, on syntactic devices to get at the meaning of the text". Understanding of content words was not enough, she added. Berman has not produced a study to measure to what extent ESL Ss rely on syntactic devices.

2.6 Cowan

Cowan's 1976 study favors the contrastive analysis hypothesis. Briefly, this hypothesis states that L2 problems can be traced back to native language interference. Cowan found that native English speakers imposed a S V O order on German sentences even when these sentences had an O V S

order. He states: "The bulk of evidence (for adults) points to influence from the native language as a primary determinant of learning problems" (p. 107). This is, of course, contrary to what Goodman found. (10)

2.7 Brownscombe

Brownscombe's study (1977) also favored the contrastive analysis hypothesis for native Spanish speakers studying ESL. WH deletion causes difficulty for these Ss because it is not permitted in Spanish. Brownscombe did not give the frequency of those WH deletions causing this confusion.

2.8 Kolers and MacNamara

Both Kolers (1966) and MacNamara (1968, 1970) found that L2 Ss did better when reading texts (both silently and orally) which favored L1 syntax. MacNamara (1968:46) used sentences like the following: "une poulle (sic) ne possede pas une aile". He admitted doing violence to French syntax. Kolers also (1966) found that Ss do better with texts that favor their native syntax. Twelve Americans and twelve European French were asked to silently read texts in a unilingual form, in an alternate form and in a linguistically mixed form. The largest differences were always between the unilingual passages in the native language and in the foreign language. All Ss did better with those texts favoring their native syntax.

2.9 Nilagupta

Nilagupta (1978) conducted an experiment on the relationship of syntax to readability for ESL Ss in Thailand. The author expected a high correlation between structures like negatives, passives, embeddings, deletions, and nominalizations, which formed the major part of the reading test, and reading comprehension. But the correlation between the Ss' ability to interpret syntactic structure and reading comprehension was only .54 (p. 100). Nilagupta was forced to admit that these Ss had not relied heavily on syntax.

2.10 Eskey

Eskey (1970, 1971) advocated the importance of complex syntactic structures like nominalizations, appositives, absolute constructions, restrictive and non restrictive relative clauses and inversions in L2 reading. Eskey, like Berman, has not produced any study demonstrating the extent to which ESL Ss rely on complex syntactic structures in L2 reading.

2.11 Moirand

An approach similar to Eskey's was taken by Moirand in 1975 when she attempted a total syntactic analysis of a newspaper article. All nominalizations found in this particular article were analyzed, transformed, extended, manipulated, and paraphrased. The amount of work required of both Ss and teacher was enormous. However, the use of syntax in reading simply did not give the expected results. In 1977, Moirand completely abandoned this syntactic approach to L2 reading.

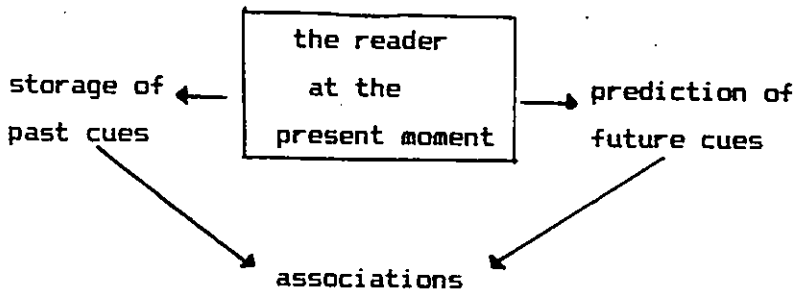
2D GOODMAN'S CUE SYSTEMS

2.12 Yorio

Yorio (1971) assumes Goodman's top to bottom processing and stresses the importance of cues for L2 readers. The L2 reader is uncertain firstly of these cues. The wrong choice of cues makes associations very difficult. A L2 reader has to concentrate on a triple process, as shown in Yorio's (1971:111) diagram.

FIGURE 10

YORIO'S CUE SYSTEM INTERACTION



The reader is both predicting future cues and making associations with the past cues that he has stored in memory. The native does this unconsciously. The foreign reader's prediction of future cues is restricted

by his imperfect knowledge of the L2; moreover, because he has to recall unfamiliar cues, his memory span is very short. He easily forgets already stored cues. These two factors make associations slow and difficult.

2.13 Hauptman

Hauptman's investigations into the use of cues in L2 reading have given us certain insights. Like Yorio, he assumes Goodman's top to bottom theory. In 1976, Hauptman found that most low proficiency L2 readers are orthographic bound. As they become more proficient, they are able to figure out the syntactic forms without depending on spelling. All groups had more difficulty with semantic than with syntactic cues. At this time, Hauptman (p. 11) stated: "It is possible that most L2 readers, even relatively advanced ones are more orthography bound, paying more attention to each word--especially the function words, than is generally thought to be true for good L1 readers". This confirms what Hatch (1974) found.

In 1979, Hauptman found that advanced French as a L2 Ss made more semantic than syntactic errors. These results were corroborated in a second study.

Hauptman (1981a) stated that the failure to use global cues was the most common feature of both L1 and L2 reading. Local cues (category 1) are found 1-2 words from a cloze blank (p. 5). Global cues are of four kinds: category 2 with 3-5 words from the blank, category 3 with 6-9 words from it, category 4 with 10-15 words from a blank and category 5 with 16 or more words from it. Some kinds of global information caused more difficulty than others. This occurred in the less distant cue categories. The most difficult cues were post referent cues, occurring after the blank.

Hauptman (1981b) found semantic errors to be the most significant variable between higher and lower reading abilities for L1 Anglo-

phones. For L1 Francophones, the most significant variable between higher and lower reading abilities was the number of blanks. L1 Francophones had more syntactic errors. In L2 reading, low proficiency Ss in both French and English made more syntactic than semantic errors. This would corroborate Cziko's 1980 study above. In this 1981 study, Hauptman tried to correlate reading ability in L1 and L2. He found the following. If a subject makes many syntactic or semantic errors in his L1, he will probably do the same in his L2. If he makes fewer syntactic errors in L2 reading, he has probably mastered the strategies required for a strong reading ability in L1. If a S reads well in his L2, he probably does so in his L1 as well. L1 reading is a ceiling for L2 reading ability. (11)

Hauptman (1981c) stated that although a S's ability to read in his L2 is not very strongly related to his proficiency in this L2, there is a relationship between L1 and L2 strategies. For example, if a S is reluctant to guess in his L1, he will be so in his L2. Moreover, if he is unable to use global cues in his L1, he will be unable to do so in his L2. If he has semantic difficulties in his L2, he will also have them in his L1. In short, good L2 readers have better strategies, not necessarily a better command of their L2. And these strateties have transferred from L1 to L2.

Hauptman's results were corroborated by Ganot (1980) who found that native Hebrew speakers carried over their lack of reading strategies in their L1 to their L2, English. There is a high correlation between a S's performance in L1 and L2 (p. 49). (12) Most errors are not language specific.

2E AN INTERACTIVE VIEW OF L2 READING

2.14 Introduction

Cziko (1980) stated that both natives and advanced ESL Ss use contextual and graphic information. This is evidence for an interactive strategy in L2 reading and in L1 reading as well. L2 readers adopt an interactive strategy once they have attained a high level of competence in the language, he stated.

Clarke's (1979, 1980) findings could also support an interactive view of reading. Originally, he had assumed that good ESL readers would rely on semantic constraints moreso than on syntactic constraints because he assumed that good L2 readers read in larger chunks. In one particular experiment (1980), both good and poor ESL readers relied on syntactic constraints.

Some of Hauptman's findings could lend support to an interactive view viz., L2 readers seem more orthography bound (1976); L1 Francophones had more syntactic errors (1981b); L2 Ss reveal distinctive groups who make more syntactic or more semantic errors (1981c).

Carton (1971) also has an interactive view of reading. He speaks of the possibilities for making inferences and notes the interaction between the target language, the L1 and the content of messages. Inferencing is defined as the ability to use familiar material to recognize the unfamiliar (p. 45). In the target language, intralingual cues such as inflections, morphemes, roots, word order, affixes, etc. are seen. From the L1, interlingual cues such as loans between languages, occurrence of cognates and false cognates, and phonological regularities from one language to another are to be found. Interlingual cues are contingent upon contacts between L1 and L2 and the S's knowledge of them. Extralingual cues are seen in the content of messages. These cues are contextual. A foreign S whose L1 is very different from his L2 is dependent upon context. Cues from various levels function together. "Comprehension may depend upon the concurrent processing of cues from several echelons" (p. 58).

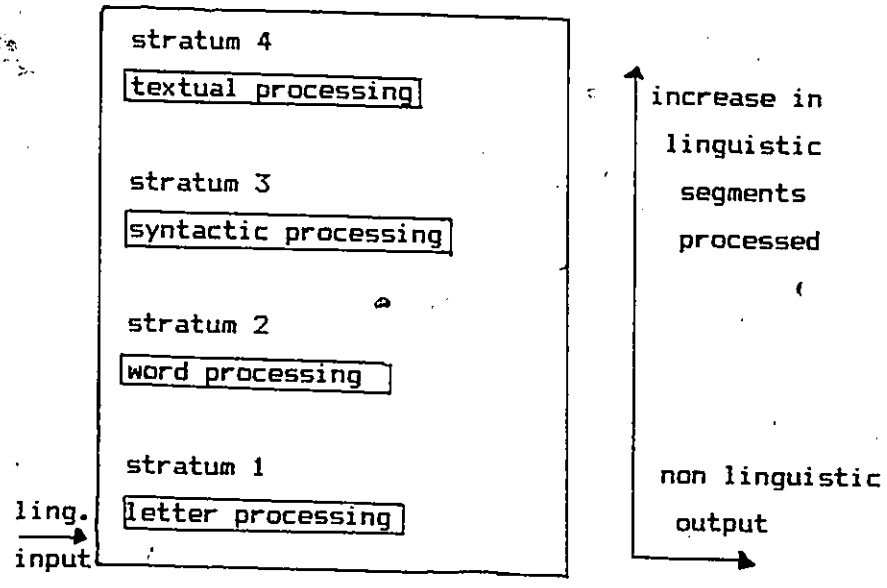
2.15 Ulijn

Some of the most comprehensive studies for an interactive view of reading have been completed by Ulijn. For him, psycholinguistic models of reading are the most suitable and contain several levels: graphemic, morphemic, lexical, syntactic, textual, and semantic. Ulijn states that the semantic level should have a special status particularly in L2 reading. Whether all of these levels have to be processed is unsure, as is their ordering. However, an interactive view could best account for the simultaneous and interdependent operation of these levels (Ulijn, 1980).

The reading process is a skill composed of a hierarchy of subskills. Textual processing occurs at the highest level, followed by syntactic, word, and letter processing. At the bottom levels, automaticity reigns. The higher the subtask level, the less automatic the reading process. (13) The following diagram is reproduced from Ulijn (1977:188).

FIGURE 11

THE READER AS LANGUAGE USER



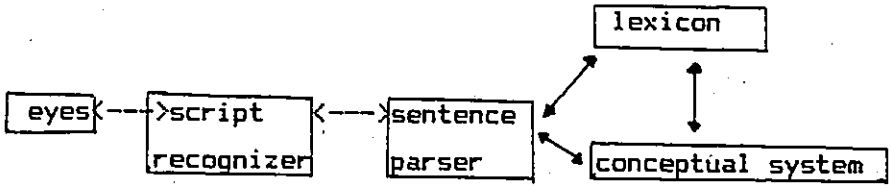
text——> reader——————————> behavior (14)

Ulijn includes certain non linguistic factors in reading which are effective in the same way for both L1 and L2 reading. Mathemagenic factors, activities which give birth to learning (term taken from Rothkopf 1972: 322), include eye movements, (15) memory, motivation, and concentration (1977:190). Contextual factors include illustrations, charts, diagrams, instructions for use etc.

Ulijn (1980:5) gives a very simplified model of this highly interactive system of the reader in man. This model is reproduced below.

