Esta tesis doctoral contiene un índice que enlaza a cada uno de los capítulos de la misma. Existen asimismo botones de retorno al índice al principio y final de cada uno de los capítulos.

Ir directamente al índice

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Aquesta tesi doctoral conté un índex que enllaça a cadascun dels capítols. Existeixen així mateix botons de retorn a l'índex al principi i final de cadascun deis capítols.

Anar directament a l'índex

Per a una correcta visualització del text és necessària la versió d' Adobe Acrobat Reader 7.0 o posteriors.
LEARNING TO LISTEN:
AN INVESTIGATION
INTO THE REASONS FOR
STUDENTS' DIFFICULTIES
WITH THE COMPREHENSION
OF AURAL ENGLISH

Tesis doctoral que presenta
John K. Eastman
1991
FOREWORD

My interest in the learning processes of listening comprehension was originally aroused in 1983 by a student who described in detail how she dealt with class listening sessions, using inappropriate strategies because of the difficulties she faced. I think that the fact attracted my attention because of my background in psychology, as my first University degree, before doing Filología Inglesa in Spain, was a B.A. in Psychology. My interest in the area has also led to my publishing various articles on the subject in European journals.

Eventually the Doctorate programme gave me the chance to formalize the study along lines suggested by my now thesis director, Dr Enrique Alcaraz. His discussion sessions in Pragmatics and Didactics gave me new perspectives and the impetus to tackle the subject, one he had already treated from a structuralist viewpoint in his book co-authored with Bryn Moody Didáctica del inglés. It has also been useful to read Tres Paradigmas de la Investigación, to which I had early access in the early stages of its compilation.
I should like to thank Dr Alcaraz for his guidance, help, encouragement and support throughout the lengthy process of completing this work, in particular the invaluable suggestions for making it more reader-friendly.
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Chapter 1

OBJECTIVES AND LIMITATIONS

1. Objectives

The general goal of our research is to try to reach a better understanding of the cognitive processes and strategies involved in the learning of the skill of aural comprehension, with particular emphasis on the earliest stages of learning. Specifically, these aims are:

1. To determine the reasons for the difficulties Spanish learners have in learning to listen;

2. To provide a rational basis for the teaching of listening comprehension based on established facts.
1.2 Rationale

This study is an attempt to discover why Spanish students should have such great difficulty with listening comprehension (LC). Our contribution to the slender body of knowledge in this field is an analysis of the extent to which students use translation as a strategy to achieve comprehension, which we carried out by a survey (chapters 9 and 10). The survey revealed that on-line-translation is rife, but the question then arises as to what prompts students to do this. Asking this question directly would have produced misleading answers, for it is unlikely that the respondents would admit the truth even if they knew it. Our conclusions therefore rest on circumstantial evidence, but as this all points in the same direction, we can be fairly confident of their validity.

Recently, Richards wrote

"...there is little direct research on second-language listening comprehension..."

(1985:189)

which is a way of implying that many of the techniques currently in classroom use are based on little more hunch, and that teachers of English blindly and blithely present aural material with little more than the vague hope that somehow the student will come to understand. It also means that
much of the theoretical material we shall appeal to as support for our arguments is based on first, not second, language research. However, if our examination does no more than highlight some valid and some unsuitable teaching procedures, then something of value will have been accomplished.

The foregoing is really an indictment of the present state of affairs in second language (SL) aural comprehension teaching. There simply is no systematic compilation of which techniques and procedures will efficaciously train the student in learning to listen and understand, and which will not.

We can discern a pattern and a trend if we look at the relatively few publications on L2 listening comprehension. They may be broadly classified into three groups: Model Builders, Experiments and Practitioners' Advice. Among the first, we move from linguistic and analogously derived models of the 60s and 70s to papers in the 80s which are more widely based and realistically conceived than the earlier work, using concepts drawn from psychology and psycholinguistics. There is a notable tendency for writers to leap, often prematurely we can say with hindsight, to proposing models based on precariously few observations.
Objectives & Limitations

In our second group, woefully few in number, are the articles which report investigations into limited and controlled aspects of comprehension (both L1 and L2) and which should have taken place before the model makers leapt in. Finally, there are articles expounding classroom teaching techniques found useful by their authors.

The theories seem to have had little effect on the text-book author and hence in the classroom, and only in the 80s do we detect attempts to speculate on and investigate the learner, especially the cognitive processes and strategies he uses in his struggle to understand. One such investigation is our own, the analysis of which occupies two chapters of this work.

The main reasons for the lack of connection between theory and practice, apart from the fact that teachers are too embroiled in the day-to-day hurly-burly of teaching to find the opportunity to concern themselves with theory or research are:

1. Listening comprehension is a cognitive process not easily amenable to investigation, especially where the beginner is concerned, and hence the paucity of published work for writers of textbooks to draw from;
2. Once the listening skill has become relatively effortless, its masters seem to forget the difficulties they once faced;
3. The classroom techniques used in the past, whatever they
Objectives & Limitations

were, seem to have worked well enough, so there is no felt need for change or improvement. This takes no account of the high student wastage occasioned by failure to learn to listen: (See note 1).

Finally, for reasons which this study aims to discover, the difficulties of understanding aural English appear to be greater among Spanish students than among students from other European countries. (See note 2).

1.3 Limitations

Since the focus of this work is the comprehension of meaningful language, we leave aside the work on phonology and phoneme comprehension, truly the concern of auditory perception. Comprehension operates at the syntactic, semantic, discourse and pragmatic levels. Although the last two levels are rarely, if ever, called into play in the early stages of (teaching or) learning the skill, the primary focus of this study, we examine what little work has been done in these areas, since modern EFL teaching typically uses authentic and pseudo-authentic (taped) discourse, and the learner is occasionally able to rely on pragmatic factors, to complete his comprehension of a text.

Neurolinguistic studies have also contributed to our knowledge in this area. The evidence, however, is at pre-
Objectives & Limitations

sent too contradictory to provide a useful basis for discussion, and we shall rarely refer to it.

Another limitation which we have imposed is that of the listener's intelligence, personality and outside interests. Evidence is accumulating that certain personality characteristics, such as field dependence/independence, and introversion/extroversion, affect the learning of this skill. It is reasonable to suppose too, that an informed interest in music, for example, may make the ear more discriminating and assist the learner. Study habits, also related to personality and past education, distinguish the good from the bad student. Few teachers, however, are able to select their students, and, fascinating though these areas may be, our prime aim must be to find methods of training the listening skill without regard to individual capacities.

We shall also confine our considerations to input from audio tapes. first because it is the most widely used and available means of providing input, and second because it involves listening in its purest form, without the support of kinesic cues, which inevitably assist the development of the skill, but not aurally. The visual element provided by video involves a lesser reliance on the ear, and would assist those students more adept at this.
Objectives & Limitations

Furthermore, our hypothetical learner-listener is assumed to be motivated to learn, may have a basic knowledge of grammar and vocabulary but little or no understanding of spoken English.

1.4 The organization of this work

Our principal interest is to examine what the novice learner of English does while he is listening, why he does them and what he should do. In order to reach our conclusions, we have had to resort to different sources of information, some of which require prior clarification. These sources are, broadly:

1. Linguistic and psycholinguistic research into language processing (chapters 2 - 5);
2. Psychological processes involved in listening (chapters 6 - 10);
3. Personal experience of teaching and the culture, (chapter 11).

Chapters 2 and 3 cover the research into speech processing, namely the research demonstrating the how and why of comprehension and the models proposed. The focus here is on word, clause and sentence, and is mainly psycholinguistic. Chapter 4 looks at the contribution of Krashen's Monitor model, the first speech processing model to deal specifically with second language (L2) learning, and one of its derivatives. Chapter 5 looks at the early work into prag-
Objectives & Limitations

matic comprehension, which promises a significant contribution to the teaching of LC.

We then, as it were, start again from the purely psychological viewpoint. Krashen's model attracted a very large following and appears to have drawn all the limelight away from information-processing theory currently being developed by psychologists. In order to be able to discuss these models (chapter 7), we had first to look at current conceptions of memory, attention and stress (chapter 6).

In contrast to these psychological processes, which are deemed to be common and essential to humans in general, there are optional ways of dealing with input, known as strategies. Some people choose to translate while they listen, for example, and we examine the probable reasons for this in chapter 8. This partly anticipates the findings of the survey, the original part of this study, which we analyse in terms of the evolution of the strategy (chapter 9), and of the contribution of teacher (chapter 10).

The third source of this work is formed of our observations of the cultural background and attitudes to teaching and learning in this part of the world (chapter 11), which fleshes out our survey results. A commented recapitulation of the most relevant research findings from the previous chapters (chapter 12) prefaces the exercises.
Objectives & Limitations

they indicate (chapter 13) and which are included as part-
fulfilment of our second objective. Finally we propose a
developmental model of the learning process, (chapter 14),
and briefly state our conclusions.

Notes

1. Student wastage is an accepted fact of the English teaching
scene, and is put down to competing demands on time, since no-one is
usually ready to admit failure. Few foreign languages are easy to
learn, but whereas declarative knowledge like grammar and vocabulary
is quickly learnt and is carefully measured out in such a way as to
avoid overload, procedural knowledge like listening, requires regular
practice and hence classroom time, which is also limited.

   There is also a widespread misunderstanding about language
learning, namely that (because it takes place in a classroom?) it can
be learnt like any other fact-based subject, such as history, and has
nothing in common with practical learning, such as driving a car. We
could add that listening comprehension has been widely taught only
since the mid 70s, and has proved to be a major stumbling block in ex-
aminations and the greatest source of frustration and wastage.

2. We have been told that in France, Germany and other coun-
tries, the Cambridge English Course Book 1 (Swan & Walter, 1983) is
typically covered in one academic year, whereas in Spain this takes
about 18 months (personal communication with the author). It is un-
thinkable that the Spaniard is therefore in some way a slower learner
or more difficult to teach. The fact that Swan’s book has been revised
and shortened (1990) is more related to economics and the removal of
the less useful exercises.

   It may be justifiable to point to the Spanish language as
more limited in phonetic range than English or more radically differ-
ent from English than, for example, French. It certainly is justifi-
able to point to the non-phonemic nature of English and the difficul-
ties this causes in the totally “phonemic” Spaniard.
2.1 Introduction

In the process of understanding a sentence, at some point we have to isolate, identify and look up the meanings of the words which constitute the input. Lexical access was a concern more apparent in theories of the 1970s than more recently, and led to theories based on the word as primary unit. Here we shall examine some of the several models which have been proposed.
First Language Models

Understanding the perception of spoken language involves theorizing about the processing of the sensory input. Studies of sentence perception show that the listener's immediate perceptual decisions about input are a combination of two separate sources of information. There is the acoustic input itself and a set of internally generated constraints on the interpretation of it. This interpretation is usually taken to be syntactic and semantic in nature, and figures in some way in all current models of speech perception, which are assumed to operate at or above word level.

The models may be divided into two theoretical classes: Passive models, involving threshold devices which respond automatically when they receive appropriate inputs, and active search processes, which search through the lexicon comparing stimulus features with stored representations. Cutting across these two classes are three broad types of models: those that propose higher level constraints as driving the system — the so-called 'top-down' systems; those based on the belief that it is the properties of the input itself which determine the higher level representations which account for the data ('bottom-up'). Finally there is a model which suggests that both top-down and bottom-up processes operate simultaneously, interacting to achieve recognition.
Before we examine the models themselves, a perspective of the scene may be gained from looking at some of the more salient research work. As evidence for the acoustic input itself providing the system drive becomes patent in what follows, we shall not present evidence for bottom-up processing.

2.2 Evidence for top-down processing

An example of top-down processing at work is the 'phoneme restoration' effect reported by Warren (1970). He deleted phonemes from polysyllabic words and replaced them with a cough or a buzz, e.g. in the first 's' in 'legislatures' in the sentence

"The State Governors met with their respective legislatures convening in the capital city"

a deletion of 120 milliseconds (msecs). He found that listeners thought that the extraneous sound occurred in another portion of the text, not interfering with the intelligibility of any phoneme. If silence replaces the speech sound, the gap is correctly localized and detected as a silence. He concluded that some higher-level process must be operating to replace the missing phoneme.

Cole (1973) has shown that subjects (Ss) listening to
prose passages rarely detected a mispronounced word. Even
two- and four-feature changes in words were not always
detected. Cole & Rudnicky (1983) showed that restoration of
excised consonants to give words their appropriate form was
determined by the positions of the missing sound in the
word and of the word in the sentence. Context, then, plays
a critical role in speech comprehension.

In a sentence-shadowing experiment (where Ss repeat
the message as it is heard, Marslen-Wilson, 1975), Ss re-
stored grossly mispronounced words to their original form
(for example 'comspiny' to 'company') most frequently where
the restored word was syntactically congruent with preced-
ing sentential context. He proved that close shadowers
could not have heard more than the first syllable of 'com-
spiny' when they started to say 'company'. I.e. top-down
constraints controlled lexical interpretation of the (bot-
tom-up) input. This also provides an example of context-
induced expectancy.

Further evidence for top-down processing comes from
misperception experiments (Garnes & Bond, 1976). They show-
ed that the perception of an acoustically ambiguous word is
determined by the semantic content of the sentence in which
it occurs. Ss reported hearing unexpected semantic combina-
tions, such as "Here's the fishing gear and the gate" when
acoustic information was unambiguous. When the acoustic in-
First Language Models

formation was ambiguous, Ss reported the semantically appropriate word ("bait"). That is, under ideal conditions, listeners report hearing anomalous sentences, but if the phonetic signal is unclear, listeners use semantic information (or other knowledge) to aid decoding. Since most normal speech perception takes place under less than ideal conditions, they argue, semantic information must play a part in decoding everyday speech.

2.3 Evidence for an interactive selection process

Evidence for this is based on the finding that the recognition system is able to select the correct location in lexical memory so quickly that it seems unlikely that acoustic-phonetic input alone is sufficient to specify that location uniquely. Marslen-Wilson & Tyler (1975) used the sentence-shadowing technique which permits the measuring of the time taken to recognise words. They found that Ss began to initiate responses to words in normal sentential contexts only 150-200 msecs after the onset of words, namely after hearing only two or three phonemes (usually an initial consonantal phoneme or phoneme cluster and part of a following vowel. Average word length was 370 msecs). They showed that response latencies were 60 msecs longer for word identification in semantically anomalous sentences, which means that context gives a one-phoneme advantage.
Marslen-Wilson (1975) had subjects shadow sentences that contained one mispronounced syllable in a three-syllable word. When the mispronunciation occurred in the first syllable, Ss never restored (or corrected) the word. With mispronunciations in the second and third syllables, a significant proportion of restorations occurred, but only when the mispronounced word was syntactically and semantically appropriate to the preceding context. This indicates that restorations will not occur if the shadower does not have sufficient acoustic information and syntactic/semantic context to make the restoration appropriate. If context is the exclusive and over-riding factor, we might expect Ss always to replace the syntactically/semantically anomalous word with the appropriate word. This did not occur, however, showing that both context and acoustic information influenced speech processing. It also demonstrates that listeners make perceptual decisions and construct interpretations as soon as they can.

Marslen-Wilson & Welsh (1978) asked observers to shadow exactly what they heard given spoken passages from a popular novel. At random throughout the passage, common three-syllable words were mispronounced by changing a single consonant phoneme to a new consonant phoneme that differed from the original by one or three phonemic distinctive features. Independently of the degree of feature change, the changes could occur in the first or third syll-
lable of the three-syllable word. Finally, the mispronounced words were either highly predictable or unpredictable given the preceding portion of the passage. Subjects were not told that words could be mispronounced although they probably became aware of this early in the experiment. (See figure 2.1)

About half the mispronounced words were restored, the restorations were made on-line, and the shadowing was not disrupted. (When the mispronunciation was repeated exactly, i.e. not restored, shadowing was disrupted and response times increased). As we might expect, one-feature changes were restored far more frequently than three-feature changes (60+% as against 15-40%), and high contextual constraint increased the percent of restorations. Changes in the third syllable were also more likely to be restored than in the first.

Marslen-Wilson & Welsh drew the following conclusions from their findings: —

1. The immediate lexical percept is the product of an on-going interaction between the stimulus input (bottom-up information) and knowledge-driven top-down constraints, and most importantly, that these are not secondary perceptual effects or a reworking of the results, but primary operations. It is the presence of fluent restorations with no
First Language Models

disturbance in the processing that is the clearest evidence for this. Deviant phonemes are restored in a way that suggest that they were never noticed even when they were prominent (three-feature cases). This finding rules out any strictly bottom-up system.

Fig. 2.1: Observed and predicted percentages of restorations as a function of featural information, lexical context, and sentential context. (From Marslen-Wilson & Welsh, 1978. Cited in Massaro and Oden 80: 160.)

2. More specifically, the system must allow both lexical and contextual constraint to affect lexical identification.
decisions. Lexical and contextual constraint are non-additive when contextual constraint is strong.

2.4 The Logogen Model

In Morton's word recognition model, each word in the mental lexicon has a 'logogen' or specification of the defining perceptual and semantic characteristics of the word. The logogen is a counting device taking input from sensory analyzers, contextual mechanisms and prior knowledge. When sufficient information from any one or a combination of these sources accumulates, a word is consciously recognized.

The relative influence of stimulus and contextual information can vary with the circumstances. For example, when the stimulus quality is poor, contextual information will have greater effect than when it is clear. Central to the theory is the proposal that the internal state of any logogen is not accessible to other parts of the logogen system, so that the only aspect affecting perception is an activated logogen. The acoustic-phonetic analysis of input is however available to other parts of the system. Output from the system to a Response Buffer is the step that makes the word available to the rest of the system and to consciousness.
Fig. 2.2: Morton's Logogen Model

Only conceptual (contextual) information is received from the cognitive system, and because the meaning of a sentence fragment affects the cognitive system, this meaning can affect subsequent lexical access. All logogens sharing semantic properties with the sentence fragment will then become partially activated, lowering the amount of
sensory information required for word recognition. The model predicts that context will have facilitatory effects in appropriate conditions. In other words, semantically related logogens are assumed to interact more strongly than semantically unrelated logogens. Thus a logogen is tacitly the outcome of a learning process, familiarization with known words being conceptualized as a process whereby output thresholds for existing logogens are lowered by repeated presentations.

The model is then a passive memory system with no active search process.

2.4.1 Evaluation

The model encounters serious difficulty in explaining performance in tasks in which subjects are asked to detect mispronunciations. According to the author, it can deal with mispronounced words being 'heard' in their original (restored) form — the appropriate logogen must be the first to reach threshold, which is presumably set in such a way as to tolerate some "noise" in the acoustic input. However, where phonetic deviations in the mispronounced word are great, the theory assumes no response because the model treats words as individual units. Yet Cole (1973) showed that Ss are capable of detecting and repeating distortions from real words, and the greater the distortion
the better able they were. The model as it stands is not sensitive to degrees of distortion because logogens consist of whole real words, and only an output word is available to consciousness.

Context will tend to increment the internal count and the greater the context, the greater the prior increment in the logogens, and the smaller the phonetic input required to reach threshold. Thus even grossly mispronounced words under textual constraint should still trigger the correct logogen. Non-accessibility of the internal state of a given logogen allows for mispronunciations to go unnoticed, and together with general availability of the acoustic-phonetic analysis, allows for fluent restorations. However, because all parts of a word increment the logogen equally, it will not discriminate between first- and third-syllable position deviations; it predicts that restorations will be equally frequent in both positions, and since the rest of the system only knows that a logogen has been triggered, it cannot distinguish between first- and third-syllable deviations.

By postulating a weighting system so that the beginning of a word produces a larger increment in the count than the end, first syllable deviations would reduce the increment sufficiently to lower the probability of a logogen reaching threshold even when contextual inputs are strong. The model, however, cannot account for exact repet-
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Marslen-Wilson & Tyler argue that whenever the logogen system fails to produce an output (because of a mispronunciation), the listener should make a response showing that he has detected the mispronunciation. To do this, he must wait until all of the word has been input to the logogen system and his reaction times will be longer the earlier in the word the mispronunciation occurs. However, while Cole (1973) found that reaction times were longer to first-syllable deviations, there was no difference between second- and third-syllable deviations, which implies more than waiting for logogen failure. This argument assumes that the subject can distinguish between logogen-using and non-logogen-using acoustic inputs (words and non-words), yet Morton states that only information in the Response Buffer is available to the system or consciousness.

Morton overcomes this by suggesting that when the logogen system fails to produce an output, the listener lowers all thresholds and re-circulates the original input, repeating this until a logogen is activated. This procedure predicts that the time taken to detect a mispronunciation will increase as phonetic deviation increases. Precisely
the opposite is found to occur. Cole (1970 & 1973) showed that the greater the distortion the better people were at detecting and accurately repeating those distortions; similarly he found that one-feature reaction times are slower than some two- and four-feature reaction times.

Another difficulty which Morton's model cannot overcome is the failure to detect mispronunciations. The model treats words as indivisible units, yet Ss have phonemically restored mispronounced words even before they have heard the whole word. We must conclude that a sequential search model based on words as whole units before contextual information is accessed is inconsistent with this finding.

Various studies have indicated the incompleteness of the logogen model. For example, the interactions of stimulus quality and semantic context and stimulus quality and word frequency predicted by the model were not found experimentally. Furthermore, stimulus quality and semantic context appeared to affect one common stage of information processing, while stimulus quality and word frequency influence different stages. Semantic context can influence the relatively early stages of processing at which stimulus quality is important, and word frequency affects a later stage.

In the logogen model, semantic context acts by sup-
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Applying activation to target logogens from semantically related logogens. This type of context effect is equivalent to lowering the output threshold of the target logogen, which is the mechanism used to account for faster recognition of higher-frequency words. Again, various lexical decision experiments did not confirm this prediction.