FIGURE 12

THE READER IN MAN



The eyes perceive letters and blanks. The script recognizer tries to identify the script and discover the phonology. Even at this preliminary stage, the sentence parser, lexicon, and conceptual system can be used. The script recognizer can ask the eyes to look more closely. The sentence parser detects the conceptualization underlying each sentence in reading and uses its own syntactic knowledge. Ulijn prefers the term conceptual to semantic. A conceptualization is defined as a relationship between concepts or a conceptual structure applicable even when those concepts do not correspond to single words or simple sentences (1980:8). The lexicon contains word labels; the conceptual system contains word meanings. "All systems are accessible at the same time and can be switched on when necessary in order to determine the meaning of a sentence" (1980:5). Interaction is constant. Notice that Ulijn's model, like Rumelhart's, is not very indicative of the complex activities in-

volved.

Ulijn recognizes two processors (the script recognizer and the sentence parser) and two knowledge bases (the lexicon and the conceptual system). The sentence parser can operate in two ways: syntactically guided analysis or conceptually guided analysis. In the former, the use of function words, affixes, and the grammatical categories of content words are used as clues to the identity of constituents to build propositions from these constituents. This is a preliminary, yet thorough syntactic analysis. A thorough conceptual analysis follows. In a conceptually guided analysis, the reader begins with propositions that make sense contextually and checks for surface constituents that express these propositions. The sentence parser applies a 'superficial and incomplete syntactic analysis' (1980: 6) in that only the surface N and main V are located. Then the lexicon is consulted to get the conceptual information of this N and main V. The sentence parser will generate an expectation about the identity of further possible constituents of the input sentence. Since in both syntactically guided analysis and conceptually guided analysis, a thorough conceptual analysis is needed, Ulijn concludes that the parsing process is controlled by conceptual knowledge rather than by the application of syntactic rules (1980:7). His experiments in L2 reading have concentrated on this conclusion.

2F L2 READING AND SEMANTICS

2.16 Ulijn's experiments

2.16.1 The Shadok project

In Ulijn's Shadok project, 43 Dutch engineering Ss were to read instructions in French on how to operate an apparatus named Shadok. Ulijn found that for these Ss, polysemous concept words e.g. 'bouton', caused more trouble than one concept words e.g. 'ecran', and that misleading

cognates caused more difficulty than cognates e.g., French 'interrupteur' looks like English 'interruptor' but, in fact, is English 'switch' and Dutch 'knop(je)' (1980:13). He believed that a thorough conceptual analysis in foreign language reading was necessary. But he did not believe a thorough syntactic analysis to be needed because he considered that content words in French caused more difficulty than syntactic function words. Moreover, he assumed that in Dutch, contrastive syntactic structures would not necessarily cause more reading difficulty than parallel syntactic structures. He reasoned that if a reader does not need a thorough syntactic analysis, then syntactic function words can be avoided because they remain unnoticed.

A study by Louthan (1965) gave further evidence for Ulijn's hypothesis. Using native seventh graders, Louthan found that by deleting words like 'a, an, the, that, whose, what, his, some, any, prepositions, conjunctions (not subordinating conjunctions)' and 'pronouns', there was no appreciable difference between a control group (with no deletions) and an experimental group (with the above deletions) on a reading test. Moreover, comprehension scores actually increased when the above words were deleted.

2.16.2 Syntactic structures experiment

Ulijn conducted an experiment in which he used: 1) syntactic structures in French i.e. une subordonnee relative, temporelle ou consecutive, which were parallel with syntactic structures in Dutch; and 2) syntactic structures in French i.e. construction participiale ou infinitive, which contrasted with Dutch syntactic structures. The Dutch Ss read the relative parallel constructions more slowly than the contrasting structures (1979:111). Both Dutch Ss (L2) and Francophones (L1) had syntactic difficulties with the contrasting structures. Therefore, the difficulties with syntactic structures do not depend on L1. Contrasting syntactic structures will not necessarily cause more reading difficulty than parallel syntactic structures. The contrastive analysis hypothesis is thus rejected as

far as reading is concerned. If a Dutch reader of a French text does not need a thorough syntactic analysis, the fact that syntactic structures differ from the L1 should not matter.

Ulijn contended that a L2 reader who lacks conceptual information will be forced to read word by word and to capitalize on his syntactic knowledge in order to detect hidden conceptualizations. (16) In this case, syntactic contrasts would hamper his comprehension. Forty-three Dutch psychology Ss were asked to translate a very difficult French text into Dutch. The translation showed more interpretation difficulty for syntactic contrasts than for syntactic parallels. Here the Ss were forced into a thorough syntactic analysis because they had no possibility for conceptual analysis due to the difficulty of the text.

Ulijn refers to one of Cziko's (1978) experiments on the use of syntactic, semantic, and discourse constraints in L2 reading. Cziko had given his Ss two original meaningful texts, two random texts and two anomalous texts to read. The anomalous texts were syntactically correct but not semantically so. The random texts were neither syntactically nor semantically correct. Only native English speakers and advanced ESL Ss read the meaningful texts faster than the anomalous texts. Cziko concluded that in L2 reading, syntactic constraints develop before semantic and discourse constraints. Ulijn sharply criticizes this conclusion for two reasons. Firstly, Cziko's texts were semantically violated and thus were not representative of normal reading. And secondly, his texts forced his readers to make a syntactically guided analysis which probably does not occur in normal foreign language reading. When a reader is forced to read word by word, as in Cziko's experiment, and to capitalize on his syntactic knowledge, which may be faulty, in order to get to conceptual analysis, his comprehension will be hampered.

2.16.3 The map experiment

Twenty-four Dutch (L2) Ss and twenty-four Francophones (L1) were asked to read a map in French. One version of the map had syntactically parallel structures and the other, syntactically contrasting structures. ULijn suspected that the text with the least conceptual information would force its readers to use a syntactically guided analysis. Francophones read the map twice as fast as Dutch Ss. This would corroborate both Kolers and MacNamara on L2 reading speed. (17) However, there were no significant differences between the parallel and contrasting versions read by the Francophones or the Dutch. Both groups showed the same pattern of difficulty. A difference in syntactic structure did not affect either French L1 reading or French L2 reading (1980:28).

As a conclusion to his experiments, Ulijn postulates that conceptual analysis overrules syntactic analysis in foreign language reading and that a thorough conceptual analysis is necessary but a thorough syntactic analysis is not. The sentence parser is primarily concept oriented.

These findings imply that reading in a L2 or foreign language should concentrate on conceptual analysis--the semantics of reading. (18) Concentration on content words which carry the conceptual information, on word derivation procedures, word families, misleading cognates and false cognates should all be emphasized.

2.17 Conclusions

Most of Ulijn's experiments deal with scientific texts (except for the map experiment) and individual sentences in syntactically parallel and syntactically contrasting versions. He uses the terms foreign language reading and L2 reading interchangeably, and this point needs clarification especially for reading theorists in North America. More work is needed on the temporal staging of conceptually guided analysis and of syntactically guided analysis, as Ulijn himself admits. In addition, more details are required for the superficial syntactic analysis that

occurs in conceptually guided analysis before the conceptual analysis itself. It is unclear how much syntactic analysis is involved.

2G HYPOTHESES

Ulijn's studies have documented some very significant evidence for the primacy of conceptually guided analysis in foreign/L2 reading. Generally, I agree with his findings. The semantic level should have a special status in L2 reading exactly as Ulijn claims that it should.

Ulijn's above experiments and their results led me to construct a reading test (See Appendix D) with a definite conceptual basis. It required L2 readers to recognize the various intersentential relationships (conceptualizations) in a total piece of discourse. It was predicted that L2 readers of intermediate proficiency in English would not be able to give primacy to conceptually guided analysis because they lacked the necessary conceptualizations and thus would revert to syntactically guided analysis. Advanced ESL Ss were assumed to be able to use conceptually guided analysis to some extent.

It seems to me that the extent to which Ss use conceptually guided analysis can be measured more significantly by using a piece of discourse rather than individual sentences as Ulijn has done. The CM Reading Test designed for the pilot study of this thesis is such a piece of discourse. But before considering it, written discourse needs to be examined. Chapter Three will study written discourse analysis in both L1 and

3 WRITTEN DISCOURSE ANALYSIS

3A Introduction

Zellig Harris long ago recognized that language occurred in connected discourse. In his article "Discourse Analysis" (1952), he proposed continuing descriptive linguistics beyond the sentence level by analyzing the formal features of a discourse through distributional methods. In this same article, he added that his analysis of discourse was distinct from an "interpretation" of it (p.382). And although descriptive linguistics had "no equipment for taking the social situation into account" (p.356), Harris' discourse analysis (hereafter DA) could not account for it either.

An analysis of discourse must both interpret findings and take the social situation into account.

Even though the Chomskian revolution did much to provide us with a well formed system of rules (syntax) for sentence formation, there was no such set of well specified and obligatory rules forthcoming for discourse. Philosophers like Searle (1976) used the concept of speech act (representatives, directives, commissives, expressives, and declarations) to try to impose some form on discourse. But neither syntax nor speech acts could provide us with the interpretation of sentences. Gumperz said we needed to consider the speech situation and the speech event in addition to the speech act itself (Larsen-Freeman 1980:4).

To attempt a history of DA is way beyond the scope of this thesis. What is important here is that in written DA, the social situation and the semantics be considered.

Form in discourse must also be considered. This form is determined by content (Hatch, 1980, Lackstrom, Selinker, and Trimble, 1973). There is

a generalized structural formula associated with each type of text e.g., narration will often use chronological structure. This point will be examined in greater detail when DA in L2 research is studied.

A system for analyzing both the situational and interpretational aspects of written discourse was needed. Of the extant systems only two were seriously considered--the Beacco-Darot system and the Halliday-Hasan system.

For Beacco and Darot (1977), we must go beyond a morphosyntactic analysis of discourse, beyond Harris' equivalence classes, beyond purely lexical approaches which try to characterize specific texts from a study of their lexicon. They state (p. 3):

> "Il est illusoire de penser atteindre la spécificité d'un discours en énumérant une liste de mots avec lesquels on serait bien en peine de reconstituer les textes dont ils ont été extraits".

It is also necessary to go beyond decomposing a text into its constituents (analyze automatique du discours e.g., F=form, D=determiner for N etc.) All of these do not get beyond sentence level and hence are rejected by Beacco and Darot.

Instead, they propose using two concepts--'les operations enonciatives' and 'les operations discursives'.

> "Les opérations énonciatives mettent en jeu les différents repérages qui peuvent être établis par le sujet énonciateur, entre la situation d'énonciation (sujets énonciateurs 1 et 2--locuteur/interlocuteur); lieu de l'énonciation; moment de l'énonciation et l'énoncé" (p.6).

The markers for these operations encompass anaphors, lexical cohesion, tenses, and modality which are all found or not in all types of discourse in different combinations.

The second concept of 'opération discursive' comprises the very structure of a discourse viz. definitions, descriptions, interpretations, analyses, classifications, illustrations, etc. These operations

vary with the type of discourse e.g. cookbook recipes, mathematical texts, medical texts etc.

Beacco and Darot have worked with highly specialized texts only, and their analyses are often random and sometimes incomplete as they themselves admit (p.41). However, it is work that I feel holds much promise once completed.

3.1 The Halliday-Hasan model

The Halliday-Hasan model from COHESION IN ENGLISH (1976) was chosen because it provides a method for completely analyzing any piece of discourse. (19)

Written discourse goes beyond the individual sentence to the text as a whole. Many L2 readers can read a sentence and can perhaps understand all the words in this sentence. Yet these L2 readers can not go beyond to the discourse level and read a sentence in connection with its preceding and following sentences. For them, the entire discourse is a disconnected set of sentences and is equal to the sum of its parts. And this is simply not true. The whole is always greater than the sum of its parts in reading. (20) The written discourse is text and should be understood as such.

According to Hasan (1977:229),text is not a grammatical unit like a clause or a sentence; it is "a social event whose primary mode of unfolding is linguistic". A text is a group of sentences which hang together . It is a semantic unit, a unit of meaning and not of form. Sentences are syntactic objects, but their connection is a semantic notion. Together they have texture.

Hasan (1968,1977) explaining further states that there is both situational and linguistic evidence which produce texture. The situational

evidence (external) is composed of extra linguistic factors which are relevant to the language of a text. These factors are: field (what is the language about), mode (is the language spoken or written), and tenor (is the total set of relations among the participants formal or informal). Field, mode and tenor are the dimensions of register; register is the characteristics of the varieties of language according to use. If a piece of discourse is 'text', it will be within one register. External evidence shows how language links meaningfully with the situation in which it is found.

Linguistic evidence (internal) is also needed to produce texture. Linguistic evidence deals with cohesion. And cohesion exists within text and not within the mind of the reader. Cohesion is a relation between and not within sentences. The sentences of a text are related to one another. "In a text...the meaning of each sentence depends on its environment--on its cohesion, in fact, with other sentences" (Hasan 1968: 19). The sentences of a text may follow each other in sequence without being connected or may be linked by cohesion. Cohesion is defined as "the set of semantic resources for linking a sentence with what has gone before" (Halliday and Hasan 1976:10). Within a text, the meaning of each sentence depends on its environment, including its cohesive relations with other sentences. Thus, a text is a unit of situational semantic organization. (21)

According to Halliday and Hasan, there are five kinds of cohesive ties:

1. reference
2. substitution
3. ellipsis (substitution by zero)
4. lexical cohesion
5. conjunction.

These ties are semantic relations and are independent of structure. They

link one sentence to a sentence or group of sentences preceding or following. They are normally anaphoric, and there is no new content to them.

In this thesis, I am concerned with the cohesive tie of conjunction only. Conjunction relates elements that occur in succession but are not related by other structural means. Conjunction is a semantic relation between sentences. Consider the following example.

1

a.Soldiers fought a battle.

b.Afterwards, it rained.

It is the underlying semantic relation of succession in time that has cohesive power here. It crosses sentence boundaries and causes 1a and 1b to cohere. 'Afterwards' is the conjunctive adjunct (after Halliday and Hasan) used to signal this relation. Conjunctive adjuncts include:

-adverbs like 'and', 'but', 'yet', 'actually'

-compound adverbs like 'furthermore' and prepositional phrases like 'on the contrary'

-prepositional phrases plus 'that' e.g. 'in addition to that' (Halliday and Hasan 1976:232).

There is also a group of subdued cohesives called 'continuatives' which include words like 'now', 'of course', 'surely', 'certainly' etc. (22)

The term conjunctive marker (hereafter CM) will be used for conjunctive adjuncts. This term is used throughout the present thesis.

3.2 CM—part of the semantic system

Consider example two.

2

a.John was very uncomfortable in his easy chair.

b.Nevertheless, he fell asleep.

'Nevertheless' is the CM which signals the intersentential relation between 2a and 2b above. Other CMs like 'nonetheless', 'however', 'still',

'yet', 'in any case', 'all the same', and 'anyhow' could all be placed successfully in the same slot as 'nevertheless' above. The good native speaker can recognize firstly that the intersentential relation above is one of contrast and secondly, that other CMs could express this same relation. More importantly, the good native speaker can recognize the intersentential relation above even when there is no overt CM. It is the underlying semantic relation of contrast in 2 above that has the cohesive power. The use of a CM presupposes that 2a and 2b are connected. (23)

Urquhart (quoted in Cohen et al 1979:560) found that native English readers had only slightly more difficulty processing texts not marked for intersentential relations than for those that were. He stated that natives use intersentential information to reduce the amount of processing necessary.

The native also knows that simply placing a CM between two sentences will not make them cohere (van Dijk 1980:49). Consider the following example.

3

a.Mary loves chocolate.

b.Yet, Ottawa is the capital of Canada.

A common topic which delimits certain areas or ranges of semantic space is needed between 3a and 3b above (van Dijk 1980:51).

Consider yet another example.

4

a.John fell off his horse. He broke his leg.

b.John broke his leg. He fell off his horse.

In 4a, the native infers that John broke his leg when he fell off his horse. There is an intersentential relation of causality implied. In 4b, a native could infer that John fell off his horse because his leg was broken. The ordering of the sentences in 4a and 4b determines the causal pattern inferred.

A CM usually has first position in a sentence and its meaning extends over the whole sentence in which it occurs. CMs can also occur in the middle of two independent clauses in a compound sentence. Example 2 is repeated here as example 5.

5

a. John was very uncomfortable in his easy chair; nevertheless, he fell asleep.

'Nevertheless' shows a cohesive and not a structural relation here because example 5 can be terminated after the word 'chair' (Frank 1972:226; Halliday and Hasan 1976:264).

The intersentential relations signalled by CMs are not logical but are textual (Hasan 1977). They represent types of connection holding between sentences. Halliday and Hasan list four types of internal and external intersentential relations:

1. additive (expressed by CMs like 'and','furthermore','similarly')
2. adversative (expressed by CMs like 'yet','but','however')
3. causal (expressed by CMs like 'so','thus', 'therefore')
4. temporal (expressed by CMs like 'then','finally','first')

(See Appendix A for complete list) (24)

3.3 L1 and CMs

It is relevant at this point to briefly examine the development and frequency of CMs in L1 in order to make some assumptions about them in L2 reading.

3.3.1 The development of CMs

In a study by Katz and Brent (1968) with native first and sixth graders, it was found that children in grade one were not able to verbalize the meanings of certain connectives . They were able, however, to use connectives correctly in spontaneous speech and to select the correct connective on paired sentence tests.

In a study by Robertson (1968), native pupil understanding of connectives in reading was investigated. A connectives reading test was constructed for this purpose. In both oral and written language, children's ability in the use of sentences containing connectives increased as their chronological ages increased. However, there was a lack of uniformity in the role of development of understanding among different connectives. 'However', 'thus', 'although', 'which', and 'yet' presented the most difficulties. Robertson concluded that there are different rates of understanding for individual connectives. It is the semantics of these words that causes difficulty.

In Stoodt's 1972 study, three hypotheses were investigated in relation to native understanding of conjunction and reading comprehension.

1. A correlation exists between the relationships a subject identifies with conjunctions and reading comprehension.

2. There is a difference in the difficulty of various types of conjunctions.

3. There is a relation between understanding conjunctions, sex, socio-economic level and intelligence.

A Comprehension of Conjunctions Test was devised for Stoodt's investigation. Conjunctions of high usage for native fourth graders were identified as: and, as, because, *but, either, for, *if, *how, now, *or, *so, than, *that, though, *where, *when, *while, why and yet (p. 504). A Cloze Comprehension of Conjunctions Test was also devised. The readability of the passages on the test was controlled by the Lorge formula. The results showed that hypothesis 1 above is confirmed. Hypothesis 2 is also confirmed because the starred conjunctions above proved more difficult than other conjunctions of high usage for fourth graders. Girls, in general, performed better than boys, thus confirming hypothesis 3.

In a study by Ruddell (1965), it was found that the degree of comprehension with which written passages are read by fourth graders is a function of the similarity of these written passages to the oral patterns of their language. Comprehension scores were higher on those passages using highly frequent patterns of oral language.

In a thesis by W.L. Smith, it was found that what a subject normally produces influences the syntactic level at which he reads. Using fourth, eighth, and twelfth graders as well as skilled adults, Smith discovered that only fourth graders read fourth grade material well--the other groups did not.

It does not seem surprising that native children from different backgrounds will differ in their knowledge of connectives and that the understanding of connectives is determined by age. It seems apparent that L2 readers will also differ in their understanding of connectives, and that some connectives will be more difficult to understand than others.

3.3.2 The frequency of CMs

In a study by Rodgers (1974), the kind of connectives used (including subordinating conjunctions and CMs) varied with the subject matter of the geography, history, chemistry, biology, and physics textbooks examined. The frequency of a connective depended upon the subject of the textbook in which it was found. In other words, the content of the textbook determined the form. Connectives were tabulated for overall frequency and for subject frequency. Rodgers' two tables reproduced below illustrate these frequencies (p.464).

FIGURE 13
CONNECTIVES OCCURRING MOST FREQUENTLY IN 35 TEXTBOOKS

frequency	connectives
1000 or more	but, if, when, because, however, as, although, thus, then, while, for example, since, also, therefore, so, even
500-999	perhaps, yet, such as, in fact, whether, that is, so that
250-499	on the other hand, and, as well as, in general, too, furthermore, just as, indeed, in other words, consequently, for instance, rather than
100-249	moreover, similarly, as a result, either, or, even though, in addition, where, instead, except, in addition to, meanwhile, despite, at least, rather, generally, hence, unless, especially, whereas, as a result of, in contrast, still, in turn, apparently, in spite of, nor

The frequencies are estimated totals for the 35 texts based on actual frequencies in the pages sampled.

FIGURE 14

Ranking (By Frequency) of the Twenty Most Common Connectives in Each Subject Area from 35 texts

	overall freq.	grade 6 social studies and science	grade 12 geography	grade 12 history	grade 12 chemistry	grade 12 biology	grade 12 physics
1	but	1	1	1	1	1	2
2	if	2	9	5	2	2	1
3	when	3	2	12	6	9	4
4	because	4	5	9	11	8	3
5	however	10	3	8	5	3	8
6	as	5	8	6	10	7	6
7	although	11	4	3	12	11	11
8	thus	12	7	4	7	4	14
9	then	6	13	13	–	13	7
10	while	–	11	2	14	10	13
11	for example	13	12	–	4	5	9
12	since	14	15	10	3	6	12
13	also	8	10	–	9	16	10
14	therefore	–	14	16	13	14	5
15	so	–	6	–	15	20	15
16	even	7	–	7	–	12	–
17	perhaps	9	19	10	16	18	–
18	yet	15	16	14	17	17	–
19	such as	17	–	–	20	15	–
20	in fact	–	20	15	–	–	–

In a COMPUTATIONAL ANALYSIS OF PRESENT DAY AMERICAN ENGLISH (Kučera and Francis 1967), I sought the frequencies of certain CMs. This book gives a straight count of the frequency of a word for 1,014,232 words of text in 15 types of text: press reports, press editorials, press reviews, religion, skills and hobbies, popular lore, biography, miscellaneous; learned and scientific writings, fiction (general), fiction (mystery and detective), fiction (adventure and western), fiction (romance), and fiction (science). The first number after each CM indicates the actual frequency in the total count of words; the second lists the number of types of text in which it is found (1-15); and the third lists the number of samples in which the CM is found. The most frequent item is ranked 1 and the least frequent, 50,406. The starred entries in the table reproduced below are those found in the CM Reading Test (See Appendix D) for the pilot study of this thesis.

FIGURE 15
WRITTEN WORD FREQUENCIES

TYPE OF CM	CM	FREQ. TYPES SAMPLES	FREQ. RANK
Additive:	*and	28,852-15-500	3
	*or	4,207-15-492	27
	besides	66-13-059	1645-1675
	moreover	88-13-063	1202-1223
Adversative:	nonetheless	10-05-010	7920-8478
	yet	419-15-241	206
	*but	4381-15-490	25
Causal:	thus	312-13-180	296-299
	*so	1984-15-467	52
	because	883-15-344	103
Temporal:	*now	1314-15-394	76
	finally	191-15-144	505-508
	first	1360-15-430	73
Continuative:	*certainly	143-14-107	697-707

*item found in CM Reading Test

Some of the starred entries are very frequent while others are not. I had assumed that highly frequent CMs would be more predictable in the pilot study, but this was not confirmed. (See Chapter 5 Analysis of the Data.)

3B L2 DISCOURSE ANALYSIS

3.4 Introduction

Written DA in L2 reading can be divided into two very general groups: 1) those researchers who write or examine texts specifically prepared for ESL Ss and 2) those who use native texts. In the first group, Widdowson and Selinker hold a prominent place. In the second, Moirand, Beacco and Darot, and Cohen will be considered.

3.5 Discourse analysis in ESL texts

Widdowson (1973) distinguishes two ways of looking at language which goes beyond the sentence level. The first way of looking at language is as 'text' as referred to by Halliday and Hasan. (Cf the Halliday-Hasan model of written discourse in 3.1 above.) The second way sees language as the use of sentences to perform communicative acts. These acts then become larger communicative units which, in turn, establish a rhetorical pattern characterizing the whole discourse. If scientific varieties of English can be represented as types of text, they can also be represented as types of discourse. There would be combinations of definitions, classifications, generalizations etc. which could combine into larger units e.g. reports. These latter forms would reflect the methodology of scientific inquiry.