2.5 Forster's autonomous search model

Proposed in 1976, this bottom-up-driven, sequential search model suggests that information about words is stored in a master file, access to which is only by a number of access files. A word's perceptual attributes are used to select an initial subset of lexical items. These are then serially examined to match the attributes in memory with the input word's attributes. Relevant here is the phonologically organized access file, which holds a description of the phonetic features of the words in a language. Each description has a pointer giving direct access to the corresponding entry in the master file. Words in the access file are grouped into 'bins', and the system allows access to the most probable bin. As words are arranged according to frequency, the access code for a given word requires a search process. Once it is found, the code allows direct access to the master file entry.
Forster goes on to suggest that syntactic, semantic and other context play no part in lexical access until after a word is found by the search process, and while he also proposes syntactical and semantic access files, he believes that they are too slow for listening and operate only to confirm or disconfirm a choice of word. Sentential context would come into play in a ‘post-access check’ where the lexical entry reached by the search process is matched to the original input and the context requirements.

This model, then, relies on bottom-up (phonetic) analysis first and resorts to top-down (contextual) analysis only at a later stage.
2. 5. 1 Evaluation

The model accounts for the low detection-rate of one-feature deviations if the search process has fairly loose criteria for finding a satisfactory match in the access file. If we assume that the search can be started on the basis of the first one or two syllables, then the correct phonetic features can be found even where large deviations are present, but only if the deviations occur late in the word. It will also account for successful detections and exact repetitions. The search process may fail to find an acceptable match in the access file particularly when the first syllable is deviant, or the post-access check may reject a proposed word, either because it does not fit the context or because the phonetic mismatch between proposed word and original input is successfully detected. First syllable changes may take longer to detect than later deviations simply because they involve contextually inappropriate word proposals and further searches of the access file. Small deviations will be slower than large since again more checking is required.

Marslen-Wilson & Tyler (1975) point out that the model cannot account for the finding that in shadowing experiments Ss were able to recognise words on the basis of only three phonemes, because the model is, like the Logogen model, based on word-as-unit. The system is likely to
select the wrong candidate, unless the search process operates on the master file itself. Logically, a 'bin' accessed on the basis of only two or three phonemes will contain only words with that acoustic sequence. Given that contextual constraints do not operate at this stage in the system, all words in the bin will be equally viable candidates, as the search process has no basis for selecting any one over another. But, as recognition has taken place, some top-down information must have been used, which in turn involves the use of the master file where syntactic and semantic properties of words are stored. This makes the access file redundant. So the model would now become one where primary access was to the master file.

A major weakness in the model as recognition system lies in the discontinuity between the two serially ordered parts. According to the model, once the acoustic-phonetic input triggers the direct access process, the input plays no further part in selection, for the system becomes dependent on top-down criteria. This raises several problems.

1. It is unlikely that contextual criteria will suffice to ensure an unambiguous, correct choice.
2. The system cannot deal with contextually improbable or isolated words.
3. The system is inherently inflexible. Since contextual constraints vary in strength and specificity, a recognition system should be able to adjust itself to them by accepting bottom-up information into the selection process.
The model does not predict facilitation from sentence fragments, yet sentence context has been found to have both facilitatory and inhibitory effects on lexical retrieval. (Fischler & Bloom, 1979, Schubert & Elmas, 1977, and Underwood 1977).

2.6 Interactive models

There are two models of the interactive type: Cole & Jakimik's word-based and Marslen-Wilson's cohort model.

2.6.1 Cole & Jakimik's model

This 1980 model is based on four assumptions which the authors claim are supported with experimental evidence. They are:

1. Words are recognised through the interaction of sound and linguistic knowledge;
2. Speech is processed sequentially word by word. Each word's recognition
   a) locates the onset of the following word,
   b) provides syntactic and semantic constraints that are used to recognize the following word;
3. Words are accessed from the sounds that begin them;
4. A word is recognized when the sequential analysis of its acoustic structure eliminates all candidates but one.
The model addressed two problems in word recognition: variation and segmentation. Variation is in effect ‘sloppy articulation’. The acoustic structure of a word in fluent speech may vary substantially from one utterance to the next and does not have stable sound-patterns. The model deals with this problem by the assumption that word recognition is constrained by context and its acoustic structure. Segmentation is the problem of locating word boundaries in a continuous signal (in fluent speech there are rarely intervals between words), and is dealt with by assumption 2. There are no consistent and reliable cues to indicate when one word ends and the next begins, although intonation contours at major constituent boundaries are reliable cues.

The authors suggest that the listener uses his linguistic and real-world knowledge to recognize words when speech is partially masked by noise, affected by dialect, accent or unusually imprecise articulation, but Cole and Jakimik propose that such knowledge is used even when the signal is perfectly clear. Knowledge of prosody is used to predict the location of stressed syllables. Within-sentence prior context also assists recognition as does previous-sentence implication of a word.

Assumption 2, that speech is processed word by word, is implicit to other models but made explicit here. There
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are two advantages: "by recognizing words in serial order, a listener can use the syntactic and semantic constraints provided by one word to recognize the following word. Second, each word's recognition locates the onset of the following word." (Cole, 1980: 144)

Cole & Jakimik cite shadowing and mispronunciation experiments as support for this assumption. They lead to the concept of cascading context, namely that "any variable that causes a word to be recognized faster will also cause the immediately following word to be recognized faster" (op. cit., p.146), and this is supported with mispronunciation and phoneme monitoring experiments. Furthermore, the authors claim that subsequent context did not assist word recognition and refer to an experiment where Ss recognized mispronounced words with low semantic (prior) context before the semantic information from the (highly semantically related) following word was available.

Assumption 3, that words are accessed by the sounds that begin them, is also supported by Marslen-Wilson & Welsh's (1978) experiment where fluent restorations were more frequent when the mispronunciation occurred in the third syllable than in the first, suggesting that the word had been recognised prior to the mispronunciation. The comparative slowness of first syllable mispronunciation was interpreted as the listener accessing inappropriate words
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and having to rely on subsequent syllables to detect the mispronunciation. Second syllable mispronunciations are more predictable than first as they have more prior context.

Evidence to support assumption 4 (a word is recognized when the sequential analysis eliminates all word-candidates but one) is also strong, and the fewer words sharing the same first syllable, the more rapid the recognition of any word in that cohort. Paradoxically, with sentential context controlled and acoustic differences removed, one-syllable words were found to take longer to recognize than two-syllable words. In her doctoral dissertation, Jakimik used the mispronunciation technique to direct recognition to one of two interpretations of these words. Mean reaction times in msecs for groups of 5 - 11 Ss were:

<table>
<thead>
<tr>
<th>Word</th>
<th>Reaction Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>snowdrift</td>
<td>772</td>
</tr>
<tr>
<td>address</td>
<td>679</td>
</tr>
<tr>
<td>cargo</td>
<td>604</td>
</tr>
<tr>
<td>snow drift</td>
<td>1039</td>
</tr>
<tr>
<td>a dress</td>
<td>1128</td>
</tr>
<tr>
<td>car go</td>
<td>994</td>
</tr>
</tbody>
</table>

The single words have a lower frequency of occurrence than the two-word segmentations do (snow, a, car), and yet are recognised in less time. This anomalous finding is discussed in comment 4 in the following section.
2.6.2 Evaluation

1. Cole & Jakimik claim (op. cit. p.135) that when a listener hears e.g. "Tell the gardener...", all possible words beginning with /tel/ are immediately activated as possible candidates. The next syllable 'the' eliminates all candidates but 'tell', since there are no English words beginning 'tell-the-' and no possible alternative segments.

2. The authors admittedly point out that not all theorists agree with their word-by-word processing and quote Miller (1962) as estimating that speech perception involves a series of discrete decisions, and that these occur about once a second, i.e. not fast enough to recognize speech word by word (the normal speech rate is about 160 w.p.m. or about 2.5 words per second). Miller places the natural decision unit at 2 or 3 words.

   It might be even more accurate to postulate that the decision unit varies according to the words involved. Highly probable units like verb phrases in context ('do you know that') might be dealt with as one unit and less probable units (or less frequently used word-groups) word by word. This is similar in concept to Marslen-Wilson's proposal of 'complete information units'. Cole & Jakimik's own concept of cascading context also supports this contention, and may be relevant here.
3. The authors claim that subsequent context plays no part in word recognition. However, they admit that their Ss were primed to detect mispronunciations, which may nullify this finding. This experiment can only claim to show that mispronounced words can be recognised with relatively small (prior) semantic context. The finding calls into question their conclusion that “recognition of one word is complete before recognition of the following word begins” (op. cit. p. 149).

It may be the case that subsequent context has to be used only rarely, but that if it is required to supply context, it is available. (See section 3.5). Miller's proposal about the 'natural decision unit' taking place every second (or about every three words) blurs the concepts of prior and subsequent context, so that we might consider introducing the construct of current context, or what the brain perceives and works on at the moment. As we show below (comments 4 and 5), it appears that the initial phonemes of the subsequent word are necessary to permit the identification of the current word to be finalized.

4. The paradox referred to earlier, that recognition of two-syllable words is faster than of those words segmented into two one-syllable words, raises a logical problem. The two-syllable words Jakimik used (snowdrift, address, cargo) have far lower frequency of occurrence in English than
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'snow', 'a', 'car', 'dress', 'go', which in turn implies that low-frequency words are quicker processed than high-frequency words. This in turn means that, to be more clearly understood, a speaker will prefer to use low frequency words. Low frequency words would then be high frequency. Cole explains this by saying (op. cit. p.159, with reference this time to a mispronunciation experiment), that listeners use prior contextual constraint and since RTs are faster when a mispronunciation occurs in the second or third syllable, they should recognize "forketting" faster than "for kettling" (the mispronunciation changed a /k/ for a /g/). Cole states: "When mispronunciation occurs at the beginning of a word the listener must wait for subsequent phonetic information".

Using Marslen-Wilson and Welsh's calculations (which Cole quotes, p.157) that 75-100 msecs are used up in the motor responses of responding, and Coles' own estimate that each phoneme is processed in about 70 msecs, we can predict approximate response times for each of the experimental segmentations used. In every case the time taken to detect segmentations is longer. For example in the two sentences

He just hated forgetting the right number
He was noted for getting the right number

speeds of detection for one-word and two-word segmentations
Estimated processing time for both is 660 msecs [560 msecs - 8 phonemes × 70 msecs + 100 msecs for executing the response]; the 120 (or 430) msecs unaccounted for implies that 2 (or 6) phonemes in the following word were required to establish the unique word candidate(s).

5. By basing their model on the word as basic perceptual unit, common enough among psychologists, Cole and Jakimik beg the question of what the perceptual unit is. (See Appendix 2. 1).

In summary, we cannot accept that the comprehension process advances only on a word-by-word basis. There is, for example, the possibility that a high frequency word group could be processed as a unit; Marslen-Wilson (1978) has also proposed ‘complete information units’ as the basis for transhipment to long-term memory. Furthermore, linguistic knowledge, which involves anticipation, plays only a minor role in these arguments. There is also the fact that subsequent context, which they specifically rule out, can be brought to bear on prior context held in short-term memory.
Inevitably too, while temporal sequence may be the major determiner of word recognition, this does not preclude other processes from assisting the process. Thus Assumption 3 should be modified to 'words are usually accessed from the sounds that begin them.' If we include the concept of a retroactive mechanism to recognize past words, Assumption 4 might be reformulated 'A word is consciously recognized when the analysis of sound eliminates all word candidates but one', removing the word 'sequential' from 'sequential analysis'.

2. 7 Marslen-Wilson's cohort model

Marslen-Wilson's model makes the basic assumption that decoding of the acoustic input proceeds simultaneously in two directions: the phonemes are extracted from the signal and assembled into syllables, words and phrases. This potentially laborious and time-consuming process is aided by a parallel 'top-down' process which may be seen as word identification given contextual information and linguistic knowledge. The top-down process is also claimed to operate above the word level, i.e. the listener creates expectations about the words and sentences to come, using all the information in the signal, including rhythm, stress and intonation, as well as syntactic and semantic knowledge.

More formally, the first two or three phonemes of a
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word directly activate a class of word candidates. Acoustic-phonetic input reaches simultaneously an entire array of lexical memory elements (LMEs) which are comparatively active processes. Pattern-matching permits the relevant elements to become active when they pick up a pattern matching their specifications. Each element in this initial cohort of word-candidates continues to monitor input, and are assumed to have the ability to respond actively to mismatches. That is, when input differs enough from the internal specification of an element, this is deleted. As more of each word is heard, more and more elements are removed until one candidate remains.

Pattern-matching processes may be assumed not to require a perfect match between input and acoustic-phonetic specifications. This allows for normal variation in pronunciation as well as non-recognition of mispronounced words and does not mean an automatic rejection of some relevant LMEs.

The selection process is normally complete before the third syllable is heard. Once a single word has been chosen, a less detailed assessment of the rest of it is needed, which makes the system less sensitive to deviations occurring after the point of identification.

To include the effects of context, each LME should be
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equipped with the capacity to find out what the textual requirements are. The authors define each LME as the intersection of a cluster of procedures operating over a range of cognitive dimensions, which are immediately brought into action when triggered by acoustic-phonetic input. Once informed about the contextual requirements, the LME can determine the syntactic and semantic possibilities of the word it represents. Not fitting the specifications will mean rejection of that LME.

Context in this model has two effects. It speeds the recognition of words and creates a positive feedback loop, that is, the appropriateness of its word-choice reinforces the system's confidence in the accuracy of its decision. When contextual constraints are greatest, confidence will also be greatest.

The research findings supporting Marslen-Wilson's model have been discussed in sections 2.2 and 2.3.

2.7.1 Evaluation

The model accounts for detection response latencies as follows:—

Late deviations (at the end of second or third syllable) are fastest because they occur after a word has been
identified and all that is required is a matching process to determine whether a mispronunciation is present. This matching process takes longer for smaller than for larger deviations.

Early small deviations are likely to permit the original word to be included in the pool of word-candidates and so will be correctly identified later. Responses will be slower than for late deviations because the S has to hear more of the input to decide on the word's identity.

Early large deviations mean that as the original word is not included among those initially accessed, S is rapidly left with no word-candidates, because the word candidate lists will be shorter. Responses will be slower than to late deviations for the same reasons as early small deviations. It is assumed that these processes are not normally available to consciousness — we are not aware of the word-candidates, only the final choice.

Interactive models are of particular interest, for they can be extended quite naturally to sentence and discourse processing, and because they provide a useful framework for incorporating knowledge from various levels into a unified theory of language comprehension.
3. 1 Analysis by synthesis

Halle and Stevens (1964) proposed a model of speech recognition starting from the problem in pattern recognition of finding a recognition function that will appropriately pair signal and message. They suggest that patterns are generated internally in an analyser according to a flexible sequence of instructions until a best match with the input signal is obtained. Analysis is achieved by an active internal synthesis of comparison signals — hence the process is called analysis by synthesis.

They realised that segments of an utterance are not in a one-to-one relation with the phonemes, and set out to
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develope a process which would transform the continuously-changing speech signal into a discrete output without depending on segmentation. As a lexicon would be too large, they propose that only the generative rules are stored in permanent memory. They have an analyser match the best internally generated signal with the input signal, based on phoneme sequences. As this would take too long, they insert a preliminary analyser which excludes all but a small subset of items, and a control function which dictates the order of generation of comparison signals. This control is guided by the preliminary analyser and quantified data from previously synthesised material together with statistical information about admissible phoneme sequences.

Figure 3.1. Halle & Stevens' analysis by synthesis recognition model.
Comparison is made at the level of a time-varying acoustic spectrum. There are two stages:

1. The spectral representation is reduced to a set of parameters (the phonetic parameters).
2. Transformation to a sequence of phonemes.

1. is physical and physiological, which eliminates speaker differences.
2. contains aspects dependent on linguistic and social factors, and accounts for rates of speech, linguistic background or dialect and contextual variants of phonemes.

They recognised that a strategy was required to reduce the time needed to match input and comparison spectra. This would depend on the results of the preliminary analysis and on any error computed at the comparator on previous trials. (See Fig 3. 2)
3. 1. 2 Evaluation

This model was intended to serve both recognition and production of nonsense syllables. This has two effects on the model: —

1) The authors are forced to consider input at the phoneme or phoneme-sequence level, since nonsense syllables are randomly generated CVC units (deliberately excluding any which coincide in sound or orthography with real words like KAT or SUN). These were intended to be as unpredictable as
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if they were digits, and to have no semantic or affective overtones. Each nonsense syllable therefore has to be dealt with (not comprehended) in isolation.

2) The model cannot encompass in detail the higher linguistic levels (such as the morphological, syntactic and semantic), which make comprehension easier by increasing predictability and redundancy.

3. 2 Browman’s word-level model

Browman (1980) points out that paradigms of speech perception have assumed that levels such as features, phonemes, syllables, words and phrases have all been stressed as important, and that the focus has principally fallen on the lower levels. Descriptions of higher-level processing have only been broadly described, and explicit descriptions of interactions between higher and lower levels are lacking. She examines in detail the interaction of the higher level of lexical decision with the lower level of acoustic analysis, by relating patterns of segmental mispronunciation to the internal structure of words.

Browman bases her analysis on 222 misperceptions from casual conversation. The misperceptions range from single feature change in a single word (van > fan) to multiple feature changes across several words (popping really slow >
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prodigal son, to substantial deletions and insertions of entire words (go to the car and get the tuna > get my car tuned up). Generally the misperceptions are either semantically or syntactically anomalous.

85% of the misperceptions involve a single word only (Barcelona > carcinoma) which suggests that the word is a particularly important unit in speech perception. 40% of the single words are two-syllable (simple > sinful), 33% are monosyllabic, 25% are trisyllabic and 10% are quadrisyllabic words. About a quarter of the vowels are misperceived and a third of the consonants.

She found that initial unstressed consonants in polysyllabic words had a higher error rate than vowels or syllable-final consonants, regardless of syllable position, but this did not hold good for monosyllabic words, where error rates were about the same for consonant, vowel and consonant in both stressed and unstressed monosyllables. Errors in stressed syllables show little effect of position in word or vowel and consonant within syllable. That is, unstressed syllables produce more consonantal errors, just as unstressed vowels (mostly schwa) are less frequently mistaken, as we would expect. Thus the major difference between stressed and unstressed syllables occurs in polysyllabic words, where consonants in unstressed syllables are misperceived more often than in stressed syllables, and
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Misperceptions in unstressed syllables are affected by position within the word.

There are two sources of error — acoustic misanalysis and lexical decision. Assuming that the initial processing of the acoustic signal involves some sort of feature analysis, it seems probable that a misperception, such as van > fan, is a simple failure of the low-level feature analyzer, but it seems unlikely that the low-level analyzer would fail so grossly as to produce an error such as clean teeth by tonight > my tea butter knife. i.e. gross errors probably result from the choice of the wrong word, i.e. lexical decision. Thus single feature errors will tend to be acoustic errors rather than lexical decision errors. That is, when a wrong word is chosen, the errors should be more severe and have more multiple feature changes. It therefore becomes feasible, by allocating acoustic errors and lexical errors at each position in the word, to determine the effect on word structure for each.

Browman found that lexical errors for unstressed syllables in polysyllabic words are fewest at the beginning and end of a word. This coincides with lexical retrieval data from other experiments. Selective attention rather than strengthened memory traces is the probable explanation for this; that is, the relative importance of word endings must be due to increased attention to the acoustic inform-
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attention than to increased clarity or strength in storage. Selective attention provides that the beginnings and ends of words will be attended to more closely and therefore more accurately perceived and retrieved.

There are more lexical errors (and fewer acoustic errors) in unstressed monosyllables than in stressed, and there are more errors in unstressed monosyllables word-initially than in stressed monosyllables. While Browman finds this anomalous, it seems sensible to regard this as being related to information content; unstressed monosyllables are likely to contribute semantically less and to be less semantically constrained and hence potentially have more candidates for that syntactic position, than a stressed monosyllable. Browman suggests that "unstressed monosyllables may effectively be a portion of a larger unit" (80: 223). That there are fewer acoustic errors in unstressed monosyllables may be explained by differing definitions of stress for poly- and mono-syllables, the former being defined in terms of the rest of the word, the latter in terms of the rest of the phrase, but Browman admits that reporting bias probably confounds her study, since acoustic errors in high information words are more disruptive and more likely to be noticed and reported. Finally, consonants in final position have fewer errors than consonants in initial position, except in unstressed monosyllables, a finding Browman puts down to differences in
The length of the arrows represents the relative strength of the information (longer = stronger). Stress adds length (= strength) to every arrow associated with the affected syllable. The dashed arrow (→) represents less certainty about the acoustic information.

Figure 3.3: Browman's Processing model (details for consonants only).

On the basis that there is more information syllable-finally and word-terminally, i.e. the acoustic signal varies in relation to syllable structure and word structure, Browman proposes a model where output from the acoust-
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Acoustic errors tend to decrease throughout the word. The most likely cause for this is syllable duration, but syllable duration decreases from initial to medial syllable and increases again to final. Browman deduces from this that decreasing error rate reflects the mechanism of the acoustic analyzer, and that this works from left to right, using the word as the perceptual unit. This is left as a hypothesis, since with her data, other hypotheses, such as processing from stressed to unstressed syllables either sequentially or in both directions, are not testable.

3.2.1 Evaluation

It is unfortunate that this ingenious model is based on a limited, biased corpus (biased because of reporting distortions). It is also arguable that there is more information at the ends of syllable and word; rather the constraints imposed by preceding context ensure that there are
fewer likely endings to a given configuration of phonemes and syllables. Expectations built up in the listener allow him to use endings merely to confirm hypotheses (viz Marslen-Wilson's shadowing experiments, in 2. 2 and 2. 3).