Selinker, Todd-Trimble, Trimble, and Lackstrom (1973, 1976, 1978), have also investigated texts in English for Science and Technology specifically written for ESL Ss. The writer of scientific discourse assumes that his readers share his rhetorical conventions which permit understanding of the rhetorical relations he uses even when they are not explicitly stated. This is presupposed information, and this information is frequently rhetorical. Rhetorical principles like time order, space order, and causality provide cohesion. The principle chosen will dictate the syntax. (25) For example, a narrative will have many conjoined sentences and much use of both simple present and simple past tenses. Selin-

ker et al have also found a restricted use of tense--mostly simple past and present perfect as well as a prevalence of the definite article in English for Science and Technology discourse. (26) These are what Selinker et al call the 'unique discourse functions' of scientific English.

According to all of the discourse studies by Selinker et al, the native speaker will recognize the rhetorical principle chosen and will know what kind of grammatical choice to expect from it. The native has the ability to recognize implicit or presuppositional information which is necessary for understanding the entire discourse. Non natives need instruction in discovering presuppositional information in order to gain access to the total amount of information in technical discourse. These L2 readers may not have the ability to recognize the rhetorical functions of classification, description, and definition. (27) In addition, they lack knowledge of time order, (28) space order, causality, result, comparison, contrast, analogy, exemplification, and conditionality (1976) which provide the relationships among the rhetorical functions. They might not see that a definition could be part of a chronological time development. They have trouble understanding when an example becomes an illustration. They lack knowledge of cross categories i.e., examples which produce effects.

In fact, non natives lack what Hepworth (1979) calls 'rhetorical competence'. They need to be instructed in it, and Selinker et al would agree.

3.6 Discourse analysis in native texts

3.6.1 Moirand

Moirand (1977,1979) proposes a prepedagogical grid for a global approach to non literary texts. This global approach is the beginning of a total DA. The grid is to be prepared by the teacher beforehand. It is to be used for a newspaper article, a brochure, a pamphlet, a pharmaceutical folder—in short, any non literary text not specifically written for ESL Ss. From a sociolinguistic approach, to a linguistic approach, to a textual analysis, Ss move towards a total DA.

Moirand (1979:166) states:

> "Il nous semble, par expérience, que les différences d'organisation textuelle d'une langue à l'autre tiennent plus à la diversité des structures de surface qu'à des écarts en profondeur, en tout cas, l'analyse des récits en langue étrangère paraît ne pas poser de problèmes aux apprenants pour peu que les types de textes considérés leur soient familiers en langue maternelle...si la démarche est bien comprise en langue maternelle, il leur est plus facile de transférer ensuite leurs propres stratégies d'analyse sur des textes étrangers que d'en apprendre de nouvelles".

Moirand assumes that L2 Ss will be familiar with the non literary texts she uses. An obvious weakness in this assumption is that there is, in fact, no assurance that the readers will be familiar with the texts.

3.6.2 Beacco and Darot

Beacco and Darot's 1977 study explains that there are differences in the uses of tense, modality, and anaphora from one type of written discourse to another e.g. mathematical, ethnological, cook books etc. They believe that each discipline has its own rhetoric as well as its own body of knowledge and jargon. For Beacco and Darot content determines form.

Beacco and Darot studied highly specific scientific texts and tried to find a common form in discourse in pure science. For texts in minerology

and cristallography, they succeeded in finding such a form, but for many other highly specialized scientific texts, they did not. As a result, they chose to use the discourse operations of analysis, classification, description, illustration, definition etc. because these operations would be more likely to occur in many different forms of discourse.

Beacco and Darot (1980) attempted another examination of texts that they believed could be classified into three types of discourse: didactic or textbook discourse, magazine articles, and scientific research discourse. However, after much research, they concluded that they simply could not classify them as distinct forms of discourse as they had originally proposed. They stated (p.220):

> "Les textes étant des produits de conditions de niveau différent (linguistiques, institutionnelles, sociales...), ils ne peuvent que se donner comme un continuum sur lequel tout découpage comporte une part d'arbitraire".

In spite of the multitude of texts examined and the enormous amount of work involved, Beacco and Darot continued their work in DA. For them, different types of discourse must first be examined as to their specificity. Descriptive models must be constructed. Generalizations can be made afterwards and then applied to other specific types of discourse. In this way, a hierarchy of discourse types which proceed from specific to general will be constructed. In fact, Beacco and Darot believe that they will reach the linguistic regularities which constitute abstract matrixes, each text being a particular realization of one such matrix. When there are sufficient generalizations made, they can then proceed from general to specific and classify each new type of discourse met.

One of Beacco and Darot's main contributions to written discourse analysis is the concept of 'discursive competence', "la connaissance partielle des regles de fonctionnement de certains discours dans la langue maternelle" (1980:12). (29) They state that a native speaker is capable of recognizing and/or producing texts which conform to certain abstract discourse matrixes. Each text is a particular realization of a discourse matrix, and some native

speakers can produce such texts. (30) For example, some natives can write letters asking for information and applying for a job. They know exactly what form each of these two letters should take. Beacco and Darot state that this native discursive competence can either be taught or else learned from experience.

Native discursive competence can be used as a facilitating factor for L2 discursive competence because it transfers to the L2 under certain conditions. One condition is that the texts used in the L2 be comparable to those that Ss are already familiar with in their L1. (31) The transfer occurs only when the L1 discourse is almost identical to the L2 discourse. For example, Beacco and Darot (1980:23) state that an American sociologist should be able to write an article on sociology in French (his L2) because he is already familiar with sociological texts and with their discourse in his L1. Teachers are to determine the kind of texts their L2 Ss read in their L1 and are to use similar texts in the L2. In this way Ss' discursive competence will be reactivated and will transfer to their L2. Of course, it is logical to assume that if Ss are not familiar with the L2 texts used and if the discourse is far removed for their L1 discourse, no transfer will occur.

3.6.3 Cohen

Cohen states that for L2 readers, it is the non technical terms in the discourse they read that create problems, not the technical terms. In his experiments with DA and student informants, Cohen (1979) found that L2 Ss lacked information on the function of rhetorical devices. Using Halliday and Hasan's cohesive tie of 'conjunction', referred to as CM in this thesis, he found that L2 Ss do not pick up the CM, not even the more basic ones like 'thus' and 'however'. They also can not see interparagraph CMs like 'also' and 'finally'. (32) He stated (p. 559):

"Clearly, the task of finding the markers of cohesion is a part of good reading generally, even in the native language".

3.7 CMs in the L2

The cohesive ties as given in Halliday and Hasan are not the same for the non native speaker as for the native. For example, take the cohesive tie of 'reference': in English, a word like 'this', can refer to an entire paragraph, but in Hebrew, it can not and a phrase like 'all that was said till now' is needed (Dubin and Olshtain 1980:356). For the cohesive tie of conjunction, there is a double problem. Some CMs may have more than one meaning. For example, 'then' can be both causal and temporal. (See Appendix A.) Moreover, one type of relation can be expressed by several CMs e.g., adversativity can be expressed using 'but', 'still', 'however', etc. Other CMs have more than one function. Consider the following example.

6

a.I have been waiting all day. YET I have not seen him.

b.I have been waiting all day. I have not seen him YET.

In 6a, 'yet' is a CM. It is peripheral in clause structure and has a connective (cohesive) function. In 6b, 'yet' is an adjunct. It is integrated into clause structure (Quirk, Greenbaum, Leech, and Svartvik 1972:425). There is no one to one relationship between form and function. Some L2 readers, however, are unaware of this and select one function for any given word so that whenever it has another function, their expectancies are mismatched and comprehension is impeded.

3.8 Conclusions

It seems logical to assume (with Moirand and Beacco and Darot) that if L2 Ss are confronted with a text whose content is familiar to them and whose discourse form is also familiar to them, the text will be easy to read. However, at present, research in DA does not warrant making such an assumption. This research is incomplete. It is not possible to assume that highly scientific texts in French will demonstrate the same characteristics as highly scientific texts in English. It is known that there are certain similarities viz. lack of subject/author and of first person personal pronouns, and use of the passive voice (Beacco and Darot

1980:13). But this is not enough.

The following facts remain for L2 readers:

1.-L2 readers lack rhetorical competence

2.-cohesive ties differ for them depending on their L1

3.-L2 readers can not recognize the role of a particular CM

4.-L2 readers can not use CMs effectively.

The CM Reading Test developed for this thesis tried to measure how much, if at all, L2 readers can perceive the intersentential relationships in reading. Chapter Four will detail the design, construction, administration, and correction of this test.

4 DESIGN OF THE PILOT STUDY

4.1 Introduction

The purpose of the pilot study was to measure ESL Ss' ability or not to recognize the intersentential relationships among sentences throughout a piece of discourse by using the appropriate CMs to signal these relationships. The method used to measure their ability to recognize the intersentential relationships was to remove the CMs which overtly signal these relationships. Then, if students could understand, it was clear that they had perceived the relationships from the covert signals in the discourse. A cloze procedure was used for this purpose.

4.2 Subjects

The subjects were all students enrolled in intermediate (N=13), and advanced (N=21) ESL classes during the May, 1982 trimester at the University of Ottawa, a bilingual (English/French) institution. In addition, a control group of native speakers (N=14) was used.

4.3 Measure of proficiency

All Ss enrolled in ESL classes in May of 1982 were administered the Centre for Second Language Learning's Proficiency Test to determine their proficiency level in English. The test consisted of 90 items, all in a multiple choice format. Scores for the intermediate group ranged from 40-49 and for the advanced group from 60-86. Native speakers were not tested for proficiency in English.

4.4 The test

4.4.1 Construction

The pilot study text was an unaltered piece of discourse of general interest selected from the NATIONAL GEOGRAPHIC magazine. (See Appendix B.) It was 590 words long and measured 60.481 (or at the standard level of difficulty) on the Flesch Readability Scale. (See Appendix C for this scale.) The frequencies of the different CMs found in this text were not a criterion for selection. Both highly frequent and infrequent CMs were represented. All four kinds of relationships signalled by CMs i.e. additive, adversative, causal, and temporal were present.

Discourse especially written for ESL Ss was rejected because it is felt that altered texts are not representative samples of discourse in a language since they delete and/or replace CMs from what would normally occur (Honeyfeld (quoted in Cates and Swaffar (1979:22), Beacco and Darot (1980:24)). Halliday and Hasan (1976:19) state: "It is characteristic of a text that the sequence of sentences can not be disturbed without destroying or radically altering the meaning". I felt that using specially written ESL texts would invalidate the results of the pilot study.

4.4.2 The cloze procedure

Chihara, Oller, Weaver, and Chavez-Oller (1977) state that cloze items embedded in normal prose are sensitive to discourse constraints ranging beyond the immediate limits of a single sentence. As language users become more proficient, they also become more competent in the use of discourse constraints. These constraints have a relatively greater facilitating effect for natives than for non natives.

4.4.2.1 Cumulative cloze

The procedure chosen for the pilot study was based on cumulative cloze as proposed in Hoffman (1980). Cumulative cloze is used to measure con-

textual buildup across units of discourse larger than the sentence. In this procedure, the same single target word is deleted each time it appears. A nonsense word is substituted for it and used throughout the passage. Hoffman concluded that his cumulative cloze was, in fact, sensitive to the effects of contextual buildup across large units of discourse.

In his article on 'Inferencing', Carton (1971:47-48) speaks of Werner and Kaplan's Word Context Test in which Ss were asked to define an artificial word presented in various contexts. Only the term was novel, not the concept. Inferencing, it will be remembered, is defined as the ability to use familiar attributes and contexts to recognize what is not familiar.

In the CM Reading Test for the pilot study, Ss were also asked to identify novel words for concepts that they already had or were presumed to have.

The CMs present in the original piece of discourse from the NATIONAL GEOGRAPHIC were deleted. Nonsense words of four letters each, respecting the phonotactic patterns of English were inserted for these deleted CMs. There were no sound resemblances or spelling resemblances between any two nonsense words or between a nonsense word and an original CM. In this way, no clues for the appearance of the novel term could be inferred. The same nonsense word was used within the text when it replaced the same original CM. A nonsense word appeared twice only if it replaced a CM which was used twice. This aspect represented a sound reason for using cumulative cloze in that readers could use discourse constraints more effectively if they knew that the same CM could be successfully placed in two different slots. The entire procedure was explained to the Ss. (See CM Reading Test in Appendix D.) The nonsense words were numbered (N=10) and underlined. Ss were encouraged to guess if they did not know the deleted CM.

4.4.3 Administration of the test

All Ss were tested in their original class groups i.e. intermediate, advanced and native speakers. No time limit was imposed on any group; however, all Ss in all three groups completed the test within one hour.

There were two series of instructions on the CM Reading Test. The first series was short. The Ss were told to read the text without attempting to find the meanings for the underlined nonsense words. No other task was assigned at this time. This was done to allow Ss to become familiar with the text. In fact, I hoped it would serve as a kind of advance organizer.

The second series of instructions was more explicit. The Ss were asked to replace the underlined nonsense word with its original word on the attached answer sheet. If the Ss did not know, they were asked to guess at what they thought the original CM was and they were told that synonyms for the original word were acceptable. They were asked to write the original CM or a synonym next to its numbered nonsense word on the answer sheet in column I. In column II, they were given an alternative in that they were allowed to explain which word they were trying to guess at. It seems clear that a S can not supply a word which is not in his vocabulary, but he can explain a familiar concept.

A partial list of CMs was provided to increase the Ss' knowledge of exactly what kind of words he was expected to furnish. Three of the CMs on this list were actually original CMs. Again, I hoped that this partial list would serve as a kind of advance organizer.

The answer sheet consisted of the numbered nonsense words, column I where the original CM or a synonym was to be placed, and column II where an alternative explanation could be placed.

The instructions and text were written in one form of print, the

title, in a second form, and the underlined nonsense words in a third form. All attempts were made to make the visual array as clear and as attractive as possible. "Après tout, les textes aussi sont des images" (Moirand 1979:50).

4.4.4 Correction

For all three groups both ER (exact replacement) and AR (appropriate replacement i.e. an acceptable synonym) were used. Blanks were not considered as a separate group of incorrect responses.

Chapter Five offers an analysis of the data from the CM Reading Test.

5 ANALYSIS OF THE DATA

5.1 Preliminaries

For correction purposes, the subjects were divided into three language groups:

group 1 - French (Canadians) (N=17)
group 2 - non Anglophones and non Francophones (N=16)
group 3 - Anglophones (N=14).

Group 2 included native speakers of the following languages: Farsi, Indonesian, Cantonese, Mandarin, Dinka (Cameroon), Arabic, Ojibwa, and Spanish from Honduras, Venezuela, Mexico, and Argentina.

After all tests were administered and corrected, the following data were tabulated and served as the basis for the analyses:

-an identification number for each S (N=47)
-a proficiency test score for each S
-the language group of each S
-the 10 responses to the 10 cloze items of the CM Reading Test.

5.2 Results

Tables I-II are summary tables of the descriptive statistics for groups 1, 2, and 3. Tables III-V are summary tables indicating the number of correct or incorrect responses and the percentages for each cloze item for each language group. Table VI indicates the totals of tables III-V. Table VII indicates the total number and percentages of responses to CMs.

All of these tables are reproduced below and are discussed accordingly.

5.2.1 Tables I–II

SUMMARY TABLE I
DESCRIPTIVE STATISTICS FOR THE PROFICIENCY TEST FOR GROUPS 1 AND 2 N=33

GROUP	MEAN	S.D.	RANGE MIN.	RANGE MAX.
1 French (Canadians) N=17	65.353	17.168	40.000	86.000
2 non Anglophones non Francophones N=16	62.765	15.730	40.000	82.000

SUMMARY TABLE II
DESCRIPTIVE STATISTICS FOR THE CM TEST FOR ALL GROUPS N=47

GROUP	MEAN	S.D.	RANGE MIN.	RANGE MAX.
1 French (Canadians) N=17	20.588	17.037	0.0	50.000
2 non Anglophones non Francophones N=16	24.706	13.633	5.000	50.000
3 Anglophones N=14	30.357	19.361	5.000	80.000

5.2.2 Tables III–VI

SUMMARY TABLE III
NUMBER OF CORRECT OR INCORRECT RESPONSES AND PERCENTAGES FOR EACH CLOZE ITEM FOR GROUP 1 FRENCH (CANADIANS) N=17

cloze item		1	2	3	4	5
0 (incorrect response)	number	11	12	14	15	14
	%	64.7	70.5	82.3	88.2	82.3
AR (approximate response)	number	6	1	2	1	2
	%	35.2	5.8	11.7	5.8	11.7
ER (exact response)	number	0	4	1	1	1
	%	0	23.5	5.8	5.8	5.8

cloze item		6	7	8	9	10
0 (incorrect response)	number	10	11	16	10	10
	%	58.8	64.7	94.1	58.8	58.8
AR (approximate response)	number	6	1	1	2	2
	%	35.2	5.8	5.8	11.7	11.7
ER (exact response)	number	1	5	0	5	5
	%	5.8	29.4	0	29.4	29.4

SUMMARY TABLE IV
NUMBER OF CORRECT OR INCORRECT RESPONSES AND PERCENTAGES FOR EACH CLOZE ITEM FOR GROUP 2 (NON FRANCOPHONES AND NON ANGLOPHONES) N=16

		cloze item	1	2	3	4	5
incorrect response	0	number	15	8	10	14	10
		%	93.7	50	62.5	87.5	62.5
approximate response	AR	number	1	3	5	2	5
		%	6.2	18.7	31.2	12.5	31.2
exact response	ER	number	0	5	1	0	1
		%	0	31.2	6.2	0	6.2

		cloze item	6	7	8	9	10
incorrect response	0	number	12	9	15	6	6
		%	75	56.2	93.7	37.5	37.5
approximate response	AR	number	3	2	1	3	3
		%	18.7	12.5	6.2	18.7	18.7
exact response	ER	number	1	5	0	7	7
		%	6.2	31.2	0	43.7	43.7

SUMMARY TABLE V
NUMBER OF CORRECT OR INCORRECT RESPONSES AND PERCENTAGES FOR EACH CLOZE ITEM FOR GROUP 3 (ANGLOPHONES) N=14

cloze item		1	2	3	4	5
incorrect response 0	number	12	8	8	11	11
	%	85.7	57.1	57.1	78.5	78.5
approximate response AR	number	2	2	4	2	1
	%	14.2	14.2	28.5	14.2	7.1
exact response ER	number	0	4	2	1	2
	%	0	28.5	14.2	7.1	14.2

cloze item		6	7	8	9	10
incorrect response 0	number	2	7	13	4	4
	%	14.2	50	92.8	28.5	28.5
approximate response AR	number	9	4	1	5	5
	%	64.2	28.5	7.1	35.7	35.7
exact response ER	number	3	3	0	5	5
	%	21.4	21.4	0	35.7	35.7

TABLE VI TOTALS (ALL GROUPS COMBINED) (N=47)

	cloze item		1	2	3	4	5
incorrect response	0	number	38	28	32	40	35
		%	80.8	59.5	68	85.1	74.4
approximate response	AR	number	9	6	11	5	8
		%	19.1	12.7	23.4	10.6	17
exact response	ER	number	0	13	4	2	4
		%	0	27.6	8.5	4.2	8.5

	cloze item		6	7	8	9	10
incorrect response	0	number	24	27	44	20	20
		%	51	57.4	93.6	42.5	42.5
approximate response	AR	number	18	7	3	10	10
		%	38.2	14.8	6.3	21.2	21.2
exact response	ER	number	5	13	0	17	17
		%	10.6	27.6	0	36.1	36.1

From tables I-VI, the following can be observed. French (Canadians), group 1, had the greatest number of incorrect responses for 8 of the cloze items viz. 2,3,4,5,7,8,9,10. Group 2, non Francophones and non Anglophones, had the greatest amount of incorrect responses for 2 of the cloze items viz. 1,6. The Anglophones, as had been predicted, had the least amount of incorrect responses. However, as a group, they were not better than group 2 because both groups 2 and 3 had the greatest number of correct responses for 5 of the cloze items viz. 2,3,7,9,10.

5.2.3 Table VII

The following table was constructed from the data to permit observation of the responses to different CMs.

TABLE VII (Total number and percentages of responses to CMs) (N=47)

RESPONSE	1 certainly	2 but	3 and	4 or	5 and	6 now	7 but	8 so	9 for instance	10
incorrect response: 0 number	38	28	32	40	35	24	27	44	20	20
incorrect response: 0 %	82.9	59.5	68	85.1	74.4	51	57.4	93.6	42.5	42.5
approximate response: AR number	9	6	11	5	8	18	7	3	10	10
approximate response: AR %	19.1	12.7	23.4	10.6	17	38.2	14.8	6.3	21.2	21.2
exact response: ER number	0	13	4	2	4	5	13	0	17	17
exact response: ER %	0	27.6	8.5	4.2	8.5	10.6	27.6	0	36.1	36.1

Two facts can be noted from these data. The first is that the frequency of a written CM as given in Kučera and Francis (see Chapter Three section 3.3.2.) is not reflected in Ss' responses to the cloze items in this pilot study. For example, the CM.'and' (cloze items 3 and 5) which is the most frequent according to Kucera and Francis, had only 11 ARs and 4 ERs but up to 35 incorrect responses. 'Now', cloze item 6, which is supposedly less frequent,in written discourse had only 24 incorrect responses but 18 ARs and 5 ERs. The given written frequency of a CM is not indicative of how Ss will correctly predict it on a cloze test. Rothkopf (1972:320) states: **"lexical factors such as frequency of use have small effects on what is learned from text."**

The second fact seen from this table is related to S's ability to use discourse constraints. I compared identical cloze items 2 and 7, and identical cloze items 3 and 5. Most Ss were able to use the two contexts for both sets of identical items since the responses for them are almost the same.

For items 9 and 10, the comma placed after the item seemed a very help-

ful clue for all Ss since these items had the highest total scores of all the cloze items. This would tend to show Ss' abilities not only to use graphic constraints but also to use discourse constraints in that they felt an example was needed at this point in the discourse.

5.2.4 Correlations

A Pearson correlation was performed comparing each S's proficiency test score and his CM Reading Test score. The results were not significant (See Appendix E). Ss with the highest scores on the proficiency test in both groups 1 and 2 did not necessarily have higher scores on the CM Reading Test.

5.3 Conclusions

5.3.1 Conclusions for incorrect response

A reasonable explanation for many of the incorrect responses is that in all three language groups reading was too locally bound. For example, for cloze item 2 '--- archeologists have found...', Ss wrote the following: many, the greats (sic), especially, even, and some. The missing CM was BUT. For cloze item 8 '--- generations of archeologists ...', Ss wrote: many, some, numerous, few, several, various, few, all. The missing CM was SO. For this particular cloze item, one S wrote in Column II under Explanation that the idea of number was apparent. In all, for cloze item 8, 9 Ss from group 1, 8 from group 2, and 11 Anglophones used the above named responses dealing with the idea of number.

Other examples of reading that is probably too local include:

'--- this framework for European history...' for which Ss wrote 'all'. The missing CM was NOW.

'--- for Malta and prehistoric Europe...' for which Ss wrote 'even', 'as', and 'except'. The missing CM was BUT.

Ss made a particular effort to make their responses fit syntactically.

5.3.2 General conclusions

L1 studies in the frequency and development of CMs (See Chapter Three) are not reflected in this pilot study. Stoodt (1972) found that 'and' and 'but' and 'now' were conjunctions of high frequency for native fourth graders and that 'but' was more difficult that 'and' and 'now'. The results of the pilot study for this thesis show that the most frequent CM was 'for instance', followed by 'now', 'but, 'and', etc. Further study is needed to permit investigation of the frequency and development of CMs in L2 reading.

Most Ss seemed unable to perceive the intersentential semantic relationships within a piece of discourse and thus were probably not able to signal them by using the correct CM. In this way, they would have then been forced into word for word reading i.e. more local reading. This confirms Beacco and Darot (1977), Ulijn (1980), and Wilson (1973) who all caution that ESL Ss will read word for word when they do not understand a text. Therefore, Ulijn's (1980) contention is confirmed that when L2 Ss can not use conceptual guidance analysis they are forced into syntactic guidance analysis.

6 CONCLUSIONS

6.1 L2 Reading and semantics

Both L2 and L1 Ss had difficulty in perceiving the semantic inter-sentential relationships of the chosen text. For L2 Ss, we can assume either that they were not familiar with the concepts tested i.e. adversativity, addition, temporality, and causativity, and/or that they were not familiar with how these concepts are signalled in English, their L2. It is to be remembered that these Ss could have explained such concepts under column II, Explanation, in the CM Reading Test. Only 1 S gave an explanation about 'number'. (See preceding chapter.)