While Browman states that her intention is to examine "the interaction of the higher level of lexical decision with the lower level of acoustic analysis" (op. cit. p. 213), she avoids relying on a fixed perceptual unit. In her analysis she focuses on consonants and syllables in monosyllabic words and hints at unstressed monosyllables being part of a larger unit. That is, she leaves open the question of what the perceptual mechanism operates on. The nature of the raw data she uses suggests this, as errors occurred which were phonemic, syllabic, lexical and phrasal.

3. 3 Sentence comprehension models

Two contrasting views of sentence comprehension are patent in the literature, analogous in some important respects to the bottom-up versus interactive views of word recognition. The bottom-up interpretivist view claims that sentences are processed in sequential stages: first a literal representation of a clause or sentence is derived from the speech signal, then this representation is interpreted as a function of the social and discourse context. This is
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similar to word recognition models which propose that words are first accessed via a search process and then interpreted as a function of context (See section 2.6).

In contrast, a constructivist view provides a sentence-processing analogue of a fully interactive model of word recognition, where social and discourse contexts influence recognition and comprehension decisions at the outset. Instead of involving two discrete stages, the first context-free, the second interpretive, input is used interactively and flexibly to arrive at an understanding of meaning. Linguistic processing per se has neither temporal nor informational priority.

These two views of sentence comprehension stress different aspects of sentence memory. The interpretivist view looks for memorial residues of an initial, literal interpretation, while the constructivist interactive view seeks evidence for an elaborated representation, with little if any residues of raw, unprocessed verbatim information. The arguments are that if we remember verbatim information, then sentence processing must involve an initial linguistic representation which is later available for interpretation. However, if we remember only gist and inferential-type constructions, then sentence processing need not involve an initial linguistic representation.
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The central issue for the two opposing views is precisely when, in a comprehension sequence, extralinguistic knowledge is used. However, either view could allow for any form of final memorial representation of fully processed sentences. Whether we remember verbatim or gist depends on factors such as interest, motivation and training as well as the type of information itself. The evidence suggests that people forget much verbatim information and retain gist; verbatim memory is fragile with long delays, robust when the information is important or memorised, has personal significance like sarcasm, or personal criticism, or is witty.

3.3.1 Serial interpretation theory

The most fully elaborated form of a two-stage interpretivist processing model is the clausal processing hypothesis (Fodor, Bever & Garrett 1974, Hurtig, 1978). Extralinguistic processing, such as the application of contextual information, is performed primarily at clause boundaries, when a completed linguistic representation is available for interpretation.

The clausal hypothesis is characterized by two major features. First, clauses are considered to be the primary units of normal speech perception. Input is organized in the working memory clause by clause, the listener accumul-
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ating information until the end of the clause. Second, at the end of each clause, the working memory is cleared of surface grammatical information and the semantic content represented in more abstract form and stored in long-term memory.

In its early form, the hypothesis was formulated in structural terms. The units were defined in grammatical categories. An alternative proposal was that instead of processing structural units, the listener uses complete, coherent grammatical units, such as meaningful subject-verb-object sets, or functional clauses. Thus the optimal perceptual unit might be a clause or a smaller segment, depending on grammatical completeness, surface marking, length and complexity. A hierarchy of functional clauses was proposed, with more complete clauses serving as better segmentation units. So main clauses would be better functional clauses than adverbal subordinate clauses than relative clauses, and so on.

When processing within a clause is complete, it is recoded in a form suitable for storing in long-term memory, and the working memory cleared to make way for the next clause. Some theorists have argued, however, that this may not be an all-or-none process, and that some surface information may be retained of those clauses awaiting further information for a full interpretation, as might be the case.
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for subordinate clauses followed by a main clause. Indeed Flores D'Arcais (1978) showed that more processing took place in a subordinate clause which was heard before its main clause than when it was heard afterwards. He interpreted this to indicate that some syntactic information about the sub-clause must be retained until the main clause is heard.

Marslen-Wilson's experiments produced results which were not completely consistent with the clausal hypothesis. They discovered semantic facilitation effects early in sentences before a clause was ended, suggesting that lexical information is used in predicting the sequence that follows. That is, the listener constructs a syntactic and semantic interpretation of the input word-by-word, and this is used to guide the processing of subsequent words. However, this can be logically combined with the idea that the listener uses all sorts of information to form an interpretation and that the end of a clause is marked by perceptual closure. More specifically, Marslen-Wilson, Tyler & Seidenberg (1978) demonstrated that it is not the boundary of the clause but the boundary of units of information which is a major determinant of the units involved in language comprehension.

Kintsch and Bates took this a step further and showed that the amount of syntactic information that is retained
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also depends on relations between syntactic and semantic form and pragmatic aspects of the message. They found that students could discriminate paraphrases from original sentences in lectures heard 48 hours before, for all types of lecture material (topic statements, details, jokes and asides). They reconciled this finding with Jarvella's (1971) discovery that surface form was no longer retrievable after an intervening sentence, by postulating that pragmatic constraints on the choice of syntactic form is crucial, and that these are usually omitted from psycholinguistic experiments. All information about the surface form of an utterance is not necessarily lost when it is purged from the working memory.

In this context, and of some significance to our early listener's problems in listening comprehension, are the investigations into the effects of semantic and pragmatic constraints on syntactic processing. Various experimenters (Slobin, 1966, Johnson-Laird 1968, Herriot 1969 and Greene 1970) have shown that the relative difficulty of processing complex syntactic forms was significantly reduced by semantic and pragmatic constraints. Herriot, for example showed that passive sentences were more difficult to process than their active forms, but when there were pragmatic constraints, active and passive forms were responded to equally quickly.
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3.3.2 Bever's theory

Based on the fact that main clauses have fewer syntactic restraints than subordinate clauses, Bever (1975) proposed that subordinate clauses cannot be interpreted until the main clause has been interpreted. Thus, if a subordinate clause arrives first, it must be stored until the main clause has been processed. He views the greater syntactic restriction of the sub-ordinate clause as a processing aid. In Bever's theory, this syntactic decoding step is autonomous and precedes semantic decoding.

The perceptual mechanism operates on actual sentences to extract units of meaning and the relations between them. Bever argues that if the speech perception mechanism could operate without any time constraint, then a grammar would be the only computational device needed to comprehend sentences, and he takes as one such mechanism the analysis-by-synthesis model, where the grammar generates candidate sentences to 'match' the input. Once this has been done, the device assigns to the input sequence the particular structure that is generated. As this would involve making false guesses, which takes time, various researchers have proposed that the analysis-by-synthesis model should include a 'preprocessor' which makes gross assessments of the input sequence to guide the grammar in its guessing procedure as efficiently as possible, possibly using certain
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properties, such as length of sentence. Furthermore, research suggests that the preprocessor operates

1. on the clause as primary perceptual unit;
2. within each clause direct mapping rules assign semantic relations between major phrases;
3. once processed, each clause is recoded into a relatively abstract form, leaving immediate storage available for processing the next clause.

In support of the first principle he refers to click-location experiments. The finding that clicks implanted within spoken sentences but erroneously perceived to occur at clause boundaries has been interpreted as supporting the perceptual segmentation of sentences into deep-structure linguistic units, (Fodor & Bever, 1965; Garrett, Bever & Fodor, 1966; Bever, Lackner and Kirk, 1969), but generally not at points of low transitional probability (Bever, Lackner & Stoltz, 1969) nor generally at all surface phrase structure breaks (Bever, Lackner & Kirk, 1969). If speech is switched from one ear to the other, the point of switching is most accurately located if it occurs at a clause boundary. Reaction-time to clicks between clauses is faster than to clicks far from such points (Holmes & Forster, 1970). (But see section 3. 3. 3)

The second principle (that within each perceptual
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unit the surface structure relations are assigned by direct
projection onto the deep structure of the apparent lexical
sequences) is demonstrated by the findings that sentences
with explicit relative clause markers ("who", "when") are
less complex than those without (Hakes & Cairns, 1970).
Explicit marking of complement constructions (e.g. presence
of 'that') is also facilitating (Hakes, 1971).

Both clause segmentation and internal labelling pro-
cesses place heavy emphasis on information inherent in in-
dividual lexical items as well as general properties of
surface structures. Sentence comprehension is the joint
result of segregation of clauses and phrases on the basis
of specific external cues and analysis of grammatical
relations between phrases within each clause. Underlying
structure relations are assigned by direct perceptual map-
ing rules, but not homogeneously throughout a sentence, as
reflected in variations in attention to nonspeech stimuli
during a clause. It appears that during a clause we accum-
ulate information and hypotheses concerning its deep struc-
ture; at the end of the clause, we decide on its internal
structure. Once this is decided on, the surface structure
of a clause is erased from short-term storage. Jarvella &
Herman (1972) showed that immediate recall of the meaning
of a two-clause sentence is virtually perfect, but free
recall of the words is much worse than that of the exact
words of the second clause.
Bever concludes that the listener isolates the major phrases during a clause and projects a possible internal organization for the semantic relations between them. At clause end, a structure is assigned and the external form is deleted from the immediate memory.

3.3.3 Evaluation

The primary evidence for perceptual segmentation of sentences into clauses comes from click-location experiments. Perceived displacements of clicks into clause boundaries have been interpreted as evidence for perceptual segmentation of sentences into deep-structure linguistic units (Bever & Hurtig, 1975). The major problem is that clause boundaries are normally confounded with other variables, such as the serial position of words and intonation patterns. Sentences may be perceptually segmented into clauses without being comprehended and interpreted on a clause-by-clause basis. Certainly, perceptual clause segmentation does not necessarily imply that interpretive work is restricted to, or concentrated in, clause boundaries (Townsend & Bever, 1978).

A more direct implication of the clausal processing hypothesis is that lexical ambiguities are not resolved until clause endings (Olson & Mackay, 1974). If this is true, then both meanings of an ambiguous word are always
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accessed regardless of prior context, with a choice made at the end of a clause. The alternative hypothesis is that prior context can restrict initial lexical access to the contextually appropriate sense of a word. This question has been extensively investigated with a phoneme-monitoring paradigm. People listen to sentences and respond as quickly as possible to predesignated target phonemes. Phoneme detection latencies are taken to reflect the relative processing difficulty of the word immediately before the target phoneme. Lexically ambiguous words appearing just before a target phoneme usually increase detection latencies (Cairns & Kamerman, 1975). Prior context did not eliminate this effect (Foss & Jenkins, 1973), suggesting that ambiguity resolution did indeed await clause boundaries.

More recent evidence, however, suggests that initial lexical access is affected by prior context. Mehler et al (1978) and Newman & Dell (1978) correctly pointed out that many phoneme-monitoring studies had failed to control the length, frequency and phonemic composition of words immediately prior to target phonemes, possibly increasing detection latencies. When these factors were explicitly controlled for, it was found that prior context could facilitate immediate semantic processing of unambiguous words. This, together with the finding (by Swinney & Hakes, 1976) that prior context did affect ambiguous word processing,

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argue against a strong form of the hypothesis. The weak form would allow preliminary hypotheses about clausal meaning to be formulated before the clause had been fully heard.

Marslen-Wilson et al (1978) used a word-detection procedure, placing a target word either before or after a clause boundary. There were no effects of word location irrespective of whether the words were monitored for sound or meaning. As far as word recognition and interpretation are concerned, position within clause seems to be irrelevant. These results are inconsistent with interpretive models that posit literal representations as a necessary first step in a comprehension sequence before contextual information is brought into play.

Perhaps the clearest test cases for a literal-first interpretivist model are those sentences whose "literal" meanings do not coincide with their intended meanings. Indirect requests are one such class of sentences. The statement "Can you pass the salt ?" has at least two interpretations. It can be a question about someone's ability to perform the action, or it can be a request for that action to be performed. An interpretivist comprehension sequence would be (a) derive a literal meaning, (b) check that meaning against context, (c) if it fits plausibly, stop. (d) if not, seek an alternative nonliteral meaning that does fit.
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Clark & Lucy (1975) used such sentences in a sentence verification task and found that people required more time to verify indirect requests than direct ones. However, the sentences were tested in isolation. When the same sentences are embedded in appropriate contexts, appropriate indirect interpretations were understood more quickly than direct but inappropriate ones. These data are inconsistent with a literal-first comprehension sequence.

This approach assumes that the listener relies on surface features such as function words, suffixes, prefixes and grammatical categories of content in identifying constituents and building propositions: that is, he uses his declarative knowledge of the language. The problem is that it is precisely these function words, suffixes and so on, which must be identified immediately, but which are the worst pronounced (Pollack & Pickett, 1963), virtually all suffering vowel reduction. Further, semantic and pragmatic information in this theory is not exploited until late in the comprehension process. In other words, the listener is assumed to rely heavily on bottom-up processes and only later to turn to his knowledge of the world to achieve understanding.

Marslen-Wilson (1980) refuted Bever's theory by providing Ss with subordinate clauses and the subject of an ambiguous main clause followed by one of two verbs which
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biased interpretation in one of two ways:

If you walk too near the runway, landing planes (are)

If you've been trained as a pilot, landing planes (is)

and found that naming latencies are shorter when the verb was compatible (as shown in the first example), but longer when the alternative verb was presented. In the first context, 'landing planes' is more naturally perceived as participial adjective + subject noun (requiring a plural verb). In the second, 'landing planes' is more likely to be processed as gerund + object noun (requiring a singular verb). Marslen-Wilson found that naming latencies were shorter when the verb presented ('is' or 'are') was compatible with the prior context. This is taken to demonstrate that on-line processing operates at structural and semantic levels. He claims that these information levels interact in the decoding process.

The relevance of these studies to L2 listening comprehension can be clarified if we consider that lexical ambiguity is probably a frequent occurrence in the early listener, arising from insufficient vocabulary learning or a less-than-complete certainty about the identity of a word. In the L2 listener, therefore, instant lexical access is of even greater importance than in the native listener, given that not only is he dealing with all the less-than-familiar aspects of the L2, but also translating the input,
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whether as a basic, all-pervading comprehension strategy or as a confirmation of what he believes he has heard.

In this sense, of course, direct parallels with L1 studies cannot be drawn, since prior context cannot be assumed to be fully comprehended. Prior context is usually held to bias the interpretive process before an ambiguity arrives. Where the prior context itself is incomplete (and therefore ambiguous), it is clear that any interpreting process will either be hedged about with qualifications or hopelessly wrong, since the process cannot have direct access to appropriate readings with any degree of confidence. The point remains, however, that ambiguity resolution is an on-going process rather than one which awaits clause boundaries, and must greatly increment the L2 listener's load. As Swinney and Hakes state

"The presence of a lexical ambiguity in a neutral sentence has been reliably shown to momentarily increase processing complexity, and this increased processing load is quickly reduced when a disambiguity context occurs following the ambiguity."

(1976: 682)

3. 3. 4 Parallel interpretation theory

Marslen-Wilson’s theory is based on work using the word as basic unit, and was examined in 2. 7. However, as he involves larger perceptual units by proposing that the
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listener extracts from the word its syntactic and semantic implications, it also belongs here. Shadowing experiments also provide evidence that the word is processed in context, i.e. that all syntactic and semantic information was being exploited at its arrival in consciousness.

The important point to make here in the context of clausal, as opposed to word, processing, is that the L1 listener, as the close shadowers showed, begins interpreting the clause even before it is complete, since both syntactic and semantic constraints affect the speed of word recognition early on in the clause. There are, indeed, good grounds for believing that the L1 listener constructs a syntactic and semantic interpretation of the input word by word and that this information is used to guide the processing of subsequent words. Furthermore, Marslen-Wilson et al (1976) take the view that, rather than using whole clauses as a basis for long-term storage, 'complete information units' - which do not necessarily coincide with clause boundaries - are used.

Flores d'Arcais and Schreuder (in Flores D'Arcais and Jarvella (1983: 18) agree with this, but propose to label them differently. In the light of Marslen-Wilson's work and various studies by Carroll, Tannenhaus and Bever, they conclude that the clausal hypothesis can be restated as follows: —
"1. ... the listener constructs an interpretation of the sentence from the very beginning; the end of the clause marks only a point of definitive perceptual closure.

2. The processing unit is probably not a structural unit defined in linguistic terms. We would like to call this a propositional structure, which may or may not correspond to a clause. It is this propositional structure unit which is probably sent to long-term memory in an abstract form where a consistent and stable semantic interpretation is reached.

3. ... surface information within each propositional unit is not necessarily cleared from working memory without leaving a residue, but undergoes a process of decay which is dependent on the completeness of the clause.

4. Clausal processing will be affected by features such as clause length and syntactic complexity."

3. 3. 5 Evaluation

Conrad (1985) has shown that, at lower levels of proficiency, the L2 listener uses semantic cues far less, the subject relying far more (or entirely) on syntactic cues. This means that any systematic build-up of complete information units is prevented, leaving the listener with unrelated islands of comprehended input. These in turn soon over-reach the working memory's capacity because they are unrelated and lead to a temporary cessation in attentive listening.

An implication of this finding is that syntactic and semantic processing are independent. Indeed, the relation-
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ship between these two and pragmatic constraints have received considerable attention from psycholinguists. Various experiments have shown that the relative processing difficulty arising from complex syntactic forms is significantly reduced by semantic and pragmatic constraints. Herriot (1969) showed that for passive sentences like 'The sister was hated by the brother', subjects took longer to name the actor and acted-upon than in the corresponding active form. When there were pragmatic constraints on which of the two was likely to be the actor and which the acted-upon, there was no difference in response times. Thus 'The bather was rescued by the lifeguard' and 'The lifeguard rescued the bather' yielded equal recognition times.

This has been taken as evidence that pragmatic and semantic constraints can over-ride syntactic analysis, which is only used if there are no other cues to interpret. The question next arises as to whether semantic/pragmatic factors affect syntactic analysis or whether they proceed independently, the syntactic analysis being ignored if a plausible interpretation can be derived without it.

Experiments purporting to demonstrate independent processing, by Forster & Olbrei, resorted to atypical stimulus presentation and inexpert interpretation of statistical results, fortunately creating no great upset in the pervasive findings that the brain continuously uses all the
information it can. Warman's study, in contrast, supports the interactive point of view. Subjects had to respond 'Yes' or 'No' to questions about an informative sentence presented on a screen for four seconds. Increasing syntactic complexity increased response latencies, but by adding semantic and pragmatic cues, latencies were reduced. For example, to the sentence 'In the park, the man saw the boy who waved at him', subjects took longer to answer a subsequent question like 'Did the boy that the man saw wave?' than one like 'Did the boy the man saw wave?'. Warman argued that there are no semantic cues as to who is waving at whom, and the syntactic analysis is more difficult in the second version, where the relative pronoun has been omitted. Where semantic constraints were given, syntactic analysis was unnecessary and such differences in the questions had no effect on processing time. As the time taken to understand a sentence does not depend solely on the amount of syntactic analysis, these results suggest that syntactic processing is interactive.

3.5 Hold mechanism theory

Wanner & Maratsos (1978) proposed that the listener may have to store a sentence in short-term memory awaiting subsequent processing when a word cannot momentarily be assigned a function. In their model of a sentence processor, they proposed a special memory function, the hold mech-
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anism, where incomplete information can be held until it can be incorporated into sentence meaning. Once this is achieved, the meaning, as gist, is transferred to the long-term memory. They used minimally contrasting sentences like

The witch who despised/sorcerers frightened little children.
The witch who sorcerers/despised frightened little children.

In the former sentence ‘who’ is subject, but in the latter it is direct object and cannot be interpreted structurally until ‘despised’ is heard, which they proposed requires extra processing capacity and extra mental effort. Subjects had to remember both the sentence and as many names in a list which interrupted the sentence at the slash. They remembered significantly fewer names in the list presented during the second sentence, which was interpreted as indicating that more effort is required to process it than the first. Since all other features of this sentence (and others) were as far as possible controlled (number of words and their frequency of occurrence in the language) except the wh-movement transformation, we must conclude that this is the perturbing factor.

A hold mechanism also appears to be necessary for the decoding of ambiguous sentences. In a sentence like

Everyone liked the woman the child begged to sing those songs for.
the listener has to decide whether the subject of ‘sing’ is the little girl or the woman. Either the listener remembers the whole sentence and only interprets it after receiving clarifying information (‘for’), or he places a plausible interpretation on it and only reinterprets it if further context indicates his interpretation is mistaken. The authors suggest that in either case the listener must use a hold mechanism.

3. 5. 1 Evaluation

The hold mechanism has been viewed as a compromise between the serial and parallel theories (Dirven & Oakeshott-Taylor, 1984). However, with the weight of evidence in favour of the latter, a more likely view seems to be that the hold mechanism is just one resource available for the interpretation of ambiguous sentences (or sentences not immediately fully understood).

Indeed, studies (by Carroll & Bever 1976, Flores D'Arcais 1978, and Marslen-Wilson et al, 1978) examining the clausal hypothesis concluded that the listener has to 'carry forward' some additional load when a subordinate clause precedes a main clause. Thus a main clause can be processed without reference to the subordinate clause and cleared from working memory, but not vice versa. The 'load' carried forward will depend on the type of clause and how
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'complete' (in information terms) it is, and is used to process the next clause.

3.6 Summary

In these two chapters we have reviewed some of the L1 models of listening comprehension. The focus of investigation which has fallen variously on word recognition and interpretation, the clause and the sentence, has been limited by our ignorance of how the brain is organized and stores knowledge, and possibly an over-cautious view of its enormous capacity and speed of operation. At the same time, however, no more than a passing nod has been made in the direction of the supporting roles of linguistic and world knowledge. No account at all has been taken of such wider issues as the fact that we are simultaneously capable of receiving and interpreting extra-linguistic information such as mood, personality, emotion, attitude and sincerity in the language we hear.

Leaving aside these broader implications, let us return to fundamentals. We know that it takes time to understand a sentence and that we anticipate meaning. We can demonstrate this with

The man who hunts ducks out at weekends.
Now at first this seems to be an ill-formed sentence; on a second reading, however, its meaning becomes clear. What has happened is that we establish a meaning for the first four words even as we are reading the second four. That is, on a basis of incomplete information we set up an expectation of relatively high probability that after the verb ‘hunts’ we will find the direct object, as this verb is far more frequently used transitively than otherwise. When ‘ducks’ arrives in consciousness, the expectation is confirmed but as quickly confounded by the preposition ‘out’. We may have expected another verb — ‘has’, ‘was’ or ‘had’ for example.

This demonstration clearly shows that time and anticipation are integral parts of our comprehension process. The predicting process (top-down processing based on linguistic and world knowledge) appears to be an automatic way of maximising our use of time. It may proceed on a basis of rapidly reducing dependent probabilities, (Cole’s cascading context, section 2.6.1) both syntactic and semantic. That is, with each successive word, the syntactic and semantic possibilities for the following one(s) are progressively restricted. Anticipation is, therefore, a factor which increases irregularly but at an accelerating rate through each clause and sentence. It also shows that we predict on the basis of incomplete information, i.e. before the clause- or sentence-end is reached, as Marslen-Wilson and
Cole & Jakimik proposed. The significance of the click-location experiments lies in a further stage in comprehending, namely that we bundle or 'chunk' meanings (into propositional units) and resist interference to those bundles.

It seems, therefore, that we locate meanings for words as we hear them, accumulating with each subsequent word a running sub-total of meaning as the syntactic/semantic context unfolds. Furthermore, the judgmental basis seems to be an amalgam of all pertinent knowledge — grammatical, semantic, world and other knowledge, although we can only infer this.

What went amiss with the processing of our sample sentence was that prior context, which is usually sufficient for predictions of a high degree of confidence, was in this case inadequate. Subsequent context is rarely relied on to furnish meanings, which is where the hold mechanism is purportedly activated, although it is arguable that disruptions in the basic word order, like wh- movement transformations, also use this mechanism.

Comprehension, then, has to do with word recognition and the attaching of meanings to them. This has at least two aspects. One leads to the logical (and neurological) problems of how we rapidly isolate this specific word and its meaning from all other words and theirs, and then
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string them together to comprehend this particular sentence. This involves discussion of lexical access and storage in the brain.

Thus in Morton's, Forster's and Halle & Stevens' models, the focus of theoretical attention falls on accessing the mental lexicon: in Cole & Jakimik's on context, segmentation and variation as well. Marslen-Wilson widens the illuminated area and places even more emphasis on context and linguistic knowledge than Cole.

Browman attacked the problem from a different standpoint, throwing light on an area which may be a major source of confusion for the L2 learner — misperception. While misperceived words were perceived as other words by native speakers, for the non-native (especially the early learner) they will be gobbledygook. It is of particular interest to us that native speakers experienced more misperceptions arising from unstressed syllables — a feature very foreign to syllable-timed language speakers — than from stressed syllables, as we can hypothesize that unstressed syllables will present the L2 learner with even greater problems than they do to the native.

As the theoretical standpoint recedes to encompass not word and clause, but sentence and discourse, which we discuss in chapter 5, so the concern with lexical access
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seems to diminish in comparison with the new questions that arise. Memory and attention become major protagonists, and we turn to these in chapter 6. First, however, we shall examine the first L2 language processing model, which for reasons unclear, was to delay the arrival of a demystifying process in the shape of information processing.
Chapter 4

THE KRASHEN SCHOOL

4.1 Introduction

Krashen and his co-workers have presented a theory of SLA which has had a major impact on the thinking about and research on the subject, partly because of its respectable academic provenance and partly because of its intuitive appeal. It does not hypothesize about the processes involved in listening comprehension and bases its argument on conscious/subconscious distinctions which make it difficult to test. As Ellis says:
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“theory must be presented in such a way that it is falsifiable ... the researcher must not be able to interpret any conceivable event as verification of the theory.”

(Ellis 85: 250)

It has, however, been a major stimulus in the elaboration by others of models more relevant to our purpose and which will be discussed in chapter 7.

4. 2 The Monitor Model

With reference to the Monitor model, Gardner has pointed out,

“it has direct applications for the acquisition process, and in fact develops from assumptions concerning when language skills are being developed.”

(Gardner 1985: 125).

This means that, together with the fact that it has had a great influence on subsequent models and that it has stimulated more SLA research than any other, it must be discussed here. In its most recent and elaborate form, it incorporates an affective filter which has direct bearing on language input. The model is based on five hypotheses, which we shall briefly expound.
4. 2. 1 The acquisition-learning hypothesis

According to Krashen, acquisition is a subconscious process similar to that which children undergo in acquiring their mother tongue. I.e. it is slowly built up after many exposures to the (unstructured) language. Learning, on the other hand, is a conscious process that results in knowing about a language. Acquisition results in implicit knowledge and is a process which formal teaching does not help. Learning, on the contrary, leads to explicit knowledge, a process that is aided by formal teaching. The hypothesis "claims that adults have two distinct ways" (Krashen & Terrell. 1983: 26. (K&T 83)), "two independent ways" (Krashen 1985: 1. (K 85)) of developing competence in second languages.

4. 2. 2 The natural order hypothesis

This states that we acquire "grammatical structures" (K&T 83), "the rules of language" (K 85) in a predictable order, which is not entirely determined by formal simplicity. However, this is not relevant to our thesis, and will only be glancingly referred to.

4. 2. 3 The Monitor hypothesis

"Our ability to produce utterances in another lan-
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Usage come from our acquired competence, from our subconscious knowledge. Learning, conscious knowledge, serves only as an editor, a Monitor." (K 85: 1) The monitor, learned competence, seems to be used only when three conditions are fulfilled: The performer must (1) have time available to operate it; (2) be consciously concerned about correctness; and (3) know the rule. K&T 83 add another limitation, that the rule must be simple (83: 32).

However, research shows that monitor use is very limited (K&T 83: 30), because the conditions for its use are difficult to meet (K 85: 2). Further, conscious knowledge of the rule does not mean that the Monitor will be used (Dulav, Burt & Krashen. 1982 :62 (DBK 82)). The monitor seems to be applied only to lower-level morphological rules and rarely to syntactic rules (DBK 82: 67). Self-correction can also come from 'feel' or subconscious language knowledge.

4. 2. 4 The input hypothesis

The input hypothesis is central to the theory. It claims that "humans acquire language in only one way, by understanding messages or receiving comprehensible input" (c.i.) (K 85: 2). Progression along the natural order is by understanding structures that are a little bit beyond our current level of competence. Context (including extralinguistic information and knowledge of the world) helps us
to understand 'new' grammar. i.e. if input is understood and if there is enough of it, the necessary grammar is automatically provided. Input is not passively ingested; rather the internal language processor (or Chomsky's LAD) contributes to comprehension. Not all input is 'processed for acquisition' (K85: 3) and the LAD generates possible rules following innate procedures. Further, Krashen proposes, not all c.i. reaches the LAD.

The natural order is used to demonstrate how language is acquired (not learnt). The current level of acquired competence is labelled i, and we progress by exposure to i + 1. or the item next in order, when this is embedded in already-acquired language. The inclusion of an abundance of i + 1 in a sufficient number of i - n structures will ensure that the new item is learnt. However, the teacher may include structures scattered around i. K&T call this 'rough-tuning', or a net which is cast by the speaker (K&T 83 :33). Thus we may infer that the next step in the natural order for a given acquirer may be i + 2. i + 3 — in fact any item proximal to i which is understood. In practice, since mother/teacher can never be sure what the stage the acquirer/learner is at, fine tuning is impossible and rough-tuning the norm, so whatever the i + 1 item is, it is sure to be covered.

Krashen cites a wealth of evidence to support the in-
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put hypothesis. Caretaker speech, for example, simplified and intended for communication and therefore comprehensible, is not meant for deliberate language teaching, by which is meant that any language learning is incidental to the process of communication. Krashen points out that caretaker speech is not finely tuned to the level of the child and proposes as evidence that the correlations between input complexity and the child's competence obtained between rapid and normal acquirers are usually positive but not extremely high.

We can argue that we should not expect high correlations between these two levels. Rather we would find them between rapid and slow acquirers. In other words, the fact that the correlations are low may result from comparing two non-contrasting populations and does not necessarily support Krashen's proposal that caretaker speech is roughly tuned. This is a minor criticism, for the evidence broadly supports his contention. More importantly however, it suggests a partisan viewing of the available evidence, and reminds us to be wary of arguments 'supporting' the theory.

Krashen draws a parallel between caretaker speech (mother to child), 'teacher talk' in SL classes and 'foreigner talk'. where adjustments are made by native speakers with the prime aim of providing the non-native listener
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with a higher proportion of c.i. Krashen also appeals to other phenomena, well-known and pre-dating his model, such as the silent period and age differences. He argues that older acquirers obtain more c.i. and therefore progress more rapidly than younger acquirers in the early stages of learning, because they have more experience and knowledge of the world, they can use first-language syntactic rules, and have a wider SL vocabulary and monitor use. They also have better conversation-management skills.

Formal instruction has been found inconsistent in its contribution to better SL acquisition. Some studies have shown that it is helpful, while others have found that informal environments are equally or more helpful. Krashen's analyses show that language classes help where they are the primary source of c.i., particularly for beginners. More advanced students do not benefit so much from classes, especially where real-world SL input is available.

While Krashen's attempt to explain contradictory research findings in terms of c.i. is helpful, we should not forget that its presence or absence is hypothetical, and that it has not been objectively measured (viz section 5.3.4. below). He is on firmer ground when he compares different teaching methods, where the degree of comprehensibility of input is much more plain to see.
4. 2. 5 The affective filter hypothesis

This hypothesis proposes that, as well as having c.i., the acquirer needs to be ‘open’ to the input, and the filter is a mental block which prevents acquirers from fully utilising the c.i. they receive. When the filter is operating, understanding occurs but the input will not reach the LAD. The filter, then, is variable and depends on level of motivation, degree of self-confidence and state of anxiety; these factors come into play in the language class where the learner’s weaknesses may be revealed. The filter does not operate when the learner is not concerned with the possibility of failure and sees himself as potential member of the target-language-speaking group. The implications for teaching, then, not only involve supplying optimal input but also creating a situation that promotes a low filter.

4. 2. 6 The organizer

One final factor must be added to the above system, and that is the ‘organizer’, like the filter, a subconscious processor, the monitor being conscious. DBK (82: 46) claim that the organizer “gradually builds up the rule system of the new language in specific ways and is used by the learner to generate sentences not learned through memorization.” It is based on cognitive principles (DBK 82: 54) and its functioning “is reflected in three pervasive
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phenomena: (1) the systematic progression of changes in interim rules or transitional constructions that learners use before a structure is finally acquired; (2) the errors that systematically occur in learner speech and (3) the common order in which mature structures are learned." (DBK 82: 54).

According to the authors, the organizer 'apparently guides the acquisition process, limiting what can be learned to new material that fits into the growing organization of the new language system and rejecting material which does not yet fit ..." (DBK: 56). They admit, however, that the operational principles of the organizer cannot yet be specified. There has been a tendency to equate principles which may describe a developed language system with those which the mind relies on to acquire the system, but there is no reason for this to be case. It seems that it is necessary to distinguish between linguistic and learning complexity which do not manifest the same order.

4. 2. 7 Other influencing factors

K&T hypothesize that aptitude relates to learning, while attitudes relate to acquisition. This helps to explain how attitude and aptitude both relate to SL attainment but not to each other; they relate to different means of developing SL ability: 'Having a high aptitude makes you
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a good learner but not necessarily a good acquirer.’ (K&T 83: 40).

K&T seem to see language interference not as something to be resisted, but to be overcome by acquisition, since errors that show first language influence simply are evidence that the student is taking recourse in his mother tongue for lack of a rule in the SL.

4. 2. 8 Synthesis

The five hypotheses are summarized by the claim that people acquire second languages only if they obtain c.i. and their affective filters are low enough to let in the input (to the LAD). All other factors relating to SL acquisition operate only when they contribute to c.i. and/or a low affective filter is operating.

4. 3 Evaluation

Krashen’s model draws together most of the major elements involved in language acquisition and provides a practical pedagogical framework and philosophy. Its concentration on language acquirers (people who live in a community where the target language is in daily use) makes it less than fully relevant to our purposes, where the target language is foreign. Nonetheless, it is important to assure
ourselves of the validity and utility (or otherwise) of those constructs which may be incorporated into a model of listening comprehension. However, the use of cognitive code (subconscious) constructs when these can be avoided, and its apparent completeness, have attracted criticism of the model, which will form part of our evaluation.

It is as well to bear in mind, too, that some of the qualifications which hedge about some of the hypotheses considerably reduce their applicability and usefulness. For example, the monitor is only observable when three (or four) conditions are fulfilled, making it really an insignificant part of the model; the natural order can be discerned only when the performer focuses on communication, and evidence for it is limited in any case to difficulties observable only among below-intermediate performers.

4. 3. 1 Evaluation of the acquisition/learning hypothesis

Krashen adamantly denies that learnt language structures can become acquired. The two routes are rigidly separated by his definitions, which may not have psycho-linguistic reality. The idea that consciously learnt linguistic rules can come to operate as if they had been inductively acquired has an intuitive appeal for many; i.e. that the deliberate, repeated conscious application of a given structure can evolve into one that is unconsciously, ef-
fortressly and automatically used — to all intents and purposes as if it had been acquired. Logically the outcome of this rigid distinction is that no SL learner can ever become a ‘perfect’ bilingual. Krashen defends himself on this count by saying:

"... we have no physiological measure that shows an acquisition/learning difference (nor, we may add, a psychological one). While such concrete correlates may be useful, their absence does not weaken the ... hypotheses ... . The ... distinction is an abstract that predicts many observable and concrete phenomena. In this way SLA research is identical to research in cognitive psychology, in which researchers posit an abstract hypothesis and see if it predicts measurable phenomena."

(1979: 152)

In this quotation, Krashen admits that this distinction cannot be empirically tested, a serious methodological failing. It is indeed defined in terms of conscious and subconscious processes.

Gregg (1984) has also attacked Krashen's first hypothesis: If adults can access the same LAD as children use, then the adult's superior cognitive abilities, memory and pragmatic knowledge are 'next to useless': why are so few adults successful in learning a second language? Krashen equates Chomsky's LAD with unconscious acquisition of any sort, Gregg goes on to say, but Chomsky argued that the mind is modular and the LAD is one of various mental organs that interact with each other and with the input data to
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produce linguistic competence. Conceptual knowledge, real-world knowledge, commonsense and pragmatic competence are all necessary for understanding and using language, but they are not part of the LAD. Chomsky intended the LAD as a construct to describe the child's initial state before getting primary linguistic data; his LAD is constrained by innate linguistic universals to project grammars to account for the primary linguistic data.

Some adults achieve native-speaker competence in a SL and such competence is largely unconscious, says Gregg, but Krashen claims that learning cannot become acquisition. Gregg relates that he learnt the rules for forming past and gerundive forms in Japanese by memorizing the conjugation chart, and was error-free in two days with little drilling; he claims that this is a case of learning becoming acquisition, in little time and without the mass of input data Krashen claims is necessary.

McLaughlin (1978) confesses difficulty with the acquisition/learning distinction too, and points out that there is no supporting evidence. He proposes in its stead 'one that is empirically based and ties into a general theory of human information processing. This is the distinction between 'controlled' and 'automatic' processing. (Schneider & Shiffrin, 1977) which allows for controlled processing to become automatic. He suggests that all
Krashen has done is to discuss SL phenomena in terms of the acquisition/learning distinction, and adds “There may ... be other ways ... that are equally valid and more parsimonious.” (op. cit: 325).

Krashen, in his defence against McLaughlin’s (1978) attack, fails to demonstrate that learning does not become acquisition. He provides studies which he says show

“... that previous learning is not necessary for acquisition. ... learning that never seems to become acquisition.”

(1979: 157)

but here he refers to ‘careless’ errors on late-acquired rules in otherwise ‘fine’ ESL speakers, and later “learning does not necessarily become acquisition” (op. cit: 157) which is a radical concession, as he is here admitting the possibility that this might happen. Stevick, an ardent Krashen supporter, argues that “seepage” (from what has been learned into the acquired store) does take place (1980: 274).

In his reply to McLaughlin’s 1978 article, Krashen states his view of scientific method:

“We look for generalizations, abstractions, that predict real world phenomena. We can arrive at these generalizations any way we like, but our generalizations need to be able to predict. ... The way we test our generalizations, is to see whether they predict new data.” (op. cit: 158-9)
McLaughlin's point still holds: while we can agree with Krashen's view of scientific method, what the former seems to be saying is that a measurable, behavioural construct would be more acceptable than a cognitive one. As happens elsewhere in Krashen, there is a strong element of "heads I win, tails you lose": that is, we must accept or reject his system entirely, and if we reject it entirely we are left with no system of beliefs, which is worse than accepting his.

Recognizing the controversial nature of this hypothesis, Krashen examined three alternatives to his stated view that learned competence cannot 'become' acquired competence (K85: 38). The strong interface position holds that conscious learning and practice or drill are the only way to develop automatic-type skills in a second language, i.e. learning precedes acquisition. Krashen proposes that the existence of performers who have learned the rules but not acquired them supports his non-interface position, that learning does not necessarily lead to acquisition. Against this, it is pointed out that for automatization of skills to take place, extended practice concentrating on form must be carried out, and many learners are not prepared to spend the time and energy to achieve this.

To support his contention that there are performers who have acquired rules without learning them, Krashen ap-
peals to the work of Hulstijn & Hulstijn (1984). Although it is an interpretation of ambiguous data according to his theoretical lights, it is worthwhile re-examining the evidence (K85: 40). The Hulstijns “independently manipulated the focus on form and time conditions in a study of adult SL performers. “(op. cit. p.22). They asked their subjects to focus attention on grammatical form during a story-re-telling task. In all fairness to him, Krashen does say that it may take more than simple instruction to invoke the conscious Monitor (op. cit. p.23), for the results (in table 4.1) are far from clear to us.

<table>
<thead>
<tr>
<th>RULE</th>
<th>RULE KNOWLEDGE</th>
<th>No</th>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INVERSION</td>
<td>incorrect rule</td>
<td>11</td>
<td>74.5</td>
</tr>
<tr>
<td></td>
<td>no rule</td>
<td>9</td>
<td>67.9</td>
</tr>
<tr>
<td></td>
<td>correct rule</td>
<td>12</td>
<td>87.2</td>
</tr>
<tr>
<td>VERB-FINAL</td>
<td>incorrect rule</td>
<td>15</td>
<td>43.9</td>
</tr>
<tr>
<td></td>
<td>no rule</td>
<td>9</td>
<td>38.9</td>
</tr>
<tr>
<td></td>
<td>correct rule</td>
<td>8</td>
<td>62.4</td>
</tr>
</tbody>
</table>

Table 4.1: Mean correct use of the inversion and verb-final rules in adult acquirers as a SL. (Cited in K85: 40)

In the inversion data, those harbouring an incorrect notion of the rule provide the performance baseline, and the other groups show the increment of performance due to acquiring or learning the rule correctly. They are almost identical. That is, those with an explicit knowledge of the rule and having a Monitor available performed as well as the acquirers who did not need or have a Monitor. In the
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verb-final group, acquirers do marginally worse than those with an incorrect notion of the rule.

Krashen maintains (K85:40) that the data show that those with conscious rule knowledge showed more accurate performance, which is patently untrue. The difficulty of pinning Krashen down as to the reasons for this finding appears in the next sentence: ‘This may have been due to Monitor use or more c.i. in their past histories.’ But c.i. is acquired language, so performers with explicit knowledge of a given rule may either use the Monitor or have acquired the rule as well. Some of the ‘correct rule’ groups have acquired the rule; all of those in the ‘no rule’ group are purported to have acquired the rule, so comparison is made between two groups sharing in part at least the very characteristics under examination.

It would be reasonable to find in this data that

1. those with incorrect rule knowledge would perform very poorly if they were concentrating on form and applying the incorrect rule, and certainly much more poorly than the other groups;
2. those with correct rule knowledge would perform better than the other groups;
3. there would be some consistency in performance between the two rules studied.

but none of this emerges. The data shows only one point of
consistency — the superior performance of learners over those with an incorrect rule. In other words, while the Hulstijns claim to have identified three different groups of students (based on what they said about their knowledge of the rules), their results do not bear out the classification. We must then question whether the interview is an adequate means of identifying acquirers and whether those who claimed to operate without rules were accurately identified.

Krashen next examines the weak interface position — that ‘learning can become acquisition but that is not the only way’ (K85: 41). He argues that it would mean there are two paths to acquisition, via c.i. and conscious rules, and therefore that there are two LADS or that the LAD works in two different ways. He does not consider the possibility that learnt material could become c.i. and then acquired. To deny that it does, implies that learned input is meaningless. Yet we have seen that learners use whatever means at their disposal to make input meaningful. Accepting this would make the position similar to the weaker interface position, which is not inconsistent with his theory: ‘that the performer’s own output can serve as c.i. to his own LAD’ (K85: 42). Thus correct use of consciously learned rules equals comprehensible input containing an unacquired structure. Krashen suggests that this is limited since the performer’s own output will only count as input for ac-
quisition if the structures are $1 + 1$, which presupposes the correctness of the Input Hypothesis.

Finally, as Ellis (85: 265) observes, Krashen does not explain the cognitive processes responsible for acquisition or learning, nor specify how the processes differ. He does not say what the learner does with the input.

4. 3. 2 Evaluation of the natural order hypothesis

The natural order seems to be, in children's first L at least, a consequence of the fact that the language they hear is limited to the here-and-now. If children mostly hear statements about what is happening around them ("Daddy's coming") or about states ("Mummy's hungry"), it is hardly surprising that progressive '-ing' and copula 'to be' emerge in the early acquired block of morphemes. Similarly in EFL, most courses begin with the here-and-now (and progress to the abstract, go from the simple to the complex) since such statements have real-world reference and are easily demonstrated. That children should learn the irregular past before the regular probably derives from the fact that irregular verbs are irregular because they are the most frequently used.