For the Anglophones, we can assume either that they were not familiar with the concepts tested, which is unlikely, or else that they used poor reading strategies which caused semantic difficulties. And if they had semantic difficulties in their L1, they would probably have them in their L2 (Hauptman 1981c). It is to be remembered that some natives did attain scores of 55 and 80 on the CM Reading Test whereas others scored 5 and 10.

For those L2 Ss who scored higher than the Anglophones, we can assume that they have few semantic difficulties in their L1 and that this ability has transferred to their L2 (Hauptman 1981c, Ganot 1980).

Nonetheless, the general semantic difficulty of all three groups is undeniable. These Ss need to be taught how to improve their reading strategies. Teachers can do so by having them concentrate more on the semantics of discourse i.e. on content words, on word derivation procedures, on cognates and false cognates (Ulijn 1980), and less on its syntax. They need strong semantic input.

6.2 Reading and proficiency in the L2

Ss of greater proficiency in the L2 do not necessarily read better than those of less proficiency. The CM Reading Test tried to measure how well Ss perceive the intersentential semantic relations in an entire piece of discourse. Some Ss of low proficiency in the L2 perceived these relations better than Ss of greater proficiency. Moreover, some low proficiency perceived them better than some Anglophones. I suggest that these Ss are simply better readers, and better readers have better reading strategies, not a better command of the L2. This would confirm both Ganot (1980) and Hauptman (1981c). As for the Anglophones who scored poorly, they perhaps had poor reading strategies.

6.2.1 Discourse constraints

The results of this pilot study disprove Cziko (1978) who stated that a relatively high level of competence in the L2 is a prerequisite to the ability to use discourse constraints as information in reading since some intermediate proficiency Ss achieved a 50 on the CM Reading Test.

The results also tend to disprove Théberge (1976) who found that high proficiency ESL Ss used global information whereas low proficiency Ss used local cues.

6.3 L2 reading--an interactive view

This study can be interpreted as evidence for an interactive view of reading in the L2 (as well as in the L1). The results show that some Ss, whether intermediate, advanced or Anglophone, were able to use semantic and discourse constraints; others were forced into more local reading when they were unable to do so. They thus were forced into a syntactic analysis of sentences and supplied syntactically appropriate but semantically inappropriate words for a particular cloze item. This not only confirms

Ulijn (1980), but also supports an interactive view of L2 reading because Ss in all groups used:

-graphic information e.g. RIKE DAGE , (For instance,) numbers 9 and 10
-syntactic information e.g. PALK generations (so) number 8
-semantic information e.g. FLUP this framework (now) number 6
-discourse information e.g. identical cloze items 2 and 5 and 3 and 7.

Ss can and will use any or all of the above information to help them to understand best what they are reading. These four kinds of information are, in fact, what Rumelhart describes in his interactive model of reading. (See Chapter 1 section 1.3 again.)

6.4 Areas of further research

6.4.1 Expansion of the pilot study

This pilot study needs to be expanded to include larger numbers of Ss. I need more data to make the study more conclusive.

6.4.2 The text of the CM Reading Test

Prior to my search for the text used in the pilot study, I had read a study on cohesive ties by Irwin (1980). This study showed that texts with many cohesive ties were easier to read than those with few such ties. I tried to find a text of general interest with as many CMs as possible. The chosen text was of very general interest only, and I am still searching for a better one with which to test my Ss.

The chosen text measured 'standard' in difficulty on the Flesch scale. Perhaps this well known readability scale needs to be questioned. Why did the Anglophones score poorly if the text was really standard in difficulty? Or did they not try hard enough to fill in the correct CM? I would like to replicate my pilot study using a text measuring 'fairly easy' on this

same scale in order to determine if Ss will score better. A difficult text will force readers into a syntactically guided analysis.

6.4.3 L1 as a variable in L2 reading

The French (Canadians) made the greatest amount of errors on the CM Reading Test. Group 2 Ss performed better. Further investigation is needed to determine the role of the L1 in cumulative cloze tests in general and in L2 reading in particular.

NOTES

1
As far as I know, the term 'interactive' is not taken from programming approaches; however, a program can certainly be approached in this way.

2
For the importance of expectation see: Deborah Tannen, "What's in a Frame? Surface Evidence for Underlying Expectations", in NEW DIRECTIONS IN DISCOURSE PROCESSING II, ed. by R.O.Freedle (New Jersey: Ablex, 1979).

3
See the following for further details: David E.Rumelhart, "Toward an Interactive Model of Reading", in ATTENTION AND PERFORMANCE VI, PROCEEDINGS OF THE SIXTH INTERNATIONAL SYMPOSIUM ON ATTENTION AND PERFORMANCE, ed. by S.Dornic (New Jersey: Lawrence Erlbaum, 1977).

4
See: Edmund Burke Huey, THE PSYCHOLOGY AND PEDAGOGY OF READING (Cambridge: MIT Press, 1968),p.580. Huey long ago recognized that a letter was more accurately perceived when part of a word than when among a set of unrelated letters. Originally published 1908.

5
For the effects of redundancy see: Frank Smith, UNDERSTANDING READING (New York: Holt, Rinehart, and Winston, 1971).

6
See: Paul Kolers, "Reading and Talking Bilingually", American Journal of Psychology, 79,no.3 (1966), pp. 357-76. In this experiment, twelve Americans and twelve European French took longer to read linguistically mixed text silently than to read alternating or unilingual material. In reading aloud, passages in the native language were read most rapidly and mixed material most slowly.

7
See: Yetta Goodman and Carolyn Burke, READING STRATEGIES: FOCUS ON COMPREHENSION (New York: Holt, Rinehart, and Winston, 1980), pp. 168-9. These reading researchers state: "Punctuation, like all conventions, is not a basic cueing system of language; it is intended only as redundant information. The language user functions without it because he already is making syntactic and semantic decisions for punctuation marks...Punctuation marks always provide cues that are redundant and operate mainly to confirm or disconfirm decisions already made".

8
Cohesive ties as they are given in: M.A.K. Halliday and Ruqaiya Hasan, COHESION IN ENGLISH (London: Longman, 1976). See also Chapter Three of this thesis for the cohesive tie of conjunction.

9
See in particular: Andrew Cohen, Hilary Glasman, Phyllis R. Rosenbaum, Jonathan Fine, and Jonathan Ferrara, "Reading English for Specialized Purposes: Discourse Analysis and the Use of Student Informants", TESOL QUARTERLY, 13,no. 4 (1979). Cohen et al stated that heavy NP's were difficult for beginning ESL Ss.

10
See: Jan M. Ulijn, "Conceptual and Syntactic Strategies in Reading a Foreign Language", ED 188 492 (1980), p. 8. Ulijn sharply criticizes Cowan for his superficial description of the reading process and his rather unsystematic error analysis.

11
See: Mark A. Clarke, "Reading in Spanish and English: Evidence from

Adult ESL Students", Language Learning, 29, no.1 (1979). Clarke found that good L1 readers were also good L2 readers. His findings support Hauptman.

12

See: William C. Flick and Janet I. Anderson, "Rhetorical Difficulty in Scientific English: A Study in Reading Comprehension", TESOL QUARTERLY, 14,no.3 (1980). These researchers found that the difficulties in implicitly stated information represented a general reading problem for natives as well as ESL Ss. The results of the pilot study for this thesis suggest that native speakers, like ESL Ss, have semantic difficulty when reading. See Chapter 6 of this thesis.

13

See: Carlos A. Yorio, "Some Sources of Reading Problems in Foreign Language Learners", Language Learning, 21, no.1 (1971). Yorio also speaks of this automaticity.

14

See in particular: Marilyn Jager Adams and Allan Collins, "A Schema-Theoretic View of Reading", in NEW DIRECTIONS IN DISCOURSE PROCESSING II. A similar hierarchy is presented in this view of reading.

15

This is questionable given William S. Gray's UNESCO findings as quoted in: Edward M.Anthony and Jack C. Richards, READING: INSIGHTS AND APPROACHES (Singapore: Seameo,. 1976), p.16.

16

For similar findings see: Lois Irene Wilson, "Reading in the ESOL Classroom: A Technique for Teaching Syntactic Meaning", TESOL, 7, no.3 (1973), p. 265, and Jean-Clade Beacco and Mireille Darot, ANALYSE DE DISCOURS ET LECTURE DE TEXTES DE SPECIALITE (Paris: BELC, 1977), p.6.

17

For experiments in reading speed see especially: John MacNamara, Marie Feltin, Marcia Hew, and Miriam Klein, "An Analytic Comparison of Reading in Two Languages", The Irish Journal of Education, 2, no. 1 (1968).

18

Yorio, "Some Sources of Reading Problems in Foreign Language Learners", stresses the importance of vocabulary in L2 reading.

19

This model is not presented as a psychological model.

20

See especially: Frank Smith, UNDERSTANDING READING, p. 36, and Kenneth S. Goodman and James T. Fleming, PSYCHOLINGUISTICS AND THE TEACHING OF READING (Delaware: International Reading Association, 1968), p.27.

21

For a similar classification of the semantic function of connectives and the pragmatic function of connectives see: Teun A. van Dijk, TEXT AND CONTEXT, EXPLORATIONS IN THE SEMANTICS AND PRAGMATICS OF DISCOURSE (London: Longman, 1980).

22

See in particular the following classifications of conjuncts.

Randolph Quirk, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik, A GRAMMAR OF CONTEMPORARY ENGLISH (London: Longman, 1972). A conjunct is peripheral in clause structure and is primarily connective in function.

Marcella Frank, MODERN ENGLISH (Englewood Cliffs: Prentice-Hall,

1972). Frank calls the word 'afterwards' a 'conjunctive adverb'. (p.226)

Yetta Goodman and Carolyn Burke, READING STRATEGIES: FOCUS ON COMPREHENSION, p. 101. 'Afterwards' is called a 'relational word'.

Ross W. Winterowd, "The Grammar of Coherence", College English, 31, no. 8 (1970). 'Afterwards' is called a 'transition'. (p.830)

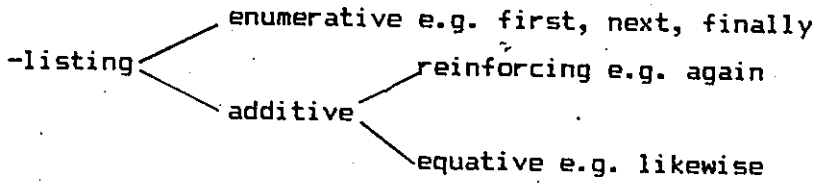
Teun A. van Dijk, TEXT AND CONTEXT, p. 52. 'Afterwards' is called a 'sentential adverb'.

23

This supports reading theorists like Frank Smith and Rumelhart in that for these researchers, comprehension precedes word indentification.

24

Note that Quirk et al (1972:444) list the following relations holding between sentences:



-transitional e.g. incidentally
-summative e.g. thus
-apposition e.g. namely
-result e.g. therefore
-inferential e.g. otherwise
-contrastive e.g. rather
-temporal transition e.g. meanwhile.

See authors for complete list.

Winterowd (1970:830) lists seven types of transitions holding between sentences:

1. co-ordination
2. obversativity
3. causativity
4. conclusivity
5. alternativity
6. inclusivity
7. sequentiality.

van Dijk (1980:53) list the relationships for natural language connectives as follows:

-conjunction
-disjunction/alternation
-contrast
-concession
-condition
-causality/reason
-finality
-circumstantial.

25

For similar findings see in particular: Evelyn Hatch, "Discourse Analysis, What's That", in DISCOURSE ANALYSIS IN L2 RESEARCH, ed. by Diane

Larsen-Freeman (Rowley: Newbury House, 1980), p.11, and Beacco and Darot, ANALYSE DE DISCOURS, p. 17.

26

See: J. Ronayne Cowan, "Lexical and Syntactic Research for the Design of EFL Reading Materials", TESOL QUARTERLY, 8, no. 4 (1979). Cowan confirms this restricted use of tense.