Furthermore, the natural order hypothesis is in any case based on a dozen or so morpheme studies and a few
grammatical phenomena, which sceptics may not regard as a sufficient argument to extend to the whole structure of language. This hypothesis may simply be trivial.

4.3.3 Evaluation of the monitor hypothesis

The limitations surrounding the use of the Monitor make it a relatively rare phenomenon. Its existence may also be seen as depending on a circular argument: when errors occur, the Monitor was not operating (or the rule not acquired), whereas correctly produced utterances show that it was.

More important is the claim that conscious learning has only the role of monitoring, or that only acquired language can initiate utterances. We can point to a myriad of utterances initiated in the FL (acquired language) and transliterated ‘*I have cold’, ‘*It likes me’ as springing readily to mind. Proving that SL utterances arise only from the acquired system is well-nigh impossible. Proponents of the theory rely on the appearance of the natural order (which we have suggested is an artefact of what the acquirer (FL or SL) is exposed to and in any case is trivial) in Monitor-free situations, i.e. when students are concentrating on communication and not form. The ‘unnatural orders’ (K&T 83: 31) found in adult grammar tests would then reflect what had been properly learnt.
Ellis (85: 265) also points out that the monitor as proposed does not account for the reception of utterances, that it is limited to syntax, but can be applied to pronunciation, lexis and discourse.

4. 3. 4 Evaluation of the input hypothesis

Comprehensible input (c.i.) is a crucial concept in Krashen's explanations of research findings, particularly where these are contradictory. For instance, the generalization that formal instruction is beneficial only where it provides the main source of c.i. and when exposure "really entails c.i." (K85: 14) neatly explains away the contradictions. The problem is that c.i. cannot be measured except by self-report, and was probably not under scrutiny in the studies Krashen reanalyzed. Krashen may be right, but he cannot demonstrate this, and we cannot be satisfied with second-hand assessments carried out with a biased view.

Gregg (1984) points out that a performer's output is available for input; the monitor can increase the incidence of correct utterances of a given structure, so output (i.e. speaking practice) seems to help acquisition and the monitor can be used for acquisition, an idea rejected by Krashen. Gregg accuses Krashen of paying lip-service to the idea of a LAD but offers a 'parody of a Piagetian development theory'. Furthermore, Krashen does not explain how we
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go from understanding to acquisition. He says acquisition is caused by understanding input, but there is no evidence for this.

Gregg (op. cit.) also points out that Krashen's use of the expression i + 1 fluctuates between a reference to competence at that level and the next structure to be acquired. This is exemplified in the following:

"a necessary (but not sufficient) condition to move from stage i to stage i + 1 is that the acquirer understand input that contains i + 1, where 'understand' means that the acquirer is focussed on the meaning and not the form of the message. (K82: 21)

Faerch & Kasper (1986) argue that the input hypothesis lacks psycholinguistic plausibility, by leaving crucial processes unspecified. They raise three points:

1. How can input be comprehended if the learner still has not the linguistic means to understand it? Referring to use of context, world knowledge and extralinguistic information is too general and needs specification. The studies that have been made have not looked at comprehension processes and purport only to identify the qualities that make input comprehensible. They suggest that findings in the correlation studies are suspect, in that grammatical morphemes were counted with no consideration for their function and context, and were often based on possibly distinct inputs. The findings in modification studies (where input
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is modified, for example by negotiation of meaning) are
also open to question: negotiation procedures may not be
about meaning and obtaining c.i., but rather ensure a 'for-
mal' not a 'substantive' understanding. Furthermore it has
not been demonstrated that c.i. is used as learning intake.

2. Faerch & Kasper find it difficult to substantiate
the concept of 1 + 1. Krashen refers to the natural acquisi-
tion order, which we have suggested (4. 3. 2) is an in-
sufficiently based phenomenon.

3. They also question whether comprehensibility and 1 + 1
necessarily lead to learning. Krashen says that c.i.
containing 1 + 1 is a necessary and sufficient condition
(K82: 21) for learning. Sufficiency for Krashen meant a
focus on meaning, a wanting to communicate successfully and
that the 1 + 1 forms would need to occur with sufficient
frequency.

C.i. is 'understanding messages' (K85: 2) but is
Krashen saying any more than input must be meaningful? In
this context, 'comprehensible' seems to mean 'relatable to
other acquired/learnt material'; but if this material must
be comprehensible to be acquired/learnt, we have circular-
ity and no explanation.

White (1987) admits that there is something essent-
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ially correct about the input hypothesis (p.96), but con-
siders it defective as stated. She asserts that Krashen, by
emphasizing context and meaning, does not consider the ex-
tent to which change in the learner's grammar can occur as
a result of his current lexical and syntactic knowledge
alone, nor do we know how the new input interacts with his
existing grammar. She also makes the same point as Faerch &
Kasper's point 1 above, but resolves it pointing out that
people use extra-linguistic information to establish the
meaning of utterances.

She assumes (op.cit.97) that a learner's current
grammar acts as a linguistic filter on input by rejecting
input which cannot be interpreted in the light of his cur-
rent knowledge, or by modifying it. She uses an example
which shows that an unknown structure may appeal as mean-
ingless or contrary to fact, forcing the learner to reinter-
pret the input using real world knowledge and logic. In-
put is data which is structurally analysed by the learner.
In other words "the driving factor for grammar change is
that the input is incomprehensible" (op. cit. p98). [ This
time-consuming mental activity provides one cause for ceas-
ing to attend to the message, although, we argue, there is
more likelihood that the learner will perform this problem-
solving behaviour using grammar that he already has but
which is not yet fully automatized].
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She also demonstrates that c.i. is not dependent on simplified input (caretaker speech, foreign and teacher-talk), and further that such input is deficient and detrimental. She cites the interlanguage output of other language learners (which KT83 see as advantageous) which might be characterized by pro-drop, and asks how the student is going to learn that pronouns are obligatory in English (op. cit. 101). Simplified input, she argues, also leads to linguistic deprivation, and cites studies which show positive correlations between complex maternal speech and language growth in children. She concludes that the hypothesis lacks precision but can act as “a guide in the absence of a theory (sic).”

Furthermore, and of great relevance to this work, is the fact that the model, while emphasizing the role of c.i., has little to say about L1 transfer in L2 learning. In particular, inferencing a meaning in L2 with reference to L1 (as well as context and world knowledge) is a frequent, if not essential, strategy. The furthest Krashen goes (K82: 66) is to underline the facilitating effect of the learner's knowledge of the world in general on this comprehension process, but what he seems to be referring to is events, not L1 knowledge. Nowhere does he mention the possibility that the learner may use his L1 to make input comprehensible.
4.3.5 Evaluation of the affective filter hypothesis

Since the filter fluctuates in line with the listener's attitudes and feelings, acquisition or its lack can always be attributed to the filter's state. But the filter is only a hypothetical construct and can only be measured, if at all, in terms of its own outcomes, a circular argument too.

Gregg also points out that if the affective filter is responsible for incomplete mastery of a SL, it is necessary to explain why the filter does not work in children who also suffer from feelings of insecurity, anxiety, lack of confidence and inferiority.

For DBK 83, the filter determines, among other things, which parts of a language will be attended to first. Gregg asks how an affective filter recognizes different parts of a language. What does 'part of a language' mean? Any such grammatical knowledge must belong to the LAD.

4.3.6 Summary

The fundamental flaw in Krashen's theorizing is his resorting to processes distinguished according to a conscious/unconscious criterion. Any appeal to the unconscious
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as a level for mental processing, however much we may feel it is right, puts it beyond the reach of empirical validation. McLaughlin’s proposal to use controlled and automatic processes (from information processing theory) has the great advantage of basing itself on concepts relying on behavioural acts which are operationally defined and empirically falsifiable, bases which the Monitor model lacks.

There are so often alternative explanations for any finding available within the theory, that there is always an escape, always at an unprovable level. In discussing one of Hulstijn’s findings, for example, Krashen says “This may have been due to Monitor use or more comprehensible input in their histories” (K85: 40); he cannot prove which explanation is correct, nor does he set out to control these variables in an experiment of his own. Similarly, we find claims like “If a structure is not acquired it is because it is not at performer’s i + 1, or the affective filter was up.” Or “Errors are made because the Monitor was not operating or the material was incorrectly acquired”, “older acquirers progress more quickly ... because they obtain more comprehensible input, while younger acquirers do better ... because of their lower affective filters.” (K85: 12).

As Rivers (83: 160) says: “Until we can find psychological support for these basic elements (acquisition/con-
scious learning) of the theory, it remains an interesting, carefully elaborated metaphor of limited scope.”

Finally, what is puzzling about the Krashen phenomenon was that it should have gained such widespread popularity, while simultaneously there was a model based on speech perception (Massaro, 1975), and research by Shiffrin & Schneider (1977) which McLaughlin (1978) used in his attempt to counter the Krashen behemoth. Perhaps his model appealed to those who thought intuitively and who in some way could not accept the idea that L2 learning can be seen as coldly as ‘mere’ information processing. McLaughlin’s articles were being published in the same journals as Krashen’s and so reached the same readers, but their impact was for some reason negligible, at least until Nagel & Sanders’ publication in 1986 (viz chapter 7).

4. 4 Stevick’s adaptation of the Monitor model

Stevick develops the Monitor model in Teaching Languages (chapter 21: 268-79). For him the ‘highly simplified’ way of outlining the contrasted means of use of acquisition and learning needs further elucidation. We are not concerned with his whole model, but solely with ways in which he defines and relates the two modes of input.
Stevick claims (op. cit. 269) that acquisition and learning differ not only in how we gain them, but also in how we access them for use. More contentiously he claims that the materials gained under the two processes 'perhaps differ in where or how they are stored'.

Acquisition refers to the whole environment of language received, including sights, actions and smells as well as the sounds, words and sentences. It is "what has come in as part of a total experience, frequently at the edge of attention rather than at its centre." (op. cit. 271)

'Learning' denotes the ability, which is born in later childhood, to abstract items from the "undivided web of experience" and to examine and compare them. In language this is done with words and the end result is a grammatical rule. Learning is gained in a 'teacher-pupil' ambiance, where the teacher helps the pupil to abstract and guide him through the practice which will help him retain such abstractions. Thus learning is consciously focused on, and abstracted from experience. It is at the centre of attention, not incidental (like acquisition). When a learner appears to use his learning for communication, he is

"assumed to be originating his utterances in his native language ... and then transposing it ... into the target language by running the utterances through the Monitor and applying what he has "learnt". The error arises in the native language and the Monitor fails to weed it out." (op. cit. 271)
either through lack of development to deal with the construction or failure to operate.

Stevick's mitigation of Krashen's stance on the acquisition/learning dichotomy begins when he says:

"The most efficient way to get new material into the acquisition store may still be through proper intake in communicative settings, but even in a classical 'learning' situation the same material that registers strongly in the 'learning store' may still leave a trace in the 'acquisition store'."

(80: 274)

In other words, in learning situations, acquisition may occur, but of structures incidental to the material being presented. Thus, although a teacher may expose the student to new structures, which may be learnt, the examples he gives allow previous structures to be acquired. This would explain the time-lag between exposure to new material and its use by the student. This parallels the silent period observed in children and adult SL acquirers.

Stevick softens the 'strong' position Krashen holds about the rigid separation of acquisition and learning. First, he suggests that learnt material may also register, albeit with low signal strength, in the acquisition store. This material may be used when a variable 'generator' (roughly equivalent to enthusiasm for the subject-matter or desire to communicate, and reactions to his listeners —
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his ‘social forces’) is turned up.

Secondly, he proposes a Eureka! phenomenon, which occurs when a student comes to a rule which draws together many things already acquired and brings about a flash of insight. This phenomenon is reflected in his model by a connection running from the acquisition store to the learning store.

Third, he suspects that ‘seepage’ from learning to acquisition store takes place, although this never appears in Krashen’s writings. Stevick equates ‘learning’ with material held in tertiary memory, where material is never lost even if not used. He supports this idea by proposing that experience (which feeds the acquisition store) can make use of any material, including learnt material.

4. 4. 1 Evaluation

Despite his claims that he is not violating the acquisition-learning hypothesis, Stevick does precisely that. Although he provides some evidence and reasoning for the links he makes, these are mostly anecdotal. He produces no evidence for the two processes being stored in different sites or for being accessed in different ways. By enumerating the different circumstances under which the processes take place, he does demonstrate how acquisition experiences
are richer and cognitively more coherent than learning processes. It becomes patent that learning processes forefront language mechanisms, which make them the object of study rather than language as a communication — in short, he is arguing for communicative teaching.

Unfortunately, the concepts he postulates are difficult if not impossible to submit to experimentation. While they have intuitive appeal, like Krashen's, this is not sufficient for the model he proposes to be considered at length, and do little more than 'fine-tune' Krashen's model.
Chapter 5

DISCOURSE & PRAGMATIC COMPREHENSION

5. 1 Introduction

So far we have been concerned with theories which focused on lexical access and clause and sentence comprehension in L1. and a model for L2 learners. In the 70's, psycholinguistic research moved to address the effects of larger contexts and various pragmatic factors on understanding. Such a change in emphasis, or what Kuhn (1970: 6) has called "a new set of commitments. a new basis for the practice of science" may amount to a revolution, and the study of Pragmatics has indeed been given paradigmatic status by Alcaraz (1990: 111 - 13).
Discourse & Pragmatic Comprehension

Where the structuralists and Chomskyans were content to view language as an idealized system at the expense of real context, pragmatists regard language as communication, which perforce includes the recipient and his interpretations, which in turn introduces an element of uncertainty. Thus we find that Brown & Yule can talk of the need to interpret what was said (1983: 24), to distinguish between 'literal' and 'speaker's intended meaning', and learners aiming at a 'reasonable interpretation' of intended meaning (p. 57).

While such considerations may create problems for the linguist-as-scientist, it does not necessarily do so for the L2 listener. In fact, the use of (pseudo-) authentic texts means that he has more clues to meaning than were usually available in the laundered studio-produced texts of yesteryear. It means that incomplete syntactic/semantic comprehension may be sufficiently supplemented by the pragmatic contribution of the text to give him a reasonable interpretation sooner than he would otherwise have had. It may also mean that we shall begin to see introductory LC courses deliberately exploiting the pragmatic aspect as a means of accelerating the student's progress.

Problems it does create for the teacher and examiner, however. Teachers will have to develop new criteria for 'a reasonable interpretation' and reconsider their approach to
ensure that their standards do not suffer. Examiners will need to determine what constitutes an acceptable approximate answer.

Even in laboratory experiments, where the test language used is relatively impoverished, sentence encoding is highly sensitive to context. For example, the serial position of test sentences has been found to affect results, as have different laboratory tasks on the strategies people use to encode sentences. It is hardly surprising that the fuller contexts provided by conversations and prose narratives make for greater cohesion through the various linking devices used and the global organization displayed.

In conversation, listeners use inferences about a speaker's intentions to arrive at coherent understanding. Inferences may have to be made because of gaps in input arising from 'noise', or linguistic incompleteness such as ellipsis, ambiguity or pragmatic indirectness. They may also be due to lack of knowledge or the inability to access relevant knowledge. (This is particularly the case with language learners, as we shall see in section 8. 4) Fluent speakers also make inferences based on knowledge of conversations in general as well as the utterances themselves. Grice (1975) proposed that successful interpersonal communication depends on an implicit co-operative principle involving informativeness, truthfulness, relevance and per-
spicity, which permit a listener to make inferences about intended meanings. Grice’s relevancy maxim is instanced by the given-new contract, which assumes that utterances provide new information and that speakers signal which parts of an utterance are given and which new. This is achieved by using linguistic and paralinguistic cues.

Linguistic devices that can indicate given-new information are the use of the definite article for second mention, pronominalization, word-order, stress and ellipsis. MacWhinney & Bates (1978) found that such devices are used to different degrees in English, Hungarian and Italian, and we may assume, in the absence of any such comparative research, that English and Spanish differ markedly in their use of these devices.

The Spanish (L2) listener, then, will almost certainly have to engage in inferential and problem-solving activities which differ, at least to different extents, from the English (native) listener. When the Spaniard listens to English, his mental activities must adapt to the demands made by a distinct distribution of linguistic devices. For the early learner, the difficulties these demands bring are added to those difficulties of word recognition and comprehension, as well as those of phrase and clause comprehension.
Discourse & Pragmatic Comprehension

Paradoxically, once the L2 listener has overcome the early problems associated with L2 differences from his mother-tongue, instant lexical access, syntactic processing and the rest, listening comprehension becomes easier, all other things being equal. The facilitatory effects of context flood in on a mutually supportive tide which make for much more effortless comprehension. This occurs at the syntactic/semantic level, and by freeing attention capacity, permits the listener to attend to and use similar supportive pragmatic cues. (See section 3.4)

5.2 Discourse Comprehension

At its inception in the 60s, psycholinguistics was concerned exclusively with attempts to offer psychological verification for the then current linguistic theory. Hence comprehension was viewed primarily in terms of speech perception and syntactic parsing. In fact, according to Sharwood Smith, psycholinguists tended to interpret competence and performance in their own terms. Competence is seen as ‘ability’ ... or even more misleadingly as ‘skill’. In other words, competence is used in its more everyday sense; someone who is ‘incompetent’ is someone who cannot do something, rather than someone who is not knowledgeable about something. In this sense you can know something and still not be competent, whereas in the Chomskyan sense competence has everything to do with knowing and only indirectly ... to do with doing.” (86: 241)
Later he writes

"procedural knowledge (performance) comes close to the psychologists' notion of ability, a notion that Fillmore loosely associates with competence. Perhaps both linguists and psychologists have been guilty of too casually referring to both procedural knowledge and actual instances of its use as 'performance', because the implication is that performance is simply 'everything else' once the domain of competence has been properly characterized, and hence the general confusion.”

(86: 244)

So it is not surprising that "psychologists are a long way from producing any definitive statement of what occurs, in terms of processing, when we actually understand an utterance in natural discourse." (Garrod 1986: 226)

Frege argued that in principle many sentences could be understood by any competent speaker-hearer without knowledge of who said it, the subject-matter, where, when and why — and formulated a propositional account of meaning. The theoretical possibility of context-free meaning also underlines the distinction between a semantic and a pragmatic description of utterance meaning. This view, that an utterance could have a context-free or literal meaning, lead to the assumption that the processing system was sequentially organized, with information flowing from the lowest, phonetic, level via the syntactic/semantic levels to the pragmatic, only the last level taking account of the
extra-linguistic context (cf Fodor, Bever and Garrett, section 3.3.2). Subsequent investigations offer little support that the comprehender first computes literal meanings before fully interpreting an utterance. Most studies suggest that understanding an utterance always involves interpreting it in the light of some context, even if this must be supplied by the listener.

Three types of evidence support this contention of on-line contextualization at all stages of the comprehension process:

1. studies of memory for discourse;
2. studies of the effect of referential links in discourse;
3. experiments aimed at discovering the decision-making that occurs during the course of understanding a sentence in context.

5. 2. 1 Memory for discourse

Memory for exact wording of utterances was originally thought to be very poor. Jarvella (71) showed that recall for the last 20 words of a text was virtually verbatim for the last clause heard (about 90% correct), and about 80% for the penultimate clause. The previous sentence had recall rates of about 30%, suggesting that access to the words themselves was far lower. However, Jarvella did not
test for recall of gist-meaning, and he concluded that sentences and clauses are stored as units of meaning, the surface form being shed as unnecessary, Garrod & Trabasso (1973) likewise established that memory for the surface form of sentences disappears within 40 - 60 syllables of input.

More recent studies indicate, however, that more than simple gist is retained. As we saw in section 3.3.1, some syntactic information is retained in long-term memory, depending on the semantic and pragmatic aspects of the message. As Harris & Coltheart put it:

"In normal spoken language there are often clear pragmatic constraints on the choice of particular syntactic forms. For example, the choice of a passive rather than an active is influenced both by whether the things referred to are animate or inanimate and by what the basic theme of the speaker\'s current discourse currently is. However, ... the relation between syntactic form and pragmatic constraints is often ignored in the kinds of discourse which subjects are typically asked to process in psycholinguistic experiments."

(1986: 184)

To support this, Bates et al (1981) found that subjects were able to remember whether a character (in a TV soap opera) had been referred to by name or by pronominal reference, and whether an utterance had contained a full clausal unit or an abbreviated elliptical clause. The conclusion...
they reached was that not all information about the surface form is purged from the stored representation when pragmatic information is included.

These results were interpreted as consistent with the sequential model, phonetic representations persisting for only a short period and semantic representations lasting longer. As to the nature of what was retained, whether literal or contextualized, the evidence points strongly to the latter. In one experiment, subjects correctly recognized the situation portrayed in a sentence which was propositionally not equivalent, and correctly rejected sentences inconsistent with the situation. It seems that we construct conceptual representations or models of the situation portrayed in a sentence rather than its propositional representation.

In another experiment, Garnham (1979) used a cued recall procedure. He had subjects read sentences like

The housewife cooked the chips

and gave them cue words to retrieve the sentences. He found that a word like 'fried' was a more effective cue than 'cooked', which was taken to indicate that readers impose an interpretation which gives the most likely context for chips to be cooked in. This again suggests that any mental
representation deriving from understanding the sentence is more closely allied to a conception of the subject-matter than to the literal meaning of the sentence.

Two sorts of extra-sentential context have been identified: general context, which derives from knowledge about the world, and specific context, which is contained in earlier parts of the discourse. In practice, however, this distinction is often difficult to make, since processing of earlier context will often have involved the use of world knowledge.

In two early studies, Dooling (1971, 1972) investigated the effect of prior context on the speed of sentence comprehension. He argued that prior context should make a sentence partially redundant, which would facilitate comprehension. His results proved the opposite, and he had to propose that context could either prepare the listener for some or all of the information in the sentence, or it could increase comprehension time by introducing additional processing demands.

Using either a priming word or a priming sentence as context for a target sentence, he showed that a priming sentence made the target more readily meaningful. However, a priming sentence made the target sentence more difficult to judge as following appropriately than did a priming
word, because it presents more complex information which has to be incorporated. Prior sentence context is closer to normal discourse, and he concluded that it has two effects on current context: it facilitates determination of meaning but increases processing load when it comes to integrating new with prior information.

Where the subject-matter is absent or is not made explicit (and so is difficult to conceptualize) and the text does little to permit labelling, listeners (and readers) are able to retain far less of what they hear (or see). Bransford & Johnson (1972) had Ss listen to such a non-explicit passage, either with no title, with one or with one given after presentation of the passage. Only prior labelling allows the listener to attach the ‘new’ to the ‘given’, to interpret the non-specific in terms of a meaningful specific. Where the ‘given’ (title) is absent or given after presentation, such associations or interpretations are reduced because comprehensibility is greatly lowered.

These and the results of other studies of discourse memory point to the retention of contextualized interpretation rather than any literal meaning, which speaks against the prior establishment of literal meaning. This obliged researchers to consider that the language processing system does not follow the dictates of a theory of language structure. Rather than analysing a sentence for
its structural make-up, the listener may be building a complete interpretation of it with respect to its context. In other words, the comprehension system is an interpreter of utterances.

5.2.2 Referential links in discourse

Studies of referential processes have shown that the ease (or difficulty) with which sentences are understood depends on the comprehender's ability to establish referential links between the target sentence and its immediate context. Haviland & Clark (1974) gave subjects sentences to read, like:

A. Mary unpacked some beer.
B. Mary unpacked some picnic supplies.
C. The beer was warm.

They took longer to understand C when preceded by B where there is no explicit antecedent for 'the beer' than C when preceded by A, which contains the antecedent. This was taken to show the operation of a special inference process which established referential links between what is currently being interpreted and what went before. Thus, when a Given appears, the system searches for a discourse antecedent. In the B - C situation, a special inference procedure to connect 'picnic supplies' and 'beer' has to be
made, and this takes time.

This finding was not substantiated in a later experiment (Garrod & Sanford, 1983), where such a bridging inference was not observed:

D. Keith was driving to London.
E. Keith was taking his car to London.
F. The car kept breaking down.

No more processing time was required with D – F as for E – F for reading F after D than for F after E, implying that the word 'driving' introduces some vehicle into the mental picture and serves as antecedent, i.e. the brain seems to be processing more than what is literally presented to it — it seems to be establishing referential significance.

Such bridging inferences are ubiquitous in language comprehension. The examples given above only begin to indicate the complexity of the process, which is still far from being understood. Indeed Clark goes as far as to say that listeners can only understand sentences if they already have in mind an antecedent for the given information or can construct one by making a bridging inference. It involves pragmatic knowledge, and affects our memory for what we have heard. Take for example:

The policeman held up his hand and stopped the car.

Because we know about police authority, the normal citi-
zen's submission to that authority and a driver's mechanical responses to accede to it, we understand the sentence, not for a moment marvelling at the policeman's strength.

Likewise, Bransford, Barclay and Frank (1972) carried out a series of experiments which demonstrated that recognition memory for sentences is confounded by the inclusion of inferences. They presented subjects with pairs of sentences like:

A: Three turtles rested beside a floating log and a fish swam beneath them.
B: Three turtles rested on a floating log and a fish swam beneath them.

Asked to recognize these sentences from a collection of four, which included

C: Three turtles rested beside a floating log and a fish swam beneath it.
D: Three turtles rested on a floating log and a fish swam beneath it.

Subjects who had heard B were likely to say they had also heard D, since this fitted in with the inference they might reasonably have made. In contrast, those who had heard A were less likely to think they had heard C. Bransford took this to show that people make inferences based on general knowledge, in this case spatial knowledge.

In a controlled and statistically analysed experiment, Chaudron & Richards (1986) examined the effect of discourse markers on the comprehension of lectures. Three
video-taped lectures were developed from a baseline one, which had either 'micromarkers', 'macromarkers' or a combination of these, inserted at various points in the text. Micromarkers (well, now, at that time, of course, obviously, in fact) are common in conversation, and 'serve as filled pauses giving listeners more time to process ... discourse.' (op. cit. p. 116). Macromarkers signal major transitions, emphases and overall discourse organization, and assist top-down processing by initiating expectations and predictions about the forthcoming discourse. Examples of these are 'What happened next was that', 'To begin with'. 'This meant that.'

Chaudron & Richards found that the higher-order markers were more conducive to successful recall. They concluded that micro-markers do not add enough content to make the information more salient or meaningful, and merely made the lecture appear less well organized. The micro-markers in the combined micro- and macro-marker lecture served only to increase the listener's attention requirements without adding any valuable information, and distracted from the effects of the macro-markers. These, being explicit expressions of lecture-planning, must be appropriately placed, unlike the micro-markers, which are little more than asides.

The authors make the point that learner-listeners
more reliant on bottom-up processing — namely the less proficient listeners — would be able to make less use of macro-markers. Markers of any sort would require as much attention, even if subsequently discarded, as lexical content items. They would then serve as distractors and have the adverse effect on comprehension that they found.

In an exploratory study, Olsen & Huckin (1990) came to the conclusion that teaching macro-markers may not go far enough. Using a video-taped lecture, they discovered that non-native students who could not give satisfactory immediate recall summaries, had absorbed facts but not the speaker's intentions or goals even though they had good sentence-level English and understood the macro-markers. Those who could make adequate summaries used discourse markers, intonation patterns and the like because they recognized that the speaker was making a point, not just conveying information. They concluded that listening strategies must also be taught, that students should learn not only to take in the information, but build up the argument too.

5. 2. 3 Decision-making during comprehension

The evidence which we presented in sections 3, 4, 2 and 5. 2. 1 showed that prior context played an important role in sentence interpretation, and that ambiguities were
more quickly resolved with context than without. That is, a
literal meaning is not set up and then discarded because of
post-hoc consideration of context; rather context makes its
contribution on a on-going basis.

To demonstrate that referential significance is est-
ablished immediately an expression is encountered, the com-
prehension process has to be examined while it is occur-
ring. The techniques developed to examine the moment-by-
moment decision-making all involve measuring the speed or
accuracy with which a comprehender can carry out some sec-
ondary task presented at a specific point during the pre-
sentation of a text. Tyler & Marslen-Wilson (1982) required
Ss to read aloud a visually presented word (either her or
him) following auditory presentation of texts:

As Philip was walking back from the shop, he saw an old woman
trip and fall flat on her face. She seemed unable to get up
again.

  a. Philip ran towards ...
  b. He ran towards ...
  c. Running towards ...

They reasoned that the time taken to produce the approp-
riate word (in this case her) would be shorter if the
subject of the clause had been given referential inter-
pretation. They found that reaction times were shorter for
the proper-name and pronoun contexts (a & b) than for the
zero anaphora (c), suggesting that referential significance is established at the moment the expression is met.

This finding is inconsistent with the two-stage, sequential theory and similar to others based on reading. Both readers and listeners, then, appear to establish the referential significance of words as they are received and not after a semantic analysis.

While we sample spoken (or written) discourse sequentially, one word at a time, comprehension depends on analysis of whole segments (phrases, sentences, paragraphs and so on). The processing system, which is constrained by time, should then build up interpretation incrementally as each element is met, rather than delay, if it is to operate efficiently. It seems that, although linguistic description distinguishes different components (syntax, semantics and pragmatics), the comprehension process does not rely on such distinctions, but is always directed at recovering significance, even if the listener has to provide it. (viz. Garrod 1986). Sharwood Smith also points out that psycholinguists produced inconclusive results when they experimentally tested derivational complexity:

"The real-time computations of language users constructing and reconstructing linguistic messages in a matter of milliseconds ... could not be directly related to the way in which generative linguists derived surface structures from deep
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structures. Transformations did not represent processing routines."

(1986: 240)

In other words, transformational grammar has no psychological reality. (In his defence, we should add that Chomsky never intended his grammar to be understood as a programme, or that derivational mechanisms should have neurological counterparts).

5. 3 Organization in the memory

The foregoing discussion calls into question the wider functions of the memory, its organization and the essentially active role it plays in language input. In later chapters, other theories of memory and knowledge are called upon to furnish understanding of the processes involved in language processing which supplement rather than contradict what we have just examined. The theories available seem to share some basic assumptions, namely that the structure of discourse is essentially hierarchical, and that it contains an organized set of interrelated propositions. Their empirical aim is to predict how a listener will use his knowledge about the structure of narratives to comprehend and recall a story, for example that a proposition high in the representation hierarchy is more likely to be recalled, being more central to the story structure.
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As we saw in Dooling's experiments (section 5. 2. 1), comprehension of successive sentences in discourse creates a processing load for the subject. We may assume that this load is largely (or totally) memory processing. Other studies have been carried out to show that information from successive sentences is integrated into an organized whole. Bransford & Franks (1971), for example, told stories which could be expressed in four simple sentences containing one bit of information or a smaller number of sentences containing more than one bit. Sentences containing one piece of information could reliably be identified as having been heard or not. Sentences which contained all four pieces of information were most frequently identified as having been heard before even when they had not, suggesting that previously-heard information is integrated into a whole which is less distinguishable from the complex four-idea sentence.

In Thorndyke's (1978) story grammar model, the underlying story structure is seen as essentially analogous to that of a sentence in generative grammar, in which constituents and the relations between them are made explicit, and conform to a set of rules. She found that giving the theme of a story at its end produced better comprehensibility and recall scores than not giving the theme at all, although there was no significant difference between the two conditions. This conflicts with other findings (e.g.
Bransford & Johnson, 1972, section 5.2.1) which showed that providing information about a passage afterwards did not improve performance. The difference was that Thorn-dyke's passages contained clear temporal sequencing and clausal connections, which allowed subjects to organize and remember a large part of the information, and to restructure it when the theme was finally presented. Interestingly, 75% of the subjects included a statement about the theme at the beginning of their recall protocols, even though they had heard it at the end, and had been instructed to give a verbatim account of what they recalled.

It is highly likely that these subjects used their more general knowledge of the world to organize the passages, and those who were not given the theme were able to guess at the theme, using their knowledge of similar stories.

In Kintsch and van Dijk's (1978) model, comprehension is taken as a process operating on several interconnecting levels: the parser yields semantic structures representing a propositional level of organization. The propositions are organized in the text base from which macrostructures are derived which constitute the general meaning of the narrative. All processes interact with knowledge sources and inferences can be made to obtain a coherent representation of the meanings of the text.
The propositions in the text base are organized hierarchically and progressively refined by inferences until a coherent network remains available in working memory. In the next phase, working memory is cleared and the representation sent to the long-term memory, except for a few propositions which are needed to connect this network with the subsequent one. Text macrostructure is derived from the text base using three types of macro-rules, deletion, generalization and construction, which transform the propositions through inferences into macropropositions which are stored in long-term memory.

The model is more concerned with memory than with comprehension, which is taken for granted. The view adopted is one where the listener does not simply accumulate information, but actively tries to account for the sequence of events, to fit it into a developing plan which serves as a basis on which he can interpret and store the events. The importance of this in turn lies in the fact that, following comprehension, organization in memory is also influenced by not only prior knowledge, but by the beliefs and attitudes of the listener, his inferencing processes and hence his recall, which is the material on which we must base our understanding of comprehension processes, for which such a diffuse change can only provide the weakest evidence. It may, however, cast an interesting sidelight on variations in classroom performance and suggest pointers for improving
Various other investigations have confirmed experimentally what experience tells us: recall is better when sentences are integrated into a coherent whole than when they are not; narratives with a consistent point of view are remembered better. Presenting relevant information prior to a story can provide a coherent framework in which to interpret the prose resulting in improved recall. However, recall improves only when the prior information is consistent with the learner's general knowledge of the world.

5. 3. 1 Schemas and frames

Schank & Abelson, working in artificial intelligence, found it impossible to programme a computer to 'comprehend' discursive input and produce elaborate paraphrases as output without supplying the programme with a substantial set of knowledge about the properties of the physical and social world. The central idea of schema theory is that memory is organized into high-level structures called schemas which draw together all our knowledge connected with particular actions, like riding a bicycle, events, like going to a restaurant, situations, like attending a lecture, and categories, like birds or mammals, as well as the necessary information about how this knowledge is to be used.
The organization of memories as schemas guides our interpretation of events, utterances and written texts. Giving a title or schema to the passage in Bransford & Johnson's experiment (viz 5. 2. 1), for example, allowed listeners to make sense of what they heard and so recall far more of it than when they had no such guide. By having people make all actions in a given situation explicit, Schank (1975) found there is a central series of actions common to everyone, with minor variations.

He called the ways in which we store certain episodes in memory 'scripts', defined as 'an elaborate causal chain which provides world knowledge about an often-experienced situation'. Thus, commonly occurring events in life such as the restaurant script, the doctor script and so on, help us to understand a similar episode when it recurs. Usually, of course, events are mixtures of scripts; as Bowers (1979) points out, two businessmen heading for a convention and concluding a deal while having lunch on a train, will use the business deal script, the convention, restaurant and train scripts. Scripts, then, are highly predictive: the decoding of phonemes, words, sentences and texts in our accumulated experience rely on top-down mechanisms.

Schema theory provides an original theory of meaning upon which later levels of meanings can be based or judged. To the degree that a schema underlying a concept is stored
in the individual's memory with the meaning of that concept, then meanings are encoded and retrieved in terms of the normal situation or event which instantiate that concept. Instantiation refers to the process of finding the most plausible interpretation of new information in order to integrate it with prior knowledge. When the new information has merged with existing information and is placed in the appropriate schema, it is said to have been instantiated.

All schema instantiated at a given moment in time comprise the individual's internal model or map of a particular concept. The schemata are abstract, provide a generic characterization of things and events and are stereotypical, in that they indicate perceived typical relationships among the elements.

The basic premise of schema-based learning theory is that an individual comprehends material by using prior knowledge to produce anticipated meaning. Comprehension depends on an interaction between the structure and content of the material and what the individual brings to it. However, although there is abundant research evidence concerning the importance of schema theory for L1 and L2 reading comprehension, corresponding empirical support for its role in listening comprehension is absent.
Bower (1979) demonstrated that people use scripts; they falsely recalled actions which had not appeared in stories they had read, filling in gaps with unstated actions implied by the script. Further, an action displaced in the story was found to be placed in its appropriate location in recall. The findings also suggest that scripts are arranged hierarchically, the highest frames holding the most general and abstract information, such as social values and nouns of interaction, the lowest the most specific and concrete, such as the knowledge of the rules and elements of individual languages. Thus the more general (attending a performance) subsumes variants (going to the theatre, cinema, and so on), which does away with the need for an enormous proliferation of scripts for each type of event. However, the problem of which schemas need to be activated to aid understanding is still an unsolved issue.

According to this theory, then, the listener has available in memory a hierarchical series of frames or nuclei.
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containing information based on experience. They are related according to topic or situation and generality-specificity: they are accessed according to familiarity. That is, the more familiar a listener is with a given topic or social situation, the higher frame he can access: the more he can predict, in lexical, syntactic and pragmatic terms. Chiesi et al. (1979) for example, showed that people with abundant baseball knowledge were superior at recalling details of baseball event sequences than those with little baseball knowledge, and this is interpreted as an ability to map new information onto the existing knowledge structure. This is, of course, top-down processing.

Where topic or situation is relatively unfamiliar, the appropriate access level will be at lower-order frame level: less prediction is possible and the listener has to work from the data, i.e. at lexical and syntactical levels. This is data-driven or bottom-up processing.

Both forms of processing appear to be used according to need. (See Marslen-Wilson's interactive processing, chapter 2. 3). Since topic predictability involves less effort, on the law of least effort, it is reasonable to suppose that top-down processing will be the preferred modus operandi for listeners in L1 or L2. It is clear, however, that new or unfamiliar topics or where no relevant frame exists, will induce the listener to bottom-up processing.
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This is the case of the learner-listener. (See Chapter 8, 3.1.)

The theory has been criticized as merely restating the problem of how knowledge is stored and related to other knowledge, but does not explain how we access any schema. However, the idea has been refined by Minsky (1975), who preferred the term 'frame' to describe categories of objects and events.

The frame has 'slots' which can be filled with appropriate 'values'. Some slots have compulsory values, others are variable and can be filled with optional values to represent particular situations. Slots can be related to each other, and to various other frames, such that the mention of a dog in a park may invoke the 'dog' frame and the 'park' frame. Where specific information is missing, we tend to make inferences by placing the most likely expected value (default value) in the slot. Thus, if someone is writing a letter, the default value for the tool will be 'biro'.

5.4 Pragmatic comprehension.

Dirven and Oakeshott-Taylor lamented the fact in 1985 that relatively little research had been conducted into the role of speakers' and listeners' assumptions about each
others' knowledge and internalized textual schemata in listening processes and strategies. (The studies referred to in section 3.4 which discussed the effects of semantic and pragmatic constraints on syntactic processing and comprehension were carried out in the visual mode. They were included precisely because there is so little published work done in listening, and because reading, like listening, is an encoding operation and uses similar processes). Fluent LC, whether in L1 or L2, is a complex process based on phonemic input (bottom-up processing) which interacts with top-down processing (knowledge of the world, contextual and shared knowledge) which permits anticipation of meaning, or the creation of expectancies. Conventionalised phrases and subtle intonation-variants are used to convey unspoken meanings and implications, and an incomplete knowledge of the L2 may entail a failure on the part of the learner to grasp these.

In one of the few studies so far conducted using FL learners, Kasper (1984) analysed two types of pragmatic misunderstanding. She cites van Dijk's context analysis model as a typical case of top-down processing. She goes on to pose the question as to how a listener deals with indirect speech acts, where locution does not match illocution. Early studies suggested that literal meaning is first determined, then rejected as inappropriate where context limitations indicated, the rejection in turn starting an
inferential search for the intended illocutionary force. Later studies, however, showed that sequential processing does not occur where top-down processing can occur, or when the convention is known.

The present position holds that both literal and illocutionary meanings are derived. Kasper quotes Clark & Schunk’s example — "Would you mind telling me where the bathroom is?" — "No, not at all; it’s round the corner." — as indicating both meaning derivations. Thus the competent listener responds to the illocutionary force and to its politeness.

The less-than-competent listener, however, may well proceed from literal to illocutionary, simply because he still predominantly relies on bottom-up processing, or because he is less familiar with (has slower access to) the courtesy uses of certain words — i.e. he has rarely experienced social situations where "Can — ?" no longer means "Are you able — ?" but "Would/could .. ?".

Kasper (op. cit.) found that there were failures (1) to distinguish between phatic talk and referential talk, and (2) to identify the intended illocutionary force in indirect speech acts. She concluded that learners rely too heavily on bottom-up processing, which may be encouraged in the classroom as a means of dealing with aural input and
which becomes a habitual response to all listening situations. The net effect of such bottom-up processing is for the learner to respond only to the literal meaning. (But see section 8. 3. 1.)

Faerch & Kasper (1986) have also pointed out that, because of the incomplete nature of discourse (whether by ellipsis, pragmatic indirectness or simply from noise), and because of the gaps between the knowledge which the speaker assumes the hearer has and that which the latter really has, inferencing procedures or strategies take place to bridge the gaps. These procedures, which are top-down by nature, are probably less available to the FL listener as he is habituated to using bottom-up processes. That is, he is concentrating on the input to such an extent that his knowledge of the world is not available to him.

There are two models relevant to this area, although they are unrelated by research to the foregoing: Labov's and Beaugrande's.

5. 4. 1 Labov's semantic-pragmatic interpretation model.

This model was developed on the basis of analysing therapeutic discourse (Labov & Fanshell, 1977). Labov used the speech event as the linguistic unit, and the model can
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be schematized thus:

<table>
<thead>
<tr>
<th>shared knowledge</th>
<th>spoken text</th>
</tr>
</thead>
<tbody>
<tr>
<td>- of the world</td>
<td></td>
</tr>
<tr>
<td>- of previous discourses</td>
<td></td>
</tr>
</tbody>
</table>

| paralinguistic cues -         |             |
| tenseness                    |             |
| hesitations                  |             |
| self-interruption            |             |
| pauses                       |             |

Figure 5.2: Schematic representation of Labov's model.

The text is the surface manifestation of meanings which include all knowledge shared by the speaker with the listener. This in turn includes propositions already uttered in this and previous discourses.

Labov expands the text to include meanings which are often only implied, so that a newcomer to the text cannot fully understand it. He also writes an account of what the person is doing, i.e. the pragmatic interpretation, namely referring, asserting, questioning, expressing uncertainty and so on.

This double analysis brings home the fact that interpersonal interaction is extremely complex, and may only be fully understood by a participant. This has obvious implications for the selection of LC materials, as it is clear...
that while authentic texts may be desirable in advanced teaching, many may be unsuitable because even relatively complete comprehension will require prior knowledge about the interlocutors and a considerable amount of on-line interpretation.

Although Labov does not mention it, there is also the important question of what is left unsaid: silences in mid-conversation, effectively elided text, can for example be intended for the listener to draw a conclusion which could be frowned on by polite society or invoke the laws of slander if it were voiced.

5. 4. 2 Beaugrande’s text processing model

Beaugrande stresses to a greater extent than Labov the element of previous knowledge. As well as interpersonal knowledge, he argues that knowledge of the world and our knowledge of other texts (intertextuality) have an important bearing on our comprehension of a text. Thus if there are three major text types, descriptive, narrative and argumentative, when we listen to a novel text, we classify it under one of these headings, helping our comprehension by allowing a measure of anticipation of the language to come.

The use of knowledge of the world is called 'mediation'. Subjects asked to summarize a text may start their
account with some sort of general statement — “This is a
story about ...” showing that they have classified the text
as having a narrative schema. Imposing such a classifica-
tion has some effect on which details are included and
which omitted from their summaries.