27

See: Anne V. Martin, "First Language Differences in Processing Spatial/Chronological and Hierarchical Information", Studies in Second Language Acquisition, 4, no. 1 (1981). Martin found that L1 may be a significant variable in the proficiency of ESL Ss to produce hierarchical and spatial/chronological texts. Of eight language groups--Arabic, Indonesian, Farsi, Spanish, Korean, Cantonese, Japanese, and Mandarin--the Arab speakers had the most difficulty with both hierarchical and spatial/chronological texts. The results of the pilot study of this thesis showed that the French (Canadians) as a group made the greatest amount of errors in the CM Reading Test. Further investigation is needed.

28

The rhetorical principle of time order or narration may be the easiest for the non native speaker because many cultures have narration. Exposition (logical order), on the other hand, often proves difficult for them because it is culture bound. It is linear and this is not so in many cultures. For further details see: Robert B. Kaplan, "Cultural Thought Patterns in Intercultural Education", Language Learning, 26, no.1-2 (1966).

29

This can be compared to Hepworth's concept of 'rhetorical competence' as given in: George R. Hepworth, "Rhetorical Competence and EST Discourse", ON TESOL 1979, pp. 148-59.

30

Just what makes some natives more or less capable of producing certain discourse forms is not explained.

31

See in particular: Sophie Moirand, SITUATIONS D'ECRIT (Paris: Clé International, 1979). Moirand makes a similar assumption. Her work is centered on this assumption.

32

See: Ilana Ganot, "Reading Strategies in First and Second Language Reading: An Initial Study", unpublished M.A. thesis, Tel-Aviv University, 1980. Ganot found that her ESL Ss used the wrong CMs to signal intersentential relationships.

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APPENDIXES

Appendix A Halliday-Hasan table of CMs

	External/internal	Internal (unless otherwise specified)		
Additive	Additive, simple: Additive *and, and also* Negative *nor, and . . . not* Alternative *or, or else*	Complex, emphatic: Additive *furthermore, in addition, besides* Alternative *alternatively* Complex, de-emphatic: After-thought *incidentally, by the way*	Apposition: Expository *that is, I mean, in other words* Exemplificatory *for instance, thus*	Comparison: Similar *likewise, similarly, in the same way* Dissimilar *on the other hand, by contrast*
Adversative	Adversative 'proper': Simple *yet, though, only* Containing 'and' *but* Emphatic *however, nevertheless, despite this*	Contrastive: Avowal *in fact, actually, as a matter of fact* Contrastive (external): Simple *but, and* Emphatic *however, on the other hand, at the same time*	Correction: Of meaning *instead, rather, on the contrary* Of wording *at least, rather, I mean*	Dismissal: Closed *in any case, in either case, whichever way it is* Open-ended *in any case, anyhow, at any rate, however it is*

	External/internal	Internal (unless otherwise specified)		
Causal	Causal, general: Simple *so, then, hence, therefore* Emphatic *consequently, because of this* Causal, specific: Reason *for this reason, on account of this* Result *as a result, in consequence* Purpose *for this purpose, with this in mind*	Reversed causal: Simple *for, because* Causal, specific: Reason *it follows, on this basis* Result *arising out of this* Purpose *to this end*	Conditional (also external): Simple *then* Emphatic *in that case, in such an event, that being so* Generalized *under the circumstances* Reversed polarity *otherwise, under other circumstances*	Respective: Direct *in this respect, in this regard, with reference to this* Reversed polarity *otherwise, in other respects, aside from this*
Temporal	Temporal, simple (external only): Sequential *then, next, after that* Simultaneous *just then, at the same time* Preceding *previously, before that* Conclusive: Simple *finally, at last* Correlative forms: Sequential *first . . . then* Conclusive *at first . . . in the end*	Complex (external only): Immediate *at once, thereupon* Interrupted *soon, after a time* Repetitive *next time, on another occasion* Specific *next day, an hour later* Durative *meanwhile* Terminal *until then* Punctiliar *at this moment*	Internal temporal: Sequential *then, next, secondly* Conclusive *finally, in conclusion* Correlative forms: Sequential *first . . . next* Conclusive *. . . finally*	'Here and now': Past *up to now, hitherto* Present *at this point, here* Future *from now on, henceforward* Summary: Summarizing *to sum up, in short, briefly* Resumptive *to resume, to return to the point*

Appendix B National Geographic original text

Ancient Europe Is Older Than We Thought

By COLIN RENFREW, Sc.D.

Photographs by ADAM WOOLFITT

ON THE SMALL Mediterranean island of Malta there stand some ruined temples, built of huge stones, that have long been a mystery.

Certainly they were built before the time of the ancient Greeks and Romans. But archeologists have found these enigmatic structures with their great courtyards difficult to date. There is nothing like them anywhere else, and the artifacts found in them, including some rather attractive statues of very fat ladies (left), don't help much.

Like everyone who has seen them, I was greatly impressed by these strange, ruined buildings when I first went to Malta as a student in 1959. And charmed by those stone sculptures with curves worthy of Matisse or Modigliani. One of the figures was larger than life size. I did not then imagine that this might actually be the world's oldest larger-than-life statue. Or that these Maltese structures might be the earliest temples still standing anywhere on earth.

We now know, through radiocarbon dating, that such temples were under construction in Malta before 3000 B.C., before the Pyramids of Egypt. And in just the past few years it has become clear that the great stone tombs dotting Western Europe are even older. Some, built around 4000 B.C., are quite simply the oldest buildings in existence.

We now know, too, that three thousand years before the Greeks, the Romans, or the Celts, European farmers had discovered the principles of copper metallurgy and were using gold to make precious objects.

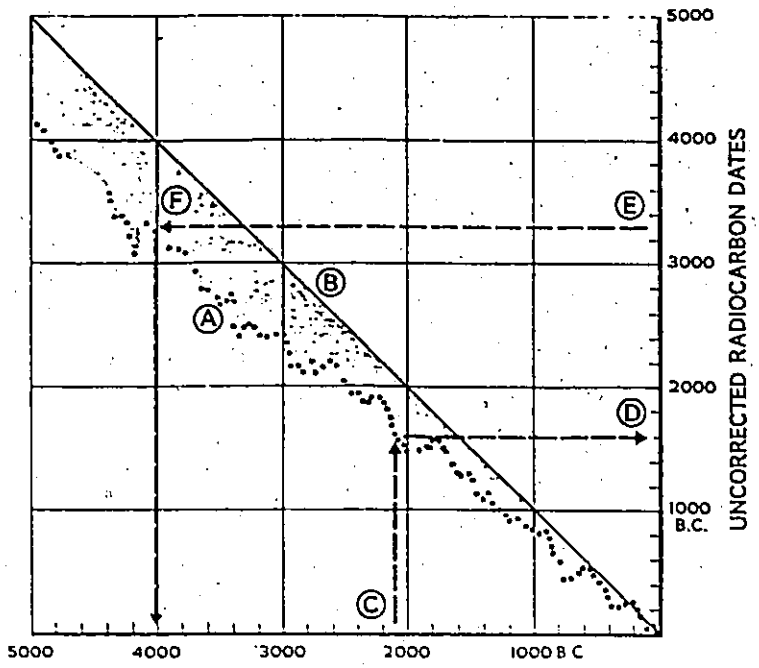
All this contradicts long-accepted theories which held that the earliest stone tombs and temples and the practice of metallurgy began in the great cultures of ancient Egypt and Mesopotamia, the traditional "cradle of civilization." Europe, one still reads in textbooks, was something of a barbarian fringe.

From the Near Eastern homelands of civilization, the theory went, new ideas were carried north and west by colonists and traders until they gradually diffused throughout Europe. This "diffusion theory" has been described as "the irradiation of European barbarism by Oriental civilization."

Now this framework for European history has collapsed, and the study of prehistory is in crisis. Not lightly have some archeologists spoken of a "radiocarbon revolution."

FIGURE, FACING PAGE, 19 IN. TALL, COURTESY NATIONAL MUSEUM OF MALTA; DAVID MUENCH (ABOVE)

Her age revealed, a headless "fat lady" from Malta (facing page) was once linked with Greece's Mycenaean civilization of 1500 B.C. Now, by matching radiocarbon dates with growth rings of the world's oldest living things—bristlecone pines (above)—archeologists date the lady at 3100 B.C.



RADIOCARBON DATES AS CORRECTED BY TREE RINGS

Tree rings alter radiocarbon dating

ALL LIVING CELLS contain radioactive carbon 14 in proportion to the amount in the atmosphere. When cells cease to absorb radiocarbon, the quantity trapped within them begins to dwindle at a known rate through radioactive decay. Thus bone, wood, and other organic material can be dated by measuring the carbon 14 that remains.

When radiocarbon dating was developed in the 1940's, it was assumed that the proportion of carbon 14 in the atmosphere, and hence in all living things, had remained constant. But when scientists measured carbon 14 in bristlecone pine rings of known ages, they found startling discrepancies. Dr. Hans E. Suess of the University of California at San Diego plotted radiocarbon dates for hundreds of years (A) and saw that beyond 1000 B.C. the dates tended to fall increasingly short of the actual ages (line B). A tree ring known to date from 2100 B.C., for example (point C), yielded a radiocarbon date of only 1600 B.C. (point D)—500 years too young. Conclusion: Carbon 14 has, in fact, fluctuated, and radiocarbon dating has to be revised.

Using the chart, other radiocarbon dates can be calibrated, although such corrections are limited by the length of the bristlecone pine ring sequence, presently to 6270 B.C. By plotting an uncorrected date from Brittany (3300 B.C.) at point E, for instance, the extension intercepts the plot of a pine sample dated from 4000 B.C. (point F). Brittany's megalithic sites are 700 years older than we thought.

While original radiocarbon dates had already cast doubts on theories of Europe's chronology (map, right), the new dates make them untenable.

At the time of that first visit to Malta two decades ago, the traditional dating for its puzzling temples—about 1800 B.C.—was still unchallenged. Radiocarbon dating, pioneered in the 1940's by Dr. Willard F. Libby, had not yet been systematically applied there, and before it was developed, there was no valid scientific method of dating such structures. The only reliably dated early cultures were those of Egypt and of Sumer in Mesopotamia, which had written records, including lists of kings and the lengths of their reigns. It was possible to work out their chronologies, based on the records, back to nearly 3000 B.C.

But for Malta and prehistoric Europe, the only feasible way to get a sound date was by comparison. So generations of archeologists studied all the detectable similarities between the undated cultures of Europe and their possible contemporaries in the Near East.