Changes and additions to their accounts also reveal
that world knowledge is used to flesh out the original
text, (thus casting serious doubt on the advisability and
fairness of asking comprehension questions on text de-
tails), the implication being that we relate our memory of
new texts to previous world knowledge and even mix the new
with the old in recall.

5. 5 Summary

Research at and beyond the sentence comprehension
level is sometimes open to criticism on the grounds of
failing to control most or all of the relevant context
variables, without which reliable and valid results cannot
be obtained. It is probably fundamental to any rigorous
investigation of discourse to have first established a
series of sound hypotheses about sentence comprehension.
Even armed with a good working model, investigators are
faced with the problem of validity, for discourse composed
of carefully controlled variables may cease to possess the
essential characteristics of genuine discourse. In other
words, the scientific investigation of real as opposed to laboratory discourse comprehension may well be impossible, or so hedged about with qualifications that it is no longer very meaningful.

However, the little research which has been carried out in this area clarifies the reasons for the difficulties that the learner-listener has, for all (or most) of the processes discussed in this chapter facilitate comprehension, and all (or most) of them are unavailable to the early listener, because of his apparently enforced concentration on bottom-up processes. The work supports the idea that the comprehension system is an interpreter requiring context (not linguistic structure), that it establishes significance on-line, i.e. accumulating meanings during not after the inputting, and that it does this most efficiently with a previously established label or context, as well as within-sentence context.

Much of the work outlined in this chapter marked a quiet revolution in theoretical thinking. Whereas considerable effort had been invested in attempting to demonstrate that comprehension involved linguistic structural analysis, every study points at context being the crux of the matter; it determines meaning: we supply it to ease others' comprehension of our utterances, for if we do not, their brains create it by inferencing, and might in the
process misunderstand us; our general and world knowledge (another form of context) is continually brought to bear.

Contextualising in the broader sense of structuring discourse is also an aid in comprehension (macromarkers), but it is doubtful that early L2 listeners derive much benefit from them. As far as the pre-intermediate learner is concerned, it seems that most if not all the top-down processes (expectancies, inferencing, world knowledge, knowledge of other texts) are simply not available to them, because they are overloaded with word-recognition, meaning searches and other bottom-up processes. Even at the intermediate level, L2 listeners appear to be over-influenced by the input itself, preferring literal to pragmatic interpretations.
Hitherto we have been dealing mainly with psycholinguistic approaches to language comprehension. In the following chapters our field of enquiry is more clearly psychological in nature. As groundwork for the analysis of our survey, we look briefly at current thinking about memory, attention, the salient effects of stress, and some of the models which have developed from information processing research.

It is essential at this stage, too, to highlight the fundamental distinction between mental processes which are activities obligatory to human endeavour, and strategies which are optional mental activities. We must all use short- and long-term memory and the fluctuating-capacity attention system if we are to comprehend; but we can choose to anticipate what a speaker will say, infer his intended meaning or translate as we listen to another language.

While chapter 6 (Memory, Attention and Process) provides a basis for understanding chapter 7 (Information Processing), chapter 8 (Strategies) discusses what we know about these optional activities, and of central relevance to this study, the reasons for the adoption of one particular strategy, on-line translation, which was the object of our survey (chapters 9 & 10).
Chapter 6

MEMORY, ATTENTION & PROCESS

6.1 Introduction

The distinction between short-term memory (STM) and long-term memory (LTM) has provided a useful way of organizing many aspects of human memory whether or not one refers to different stores or different processes. Recall measures from the two hypothesized stores have been found to be negatively correlated, suggesting that a single process model of memory is not reasonable.

These two stores are, however, preceded by a purely sensory register called 'echoic memory' or 'precategorical acoustic store' (Morton 1970). The visual parallel, 'iconic memory', much more profoundly studied, has been demonstrated as registering a rapidly fading trace containing
considerably more information than the subject can normally report, since the trace fades faster than the information can be transferred into a more durable store. There is no sign of progressive learning in this register, although it has been suggested that it is sensitive to language habits. The trace can be easily obliterated.

The role of the sensory register is probably to hold information long enough to facilitate its transfer to STM or even LTM. There is abundant evidence for an equivalent auditory buffer, but its exact limits are not clear. Forgetting of verbal material is thought to be complete within about two seconds, which is taken to be its span.

The STM has been calculated to have a total capacity of between 2.6 and 3.4 words of up to four syllables. This measure may be thought low compared with the traditional finding of 7 \pm 2, but the latter probably includes an LTM component. Transfer of material from STM to LTM is very rapid, making experimental design and interpretation of results rather refractory. It is agreed, however, that the STM can hold a limited number of items, that these are displaced by later stimuli, and that rehearsal performs the dual function of maintaining information about items in STM and transferring it to the LTM.

It appears that STM is not sensitive to the rate at
which words are presented to it. "Several sets of data reveal that auditory items are either unaffected by rate or show a slight improvement at fast rates, ... " ( Craik, 1971). STM capacity is apparently little affected by the nature of the words stored, whether in terms of frequency or acoustic and semantic similarity; the STM capacity of trilingual subjects was likewise unaffected by being presented with words in one, two or three languages. These and other findings suggest that words are not held in STM by virtue of their semantic or associational features, but rather phonemically. The STM seems to act as a buffer store which holds information long enough for it to be further processed and possibly transferred to the LTM.

The crucial factor in forgetting in STM is the number of items which intervene between arrival of an item and its recall. Time in store plays a relatively minor rôle. The simplest account of STM forgetting is that STM can hold only a limited number of items and that a further incoming item can be held only by displacing an item already held in it. Memory for an item also seems to be related to the amount of perceptual processing of that item and inversely related to the processing of interpolated items. Maintaining an item in STM appears analogous to continuing to pay attention to it.

Verbal LTM relies heavily, although not exclusively,
Memory, Attention & Process

on semantic coding, and semantically coded information appears to be less rapidly forgotten than phonemic information. Phonemic coding has been shown to occur in the LTM when it aids learning (e.g. rhyming word-pairs), and when semantic coding is difficult. Semantic coding seems to demand more information processing than phonemic coding. Also, and of particular relevance to this study:

"... phonemic rather than semantic coding tends to occur when the subject is required to perform a demanding supplementary task during learning, when he is instructed to listen passively or when he is given unrelated words and insufficient time to produce semantic links between them."

(Baddeley & Patterson, 1971: 238 - 9).

It seems likely that when material is meaningful, it is rapidly passed to the LTM for semantic processing. [The converse of this statement is that meaningless material is not passed on, as there are no analysing systems to deal with it]. Thus the semantic content, or gist, of verbal messages is retained but not usually the phonemic or syntactic, although some researchers have found that there is some memory for specific words. Both prior, and to a lesser extent following context, are used to aid the identification of words. We are capable of postponing the final identification of some words until the rest of the sentence provides the information which resolves any ambiguity.
The conditions under which Ss resort to phonemic coding in the LTM rather than the usual semantic coding, are precisely those which exist in the early stages of learning to listen to a L2, and these findings provide another factor which facilitates the S's route to attempting on-line translation. (See 8. 4. 2)

The LTM has an enormous storage capacity, with a slow rate of forgetting or no forgetting. It is a record of all past learning, and input to it is stored according to semantic-associational features as it appears to the subject. That is, an item of information seems to be stored in several categories, some of which are common to most humans, and others which are highly individual-specific. It has also been experimentally shown that elaborations that reflect on the significance of what is to be remembered enhance memory performance. This seems to be related to the amount of cognitive effort involved in the processing.

Since the L2 listener is continuously being bombarded with items, it seems that conditions are not favourable for him to be able to process and transfer any given item to LTM. Even if he does, as it may be stored phonemically, the item will require posterior attention for analysis, recognition and allocation of meaning, which, with continuing input to STM, he has insufficient time to perform.
6.2 The role of memory in listening comprehension

Three of the essential skills in comprehension are recognition (of words, verb groups and the rest), and memory for and recall of these recognised elements. These must be held long enough in the memory for interpretation, or assignment of meaning, to be carried out. This is the function of the limited short-term memory. Several studies, e.g. Jarvella (1971), have shown that once comprehended, phrases are purged from the STM after a very limited period to make way for the following phrase and sent to the LTM.

More precisely, we know that the auditory stimulus is held in sensory or echoic memory for about a second while the sound stream is segmented into meaningful units. This brief store seems to be necessary for efficient perception of sounds, but "is unlikely to be of much assistance in processing language" (Baddeley & Patterson 1971: 238). These are passed, usually in the form of words, to the STM.

STM is traditionally accepted as having a limit of about seven units, the definition of a unit varying with the type of input material and the listener's experience in dealing with it. Letters in random order would be stored up to the classic 7 ± 2 letters, but if these were arranged in patterns, many more could be recalled. This pattern arrangement, known as 'recoding', is a mechanism used to in-
crease the probability of remembering. The patterns need not even be meaningful, pronounceability giving a large increment to capacity. Thus for instance, strings of otherwise unrelated items will be ‘chunked’ together into units linked by, in this case, their sound. For example, the letter sequence CHENTHENOR will be perceived and processed as three syllables, while the same letters in a different order cannot be syllabized - HNCEOERHTN - and would have to be processed as 10 separate items and liable to be (partially) forgotten.

In language processing the STM seems to ‘chunk’ syntactically into phrases and clauses, the result interpreted semantically and sent to the LTM as a meaningful unit. The exact set of words is then forgotten, as Jarvella (1971) showed, only the meaning being retained.

A few studies have investigated the relationship of STM with language learning. Call (1985) cites Loe’s 1964 thesis which reports that advanced Ss and native speakers recalled sentences containing clauses better than sentences (of the same number of words) composed of phrases. Less proficient students however, found sentences made up of phrases easier to recall, suggesting that more proficient speakers make use of increasingly complex syntactic patterns to group linguistic data efficiently. i.e. complex grammatical structures hinder beginners but help advanced
Ss to recall spoken language. Call also cites St Jacques (1964) who found that Ss with high scores on pronunciation tests also had high scores on an aurally-presented digit memory task. Harris (1970) showed that STM for target language input and various measures of English proficiency also correlated positively, suggesting that measures of STM are good indicators of target language proficiency.

Call (1985) concludes that
1. L2 memory span is shorter for the target language than for the native language;
2. the amount of L2 language input that can be successfully processed increases with proficiency in the language;
3. knowledge of L2 syntax is an important factor in increasing the amount of linguistic material that can be retained in the STM.

Overload of the processing system was demonstrated by Cook (1975) using single and double centre-embedded relative clauses. Foreign adults and native children had more difficulty in interpreting single embeddings than native adults, and double embeddings were difficult for all groups. He interpreted this as overload and the use of inadequate processing strategies.

Call's work (op. cit.) confirmed Cook's hypothesis
that primary memory (effectively STM) is largely independent of whichever language (L1 or L2) is being used, and contributes less to the process of listening comprehension. Secondary memory, or LTM, a part of which is a speech-processing memory in Cook's terms, deals with syntactically connected text to the exclusion of random words and numbers. She also corroborated earlier work that suggests that memory for digits is different from memory for words.

Call (op. cit.) used a battery of memory subtests related to listening comprehension scores on a standardized aural proficiency test. She showed that her subtests of meaning comprehension and lexical/syntactical comprehension (i.e. of isolated sentences) correlated most highly with proficiency, the latter subtest accounting for virtually all the variance in proficiency scores. In other words, memory for syntax was the best predictor of the listening skill. Furthermore, she shows that auditory STM is an important component of listening comprehension.

A potentially useful way of classifying knowledge is to distinguish memory for personal experience and that for the learning of the experiences of others. Episodic memory is proposed as being autobiographical in nature, and stores information about temporally dated events and the temporal-spatial relations between them. Semantic memory stores more general information about rules and formulae necessary for
the use of language, as well as the organized knowledge a
person has about language, concepts, referents and their
interrelations and knowledge of the world. Following this
proposal, researchers have been occupied with investigating
whether or not this dichotomy represents functionally dis-
tinct systems, i.e. whether both are governed by comparable
laws and whether one memory influences the other.

A major difficulty that has arisen in the interpret-
ation of findings purporting to support or refute this dis-
tinction has been that of assigning tasks and information
to either of the stores. Because any retrieval operation
from the semantic memory is an event in episodic memory, it
is arguable that it affects semantic memory content. The
two systems may be interdependent because learning from an
episode will produce a rule which is stored in the semantic
memory.

One of the main reasons for maintaining the function-
al distinction between episodic and semantic memories is
that it appears to fit the growing body of research on the
memory performance of amnesic patients. In one experiment,
they acquired a mirror-reading skill, showed good perform-
ance over long intervals of time but retained little or no
episodic memory for the tasks employed.
6. 3 Attention

The idea that attention should be limited in capacity perhaps began with James (1890), but the first formal model of attention was Broadbent's (1958). Briefly, he assumed that all stimuli reach a sensory store and is passed on to a filter, which blocks out some of the input while allowing other attended-to inputs to pass through. The filter may be tuned to select stimuli for further processing on the basis of certain physical characteristics. The attended message is then processed through a limited capacity channel with access to long-term memory and to the response system. (See fig. 6.1).

![Figure 6.1: A block diagram showing the major components of Broadbent's sensory filter or stimulus-selection theory of attention.](image)

Various experiments showed that this elegant theory was inadequate, and prompted theories with no filter prior to recognition. In Norman's (1968) model, all inputs undergo some perceptual processing and contact their repre-
sentations in LTM. Thus it is assumed that all stimuli are recognized automatically and simultaneously, but are as yet unaffected by attention. At this stage, another source of activation is brought into action, a pertinence mechanism, which activates the items that are important to the individual. Information that receives that highest total input from sensory input and pertinence mechanisms combined then reaches consciousness and is selected for further processing, e.g. responding verbally or storing it permanently in LTM. Selective attention is therefore assumed to limit how many items can be responded to, but not to influence recognition. (See fig. 6.2)

Figure 6.2: A block diagram of some of the major components of Norman’s response-selection theory of attention. The circles in LTM depict memory locations or dictionary units.

In summary, stimulus selection models differ from response selection models in the stage of processing at which selective attention is assumed to occur. In the former, selective attention occurs prior to recognition of stimulus
input. In the latter, attention does not influence recognition but operates late, choosing among competing inputs. Both theories assume, however, that there is no permanent memory for unattended items.

Neither theory, however, could account for the fact that the meaning of unattended messages has been found in recent studies frequently to be processed, and that responses were not as limited as the theories predicted. In a dichotic listening task, subjects had to attend to messages which were ambiguous. In the unattended ear, messages contained words or sentences which were found to influence the subjects' interpretation of the ambiguous sentence. Thus, in the ambiguous sentence "They threw stones at the bank yesterday", 'bank' would be interpreted as 'the side of a river' if they heard a sentence containing the word 'water' in the unattended ear, but as the financial institution if the unattended message contained the word 'money'. Subjects were reported as seeming unaware of the content of the non-shadowed message, never included words from it in their shadowing and had no recall for the unattended channel. The meaning, however, had been processed.

These filter theories imply that man is a passive being and is bombarded with stimuli from which he must be protected. This negative view also takes no account of past experience. As one researcher neatly metaphorized, a man
picking apples in an orchard does not necessarily pick them all; he might select only the ripe ones (experience of stomach pains resulting from eating green ones); he is selecting, and so is not passive. Finally, he is not being attacked by the apples.

Therefore if the individual and his perceptions are seen as active, there is no need to postulate a filter to protect him from his environment. This is the view that Shiffrin and Schneider (1977) took with their capacity theory, based on Kahneman's (1973) capacity model, in which he proposed a general limit on the energy available for performing mental operations. This varies within and between persons as a function of a number of organismic and environmental states. This limit does not apply to any specific stage of information-processing, but can be flexibly allocated to different stages of processing and to different acts. Rather than the attentional mechanism being characterized by a limit in capacity, it is the mental operations that differ in the amount of attentional capacity they require. Thus the early stages of information processing require only a minimal amount of attention, but attentional demands increase as the operation moves through the system.

There is deemed to be a continuum of attentional requirements among encoding processes; those requiring a
minimal allocation of attentional capacity are designated 'automatic'. At the other end of the continuum are those mental operations which demand a considerable amount of attentional capacity and which have been called conscious, controlled or effortful. Furthermore, attentional capacity has a variable limit which varies within and between individuals according to task demand, mood, and arousal.

Automatic processes are defined as not requiring access to working memory, occurring without intention, without necessarily giving rise to awareness and without interfering with other processes. Because of this last, they often occur simultaneously. Shiffrin and Schneider (op. cit.) added four other assumptions: that once activated, they run to completion, that they are difficult to suppress, that they do not on their own result in new information (i.e. they do not result in learning), and that they develop under certain circumstances if given large amounts of practice, although the last two could be characteristic of 'learned' automatic processes.

Automatic encoding of information barely affects the capacity to process other components of the flow of information. Examples of these are spatial location, time, frequency of occurrence and word meaning. Automatic processes operate continually to encode certain attributes of whatever information is the focus of attention. Once a process
is automatized, it can no longer be improved upon by additional practice and continues to operate even when the individual is under stress. They do not require either awareness or intention and their operation cannot be willfully inhibited. We can, however, also pay attention to incoming information that would otherwise be automatically encoded; while this does not improve the encoding, it reduces the remaining attentional capacity. Automatic processes are thought to be either innate or resulting from practice, as for example the process of encoding the meaning of words from their written representations, an important component of reading.

On the other hand, controlled processing, also known as 'conscious strategies' and 'effortful processes', require an expenditure of attention and effort, use a portion of the limited capacity system (the working memory), and so limit the ability to engage in other effortful processes. Examples of these are imagery, rehearsal, organization and mnemonic or elaborative techniques. Shiffrin and Schneider assumed that there are two different kinds of controlled processes: accessible and veiled. The former are slow, can be instituted and modified by instruction and are open to introspection, e.g. rehearsal. Veiled processes occur quickly, are difficult to modify through instruction and are not necessarily open to conscious awareness. Examples are searching for items in the working memory, and certain
aspects of language comprehension. They improve with practice, are voluntarily used, are susceptible to instruction and vary greatly from individual to individual.

Since controlled processes occupy capacity, they are usually found to work serially. Two or more controlled processes can only be performed at the same time without interference if their combined processing demands do not exceed the capacity of the system. Controlled processing is also assumed to be able to lead to permanent changes in LTM, that is, they show the effects of learning.

Care is needed in the determination of what constitutes automatic and what controlled processes. If someone has to perform two tasks concurrently, we can compare how well he does them with how well he performs them separately. If concurrent performance of the two tasks involves a decrement in either, then both must occupy attentional capacity; both are controlled processes. On the other hand, if concurrent performance produces no decrement in performance, there are two possible interpretations: either one task is automatic, or one or both are controlled processes but do not exceed the capacity of working memory.
6.3.1 Attention and memory

In the light of this information-processing view of attention, we can more clearly perceive memory processes. We may regard any item to be remembered as a bundle of attributes, and memory traces as those attributes which have been encoded. We may then add the notion that when a person attends to an input, some of its attributes are automatically encoded into LTM, while others require more or less effortful processing to be encoded. Among the effortful processes are the use of imagery, elaboration of attributes and the relating of these to other items, both of which are memorizing devices. In other words, memory skills can become automatic through sufficient amounts of practice.

The process of encoding meanings of words from their written representations, together with reading, of which it is a crucial subcomponent, is one of these memory skills. It is, however, a learned automatic process (as opposed to one that is genetically based) and can be disrupted. From this, researchers have inferred either that reading (and learned automatic processes in general), share only some of the attributes of fully automatic processes, or that they are fully automatic except under stress.
6.3.2 Attention and learning

Filter theories treated newly acquired skills and highly practised ones equally. Capacity theories emphasize the influence of learning on attentional processes. Learning to walk or eat with implements are examples of developmental skills which progress from controlled to automatic, and driving and typing are other motor skills which become automatic. In the early learning stages of the skill, full attention is required, to the exclusion of all other attention-demanding activities. Practice seems to make subcomponents of skills become automatic until most or all of the skill is automatized. At any time, however, attention can be focused on an automatic skill, as witnessed in reactions to emergencies when we are driving.

It is still not clear what changes occur when a controlled process becomes automatic, but it is reasonable to suggest that overlearning is the key. That is, a skill is practised well beyond the point at which it is being performed well.

6.3.3 Attention and stress

Attentional capacity is seen as having a variable limitation within and between individuals and dependent on a number of internal and environmental states. Any limit-
The relationship between arousal and cognitive capacity seems to be a complex one, typically conforming to an inverted U.

Figure 6.3: The schematic relationship between cognitive capacity and arousal.

Figure 6.3 shows that there is an optimum level of arousal; noise is often used in psychological experiments.
as a means of manipulating arousal, and has been shown to affect extroverts beneficially since they have suboptimal arousal levels, but not introverts. Under high levels of arousal, only automatic and unconscious processes function, a fact recognized by the trainers of divers, pilots, parachutists, firemen and others.

It appears that overarousal narrows attention from peripheral information towards central information. Spielberger & Weitz (1964) showed, for example, that high anxiety facilitated the performance of high proficient Ss, but had detrimental effects on others. Spielberger and Sarason (1976) record that anxiety in general energizes, but can debilitate middle ability learners. More recently, Nord stated that there is a good deal of what is called 'stimulus generalization' in the anxious person, making any discrimination learning much more difficult for him. (1980: 9).

Thus, in a task such as L2 listening comprehension, for the early learner a discrimination learning situation which requires attention to a wide variety of cues, this exclusion of 'irrelevant' cues would impair the performance of most students. In this context, arousal may be interpreted as stress, which some students claim they suffer, with consequent deleterious effects, during listening comprehension exercises in the classroom. (See chapter 9)

Other studies point to 'noisy' conditions focusing
attention on the relevant aspects of input, such as word-order, the noisy conditions bringing about the increase in processing power which is invested in ordering the input. It has also been shown that arousal affects the learning process rather than the recall process. Hamilton (1972) showed that when noisy conditions obtain on either first or both trials, recall of words in order was better than if noise was present only on the second trial or on neither. There are also findings that words learnt under conditions of high arousal tend to be less well recalled in the very short term.