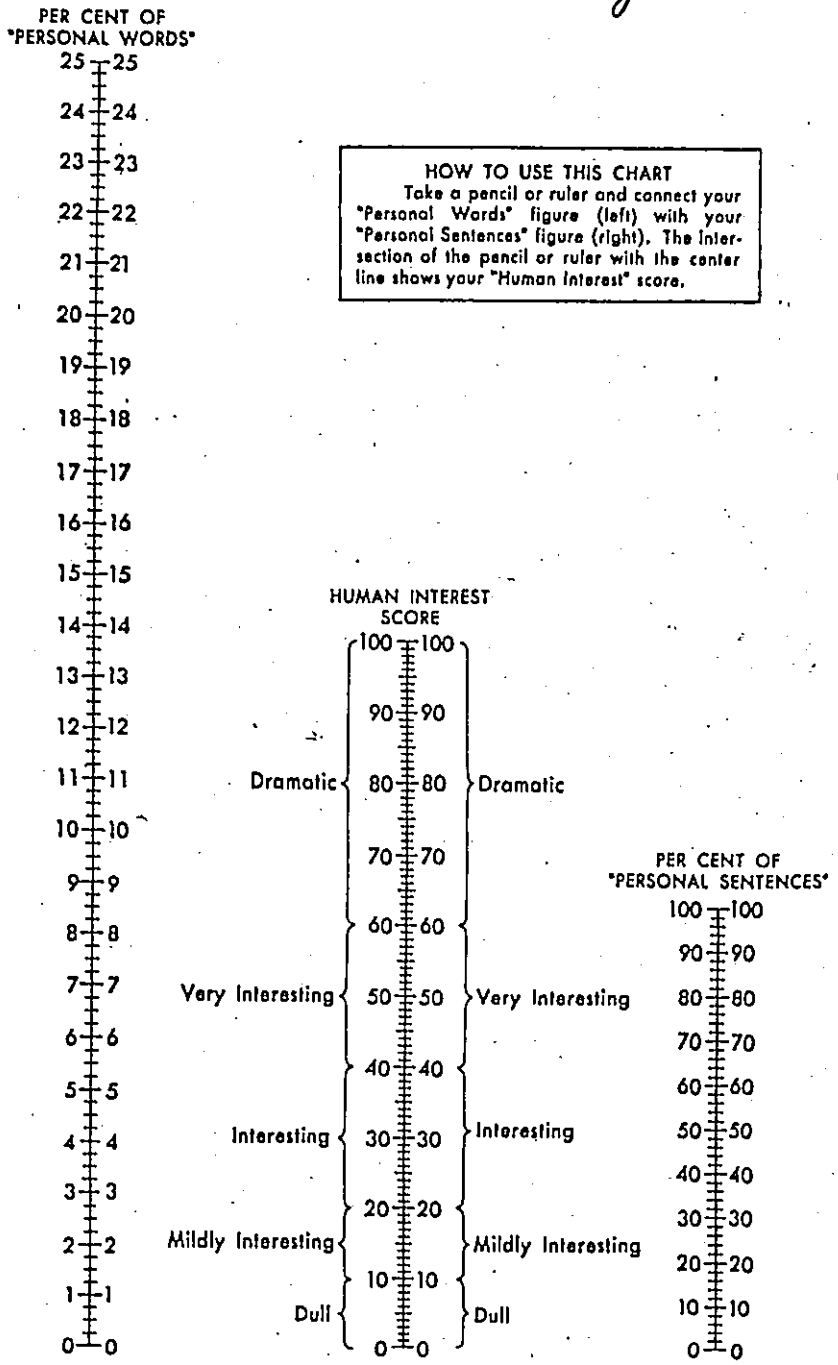
For instance, the largest of the Maltese temples, at Tarxien, contained a number of stone slabs decorated with a design of running spirals. A closely similar design decorates grave slabs at the important Bronze Age site of Mycenae in Greece (page 619). The Mycenae spirals could be dated to around 1600 B.C. by means of several close links with Egypt (which are still accepted today). It seemed reasonable to suggest that the slabs at Tarxien might have been carved around 1500 B.C., and so the temples themselves could hardly date before 2000 B.C.

Similar Tombs From Spain to Scotland

After Malta I went to Spain to see its remarkable stone-built tombs, often called "megalithic" (from the Greek *megas,* large, and *lithos,* stone). Stone Age tombs somewhat resembling these are found along the Atlantic

Appendix C Flesch Readability Scale

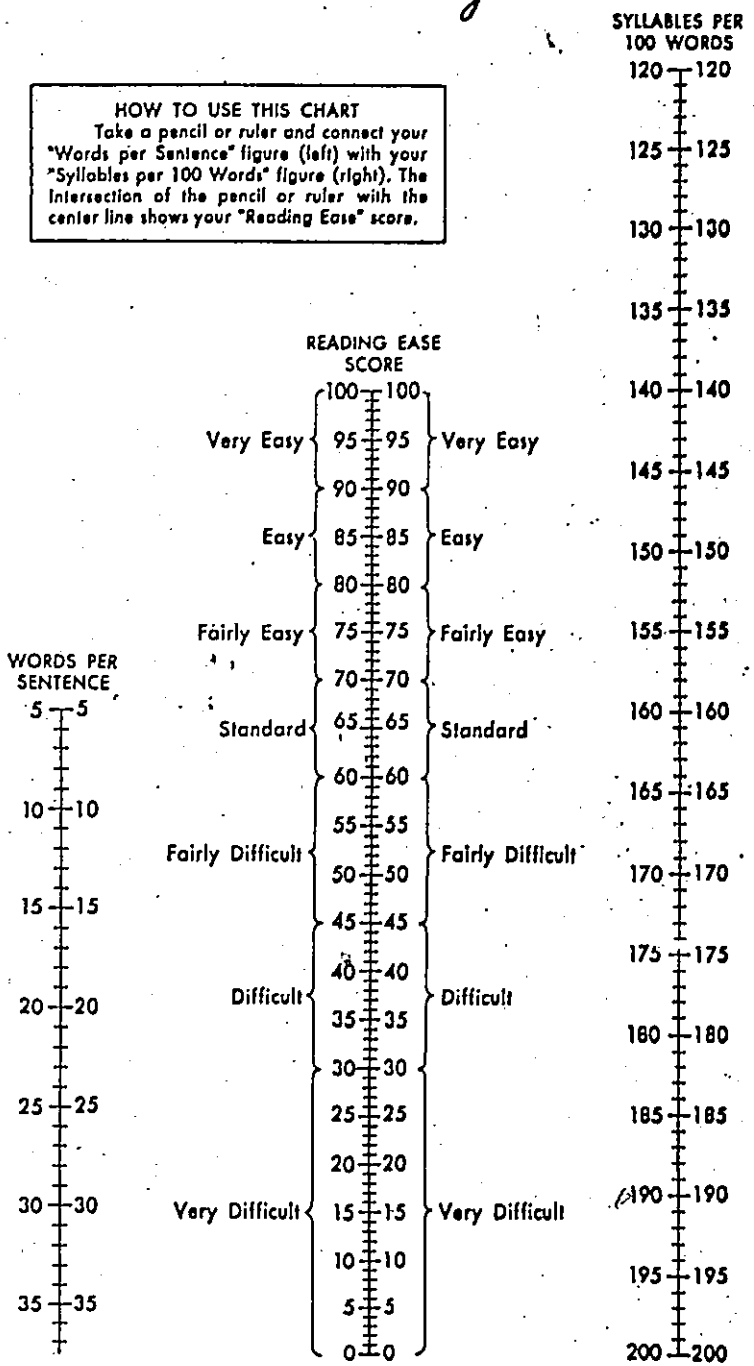
How Interesting?



HOW TO USE THIS CHART

Take a pencil or ruler and connect your "Personal Words" figure (left) with your "Personal Sentences" figure (right). The intersection of the pencil or ruler with the center line shows your "Human Interest" score.

How Easy?



HOW TO USE THIS CHART

Take a pencil or ruler and connect your "Words per Sentence" figure (left) with your "Syllables per 100 Words" figure (right). The intersection of the pencil or ruler with the center line shows your "Reading Ease" score.

Appendix D CM Reading Test designed for the pilot study.

CM READING TEST

1. Instructions to students

You are going to read a text. In this text, there will be some words which you have never seen before. These words are underlined for you. They are nonsense words, that is, they are not real English words and have no meaning of their own. The original words of this text have been replaced by these nonsense words. Do not worry about finding the original words yet. Simply read the text.

ANCIENT EUROPE IS OLDER THAN WE THOUGHT

On the small Mediterranean island of Malta there stand some ruined temples, built of huge stones, that have long been a mystery. (1) MIDE they were built before the time of the ancient Greeks and Romans. (2) WELK archeologists have found these enigmatic structures with their great courtyards difficult to date. There is nothing like them anywhere else, and the artifacts found in them, including some rather attractive statues of very fat ladies don't help much.

Like everyone who has seen them, I was greatly impressed by these strange ruined buildings when I first went to Malta as a student in 1959. (3) STIP charmed by those stone sculptures with curves worthy of Matisse or Modigliani. One of the figures was larger than life size. I did not then imagine that this might actually be the world's oldest larger-than-life statue. (4) YOPE that these Maltese structures might be the earliest temples still standing anywhere on earth.

We now know, through radiocarbon dating, that such temples were under construction in Malta before 3000 B.C., before the Pyramids of Egypt. (5) STIP in just the past few years it has become clear that the great stone tombs dotting Western Europe are even older. Some, built around 4000 B.C., are quite simply the oldest buildings in existence.

We now know, too, that three thousand years before the Greeks, the Romans, or the Celts, European farmers had discovered the principles of copper metallurgy and were using gold to make precious objects.

All this contradicts long-accepted theories which held that the earliest stone tombs and temples and the practice of metallurgy began in the great cultures of ancient Egypt and Mesopotamia, the traditional 'cradle of civilization'. Europe, one still reads in textbooks, was something of a barbarian fringe.

From the Near Eastern homelands of civilization, the theory went, new ideas were carried north and west by colonists and traders until they gradually diffused throughout Europe. This 'diffusion theory' has been described as 'the irradiation of European barbarism by Oriental civilization'.

(6) FLUP this framework for European history has collapsed, and the study of prehistory is in crisis. Not lightly have some archeologists spoken of a 'radiocarbon revolution'.

At the time of that first visit to Malta two decades ago, the traditional dating for its puzzling temples--about 1800 B.C.--was still unchallenged. Radiocarbon dating, pioneered in the 1940's by Dr. Willard F. Libby, had not yet been systematically applied there, and before it was developed, there was no valid scientific method of dating such structures. The only reliably dated early cultures were those of Egypt and of Sumer in Mesopotamia, which had written records,

including lists of kings and the lengths of their reigns. It was possible to work out their chronologies, based on the records, back to nearly 3000 B.C.

(7) WELK for Malta and prehistoric Europe, the only feasible way to get a sound date was by comparison. (8) PALK generations of archeologists studied all the detectable similarities between the undated cultures of Europe and their possible contemporaries in the Near East.

(9) RIKE (10) DAGE, the largest of the Maltese temples, at Tarxien, contained a number of stone slabs decorated with a design of running spirals. A closely similar design decorates grave slabs at the important Bronze Age site of Mycenae in Greece. The Mycenae spirals could be dated to around 1600 B.C. by means of several close links with Egypt (which are still accepted today). It seemed reasonable to suggest that the slabs at Tarxien might have been carved around 1500 B.C., and so the temples themselves could hardly date before 2000 B.C.

by Colin Renfrew

2. Further instructions to students

Now reread the text and try to find the original words which the nonsense words have replaced. There are several words which can successfully replace each original word. Notice that the nonsense words have been numbered.

Look at the answer sheet. Write the word you think is the original word next to its numbered nonsense word on the answer sheet. For example, for number (1) MIDE , you would write the original word that MIDE replaces in column I under word or words.

All of the nonsense words have four letters. There is no connection between the length of the original word and the length of the nonsense word replacing it. If two nonsense words occur in immediate succession as in (9) RIKE (10) DAGE, then they are replacing two original words which are in immediate succession.

There is no connection between the spelling of the nonsense word and the original word that it replaces. Sometimes you will see the same nonsense word used twice in the text. For example, STIP is used twice. This means that the original word was also used twice. You would write the same meaning for both occurrences of STIP on your answer sheet.

Column II on your answer sheet is called explanation. If you are unable to make a reasonable guess at the original word, indicate this in column II by writing a sentence or group of words which can explain the meaning of the original word.

The following is a partial list of some of the words that could be used in place of the nonsense words.

NEXT

AGAIN

BUT

FOR INSTANCE (2 WORDS)

THUS

IN CONTRAST (2 WORDS)

THERE IS NO TIME LIMIT FOR THIS TEST

ANSWER SHEET

COLUMN I WORD OR WORDS	COLUMN II EXPLANATION
1. MIDE	
2. WELK	
3. STIP	
4. YOPE	
5. STIP	
6. FLUP	
7. WELK	
8. PALK	
9. RIKE 10. DAGE	

Appendix E Table for Pearson Correlation

TABLE FOR PEARSON CORRELATION

	S	PROFICIENCY TEST SCORE	LANGUAGE GROUP	CM READING TEST SCORE
	1	48	1	5
	2	46	1	5
	3	44	2	20
original	5	49	2	10
ESL	6	40	1	15
interme-	7	46	2	40
diate	8	49	2	30
group	9	40	1	0
	10	41	1	30
	11	45	2	10
	12	42	2	30
	13	47	1	0
	14	73	1	10
	15	82	1	25
	16	78	1	30
original	17	79	1	0
ESL	18	86	1	40
advanced	19	71	1	0
group	20	76	2	20
	21	71	2	5
	22	75	2	40
	23	70	2	50
	24	74	2	40
	25	77	1	50
	26	82	1	30
	27	72	1	35
	28	69	1	35
	29	80	1	40
	30	72	2	20
	31	74	2	30
	32	80	2	30
	33	78	2	5
	34	82	2	30

r=0.016 group 1
r=0.225 group 2