6. 3. 3 Attention and echoic storage

If maintaining items in sensory storage is automatic, iconic and echoic storage should not be affected by the performance of concurrent activity. Doost & Turvey (1971) indeed found that iconic storage and holding items in working memory did not interfere with each other.

Anderson & Craik's (1974) experiment into the extent to which echoic storage requires controlled processing has been re-interpreted in the light of capacity theory. The auditory sensory register has a greater duration than the visual sensory memory. It is inferred that the visual process is entirely controlled, but that the last portion of the auditory is automatic. It is thought that this auto-
mamic processing includes looking up at least some aspects of the individual meanings in LTM.

6. 4 Process

Currently the conceptualization of the sequence of events in L2 listening comprehension presents a reasonably clear picture. Listening is considered to consist of active, complex processes that determine the content and level of what is comprehended. These processes construct meaning-based representations initially identified in STM and stored in LTM. Anderson (1985) recognizes three interrelated processes: perceptual processing, parsing and utilization. These may flow into one another, recycle and be modified based on what occurred in any of the processes.

In perceptual processing, attention is focused on the oral text and the sounds registered in the echoic memory are displaced by subsequent sounds within seconds.

"It seems likely that the same factors that focus attention on the oral text also focus attention selectively on key words or phrases that are important in context, on pauses and acoustic emphases that may provide clues to segmentation and meaning, or on contextual elements that may coincide with or support the interpretation of meaning such as the listener's goals, expectations about the speaker's intent, and the type of speech interaction involved." (My italics)

O'Malley, Chamot & Küpper 1989
The italicised gobbet is unproven, of course. It has not been shown that they are "the same factors": Early listeners give all the appearance of focusing (too hard) their attention on the oral text, but are then overwhelmed by the input, because they are attending to the phonological and lexical aspects. This in turn implies that "focusing attention selectively on key words and phrases" is a subskill to be learnt, and not necessarily the same factor.

The second stage, parsing, is the construction of meaningful mental representations from the identified words and phrases (and other linguistic and non-linguistic information at higher proficiency levels). The representation is an abstraction of the original word sequences, which can be used to recreate the intended meanings or even the original sequences. The size of the segment or chunk of information processed will depend on the learner's knowledge of the language, knowledge of the topic and how the information is presented. Anderson (op. cit.) proposes that the key to segmentation is meaning, which may be represented syntactically, semantically, phonologically or any combination of these. (Incomplete knowledge of L2 will of course hamper this).

Utilization involves relating a mental representation of text meaning to existing knowledge stored in LTM. Listeners make use of real world and linguistic knowledge to
identify the meanings of propositions, real world knowledge being organized as propositions and schemata. The listener augments these with the new information, the more elaboration taking place, the better the memory for it.

The advantages of schemata are that they permit the listener to anticipate what will occur next, to predict conclusions and infer meaning where a portion of the text is completely understood. This is top-down processing.

Linguistic knowledge consists of propositions and schemata in LTM about grammar and syntactical rules, and those who interpret meanings based on the linguistic characteristics of the text are using "bottom-up" processing and

"are forced to determine the meaning of individual words and aggregate upwards to larger units of meaning. This approach is problematic in that the sound, segmentations and linguistic markers are subject to interference from the first language."

O'Malley, Chamot & Küpper, 1989

Our contention is (see 8. 4) that circumstances conspire to force the low proficiency listener to adopt online translation as a strategy, which by ensuring overload, effectively cuts him off from top-down processing and from the opportunity to indulge in energy-saving anticip-
6.5 Summary

To conclude this brief overview of two major areas of psychological endeavour, we describe the conditions which differentially affect automatic and controlled processes.

1. Automatic processes should occur equally effectively under incidental and intentional learning conditions, because they require little attentional capacity. Controlled processes will usually be superior under intentional learning conditions, since they require the allocation of attentional capacity and this will not necessarily occur under incidental learning conditions.

2. Instructions about how to carry out an automatic operation will not increase efficiency, nor will practice, since these already function at asymptote.

3. Controlled processes take part of the attentional capacity and limit the efficiency of other controlled processes. Both instructions on how to perform them and practise them will be helpful.

4. Attentional capacity is reduced or reallocated under conditions of stress, such as high arousal. Such conditions
will provoke the demise or diminution of controlled processes, reducing their number, quality, accuracy and efficiency.

5 Attentional capacity increases with development. Practice improves the performance of controlled processes; if the controlled process does not improve, it indicates the use of an inefficient or inappropriate strategy.
7.1 Introduction

The impact of Krashen's theory on the L2 teaching world was enormous. On the one hand, it found many adherents who found that it accorded with their intuitions and for whom it provided a basis for investigation. On the other, the dogmatic claim for the immutable distinction between acquisition and learning and the unverifiability of its tenets, provided a stimulus for other academics to improve the status quo.
In point of historical fact, and for reasons unknown to this writer, a perfectly adequate model based on speech perception research already existed before Krashen's model emerged to hold sway, but went unnoticed by the L2 teaching world. This was Massaro's model showing the probable temporal course of auditory and visual information processing (1975). He proposed that the sound wave pattern passes through auditory feature detectors and is stored in the echoic memory for 250 - 300 msecs. Linguistic rules and other knowledge systems are called up from LTM to interpret this signal for primary recognition and to synthesize it into phonemic-, syllable- and word-strings. As traces of these representations decay, further analysis and recognition result in the generation of a more abstract (semantic) representation. Recoding and rehearsal retain this in the LTM. Cole's and Marslen-Wilson's work (1975 et seq.; see chapter 2) substantiates the model.

Chaudron (1985) and others believe that Massaro's model should apply to L2 learning, with adjustments in the contributions of L2 knowledge and world knowledge, which contributions will be smaller or non-existent in the early stages of learning to listen. As Chaudron (op. cit.) has said, an important factor in

"the operation of such a perceptual system is the degree of control exercised by the learner. The idea of automatic and controlled processing, first formalized by Shiffrin & Schneider (1977), proposes that automatic language 'derives
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from innate mechanisms for perception and analysis of human language, or from controlled processes that, through repetition, become automated." (Chaudron, 1985: 4)

and it is puzzling in the extreme that the SL teaching world should disregard such useful concepts of such ready applicability, despite McLaughlin's (1978) article, published in the same journal as some of Krashen's work containing explicit reference to this work.

Bialystok (1978, 1982) was the first to apply this in L2 research, followed by McLaughlin, Rossman and McLeod (1983). Here we examine some of the theories put forward as advances over Monitor theory.

7.2 Bialystok's model

In 1978 Bialystok published a model which uses the terms 'explicit knowledge' and 'implicit knowledge' in preference to Krashen's 'acquisition' and 'learning'. She sees explicit knowledge becoming implicit by means of formal practice. The contribution of non-linguistic knowledge represents another advance in her model over Krashen's, who does not consider this aspect. That is, she proposes that the learner does not isolate his L2 from previous learning; he brings all the means at his disposal to bear on the problem of second language learning. Furthermore, she includes the mental strategies allied to the input/output or
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comprehension/production process. She views output as coming only from implicit knowledge, producing two types of response: type I, which is spontaneous or immediate, and type II, which is deliberate and requires time to be emitted.

Fig. 7.1: The Bialystok model of SL learning.
The dashed lines in fig. 7.1 indicate language learning strategies: 1. Formal practising, in which the learner concentrates more on the code (grammar rules, pronunciation etc.), which feed respectively the explicit knowledge store and the implicit knowledge store — in the latter case with the aim of making automatic patterns; 2. Functional practising involves increased exposure in order to improve communication such as talking and listening to other speakers and watching films with the focus on direct language use; 3. Monitoring, which involves considering and modifying learner behaviour based on knowledge of the code, and which is related to Type II responses; 4. Inferencing involves acquiring some explicit knowledge about the code. This may take the form of inferring a grammar rule from knowledge of another language. Similarly, explicit knowledge may be gained by inference from implicit knowledge, and finally inferencing from the response itself, as when the meaning of a word is derived from its context.

Of particular importance is the concept of formal practising, which ‘moves’ linguistic knowledge from the explicit to the implicit knowledge store, a process Bialystok sees as “automatization” (1978: 77). This was first discussed by McLaughlin (1978) as a process whereby conscious, deliberate, slowly-expressed phrases become, by repeated
use, unreflected rapid routines. In this model such processes are seen as relating to production of spontaneous Type I utterances. In section 7.5, they will reappear applied to comprehension processes.

7.2.1 Evaluation

The model considers the normal learner. As we shall see later, it is not the case that all learners isolate L2 learning from previous learning. Ineffective learner-listeners, according to O'Malley (1985), do isolate what they listen to, but in our view, virtually all early (=ineffective?) learners have little option but to treat L2 aural input as separate, new information. This does not detract, however, from the model, which is essentially sound.

Different learner tasks would, according to Bialystok, involve different processes and strategies. Grammar tests focus on the process linking exposure with explicit knowledge and the monitor strategy. Listening comprehension testing might use the implicit knowledge store more heavily, but with some help from the other stores.

Bialystok's model accords well with experience, and gives due importance to the key factors of exposure and practice, and how they might affect processes. However, we require more detail about how linguistic factors and psy-
chological mechanisms combine to affect the learning of the listening skill.

7. 3 The integrated model

Tollefson, Jacobs & Selipsky (quoted in Nagel & Sand-

Fig. 7. 2: The integrated model. Tollefson et al's model combining Krashen's, Bialystok's and Lamendella's models.
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ers, 1986) have integrated the components of Krashen's, Bialystok's and Lamendella's models. [In 1977 Lamendella proposed a system of hierarchical networks or infrasystems of information processing. He visualized a cognition hierarchy and a communication hierarchy as related "neuro-functional metasystems" which differ in function. In adults the former is essentially a problem-solving component in FLL, and the latter is responsible for L1 and L2 acquisition. Later, an executive component was added, which controls the flow of information and oversees the processing operation by transmitting input to either hierarchy and is responsible for learning or acquisition].

The integrated model sees acquired and learned knowledge as being stored separately but each transferable to the other hierarchy. Both Monitor and affective filter affect input and influence the executive component's processing choices.

7. 3. 1 Evaluation

Two major advances are incorporated here: —

1. The feedback loops from the knowledge stores assist the executive component to determine where to send incoming information. That is, the state of knowledge of either sort should have some influence on whether the input is a problem to be dealt with by the cognitive organizer or is with-
in the capacity of the communication hierarchy.

2. The cognitive and affective feedback from the outside world which has figured nowhere in any previous model. There is a suggestion (the arrows at right in fig. 7.2) that this feedback might affect output monitoring, but more importantly it affects input, again influencing the executive component in its routing decisions. The model also allows for an interlanguage (between FLL and SLA infra-systems — the “shared subsystems”) which is a pervasive feature of early L2 comprehension.

We could also draw attention here to the distinction made between input and intake, which was resuscitated in this model. It was Corder (1967) who first distinguished between input — what is available to the learner, and intake — what actually goes in and is used by the learner. “This may well be determined by the characteristics of his language acquisition mechanism. (1967: 165). Chaudron (1985) suggests that these ‘characteristics’ include two aspects which are probably independent of each other. “One is the current state of the learner’s knowledge of the target language, or his internalized interlanguage. The other involves the procedures, processes and other psychological variables that make up the learner’s cognitive apparatus.” (1985: 2). These procedures are what we refer to as strategies. (See chapter 8).
7.4 Nagle & Sanders' model.

Nagle and Sanders (1986) set forth a model specifically dealing with listening processes. They include relevant psychological correlates such as short- and long-term memory, and the sensory register or echoic memory, which can very briefly hold raw sound. They refer to trace decay (or fading of memory) and interference of arriving input with anterior input as impeding factors in information processing, and rehearsal as an activity which can strengthen items in the short-term memory.

They draw attention to the concepts of controlled and automatic processes, the former with practice converting into the latter. Schneider and Shiffrin (1977) defined a controlled process as "activated under control of, and through attention by, the subject". In other words, it is a deliberate, active learning process, a series of acts which is practised. The automatic process is "one that (nearly) always becomes active in response to a particular input configuration, where inputs may be internally or externally generated and include the general situational context ... activated automatically without the necessity of active control or attention by the subject".

(op. cit. 1977)

Any new automatic process requires an appreciable amount of consistent training, which means that it cannot be equated
with Krashen's 'acquisition', which is implicit, subconscious learning and not susceptible to training.

Nagle and Sanders point out that most automatic processing occurs incidentally, but "most controlled processing occurs in performing new language skills which require a high degree of focal attention." The development of skills necessary to deal with complex tasks "involves building up a set of well-learned automatic processes so that controlled processes will be freed for new tasks." That is, since focal attention has a limited span, only a certain amount of controlled processing can be performed at any given moment. "Automatic processing is critical to comprehension because too much controlled processing may lead to overload and breakdown." (Nagle & Sanders 86: 15).

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<table>
<thead>
<tr>
<th>Focus of attention</th>
<th>Controlled (new skill)</th>
<th>Automatic (well-trained skill)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focal</td>
<td>A Intentional performance</td>
<td>B Intentional performance</td>
</tr>
<tr>
<td>Peripheral</td>
<td>C Incidental performance</td>
<td>D Incidental performance</td>
</tr>
</tbody>
</table>

Figure. 7. 3: Performance as a function of information processing and focus of attention. Adapted from McLaughlin et al (1983), cited in Nagle & Sanders (1986).
So on this analysis, the pre-intermediate listener, having as yet no automatic listening processes, must resort to devoting his attention capacity (here, focal attention) entirely to controlled processes. Attending involves applying energy to processing tasks and can vary from focusing on specific features of input to controlled processing for retrieval. (See 8.4.1)

Figure 4: Nagle & Sanders' model of listening comprehension processing in the adult language learner.

STS = short-term storage; LTS = Long-term storage.
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Research in visual processing indicates that attention is limited and that when the attention channel is overloaded, the subject tends to subdivide his task into smaller processing units so that he may perform, albeit slowly and laboriously. As the listener cannot slow the input down, his system is overloaded, which drives him to choose a smaller unit. Now, in the absence of direction to do otherwise, and because of arousal and other factors (see 8.4), the majority of learners seize on the most tangible, obvious unit, the content word, which together with other factors, ensures overload.

Practice means that formerly subdivided tasks can eventually be dealt with automatically. This allows attention to focus on more complex tasks, such as searching for the meaning of less- or un-familiar words and idioms, dealing with degraded sound, poor pronunciation, the speaker's intended meaning and the like.

Nagle and Sanders point out that the arousal system, which raises activity in the nervous system, may operate at higher than optimal level, also causing the subject to concentrate on a smaller number of cues. This finding coincides with our experience, that unskilled listeners who are over-aroused (or tense) comprehend less than relaxed listeners, which suggests that they are operating on fewer cues.
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The attending process is, however further complicated by the early listener's not knowing what cues to attend to. This will be discussed in the final chapter.

7. 4. 1 Evaluation

The use of psychological concepts of attention, memory, and arousal, as well as controlled and automatic processing, the authors provide a base which can be tested experimentally. Listening comprehension is treated as a skill with clear consequences for teaching and training.

The executive, a general control mechanism for dealing with input, seems to initiate controlled processes which are invoked for explicit knowledge and deals with items not fully comprehended from the knowledge store via the feedback loop. Nagle & Sanders say that, seen in this light, comprehension 'both adds to and draws upon learning, but ... it also draws upon an individual's inferences about new data based on all types of knowledge...' (86: 18).

Nagle & Sanders call their model 'listening comprehension processing in the adult learner', and it seems to represent the fully developed skill. We cannot be fully content with the model as it stands, for while it greatly contributes to our understanding of what probably occurs, it only hints at the developing stages.
These authors, supporters of frame theory (see 4.3), drew together established thinking on L1 comprehension models, which they say is fairly uncontroversial, (1986). This composite view may be schematized as in figure 7.5.

No perfect match, they claim, is usually possible between input and knowledge, since gaps may occur in the input (caused by ambient noise, or linguistic incompleteness), or in knowledge. The listener fills the gaps using inferencing procedures. Furthermore, because of the short-term memory's limited storage capacity, the input is sampled: the central processor uses different criteria to select these samples. As examples of these criteria, the authors suggest salience of input elements in bottom-up processing and expectations in top-down processing.

Both gaps and selective sampling ensure that comprehension is never complete, which means that at best only a 'reasonable interpretation' of the speaker's intention can be gained.
The authors recognize that lack of context means that higher-level knowledge cannot be accessed, which deprives the listener of predicting linguistic events, who must then gather information 'from the bottom' until 'knowledge frames are activated that permit predictions about the input' (1986: 264). They have in mind, however, a proficient listener who turns on a radio halfway through and has to
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establish the topic, rather than a learner.

Faerch & Kasper apply this model to L2 comprehension, mentioning only two minor adjustments. The L2 learner has limited L2 knowledge and therefore experiences comprehension problems. His unrealistic belief that he must decode every linguistic element may be based on a misconception of how language works, and add that this “may be induced through inappropriate teaching and learning activities, such as ... using translation into L1.” (op. cit. 265 – 66)

Secondly, L2 comprehension often involves more than one linguistic system. “... input data may be interpreted ... by means of the L1 system, and possibly other linguistic knowledge sources.” (op. cit. 266). They see the need to incorporate ‘some notion of receptive linguistic transfer’, and they refer to the separation of interlingual and intra-lingual inferencing.

To support this, they cite empirical research in reading, where learners relied on linguistic form and ignored the potential of background knowledge, and with listeners, Conrad (1985) found that low proficiency learners used syntactic information more than native speakers. What appears to happen is that the drive to comprehend L2 focuses attention in such a way as to blind the listener to his L1 knowledge, as if his mental set switched in the L2 pro-
gramme and simultaneously switched off access to all L1 knowledge programmes except L1 linguistic knowledge, which is used for referential or translation purposes.

7. 5. 1 Evaluation

Faerch & Kasper’s model is similar to Nagle & Sanders’ in that they acknowledge differential contributions from bottom-up (controlled) and top-down (automated) processing, and both have a central processor. They are, however, unconcerned with associated psychological factors (attention, arousal) which have important effects on the learner, and which we consider essential to any comprehension model.

Other factors being equal, the intentionally performed new skill at the focus of attention is predominantly data-driven. Attention is focused on detail. As the skill evolves, top-down processing increases in line with the movement of the skill away from the centre of attention (its gradual automatization). In other words, as automatization progresses, less attention is required for the detail, releasing attentional capacity for the retrieval and application of other knowledge sources.

While Faerch & Kasper attribute word-by-word decoding to a misconception of how language works, it seems more
probable that all the factors involved at this stage of learning-to-listen combine to impel the L2 learner towards word-by-word decoding. That is, exceeding the capacity of the attention mechanism, over-arousal, anxiety derived from past poor performance and the consequent exclusion of other knowledge sources combine to push the learner to rely totally on L2 linguistic input, or rather, leave him with nothing else. (See 8.4 for further discussion of this).

Finally, we might improve the picture the authors give of bottom-up processing, and at the same time incorporate new learning into the model. Faerch & Kasper refer to switching on a radio programme half-way through as an example of bottom-up processing: we use the lexical stock to fix the approximate topic area, and our world knowledge to identify it more accurately. A better analogy for the L2 learner might be a lecture. Given only the title, say, 'The holographic theory of memory', we can have little enough predictive knowledge to base any expectations on; most of the information will be new, but we shall continuously be attempting to relate this new theory to what little we know of the area. The difficulty for the L2 learner is better appreciated if we consider that his restricted linguistic knowledge (mainly lexical and syntactic) and his imperious need to attend to the phonological aspects of the language to extract meaning, combine to force his attention away from any previous knowledge he might have. I.e. he is cut
off from his world knowledge (or top-down processing) by the fact that his attention is entirely focused on the words he hears.

7.6 Anderson’s cognitive theory

O’Malley, Chamot and Walker (1987) write that linguistic theories have been developed with scant regard for the findings of cognitive theory. In a sweeping indictment of the blinkered approach, typical, it seems, of the whole field, they point out that linguists have proposed “that language is learned separately from cognitive skills and operates according to principles that differ from most learned behaviors.” (op. cit: 288). They cite as examples of “unique” language properties developmental language order, grammar, knowledge of language structures, social and contextual influences on language use, and the distinction between language acquisition and learning. In second language learning, theories which address cognitive processes do not go far enough, by failing to capitalize fully on developments in cognitive theory and research.

In their attempt to redress the balance, to carry out the cross-fertilization which is lacking, they begin by writing:

"In cognitive psychology, mental processing plays a central role in all learning and is the basic mediating variable for in-
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influences that are external to the learner, such as task characteristics and complexity, or internal influences such as developmental level, ability or motivation.”

Reliving on Anderson’s cognitive theory (1983, 1985), they suggest that language is stored and retrieved from memory much like other information, and that language acquisition follows the same principles of learning as do other complex cognitive skills. They set out to explain how information is stored in memory and how new information is acquired. The latter goes through a four-stage encoding process involving selection, acquisition, construction and integration. In selection, learners focus on specific information of interest in the environment and transfer that information into working memory. In acquisition, the information is actively transferred to long-term memory. In construction, internal connections are actively built between the ideas. Other information in long-term memory can be used to enrich understanding and retention by providing related information or schemas in which the information can be organized. In the integration mode, prior knowledge is transferred to short-term memory for use in further construction processes. The first two processes determine how much is learned, and the last two determine what is learned and how it is organized.

Declarative knowledge is represented in long-term
memory in terms of abstract meaning. The concepts on which meaning is based are represented in memory as nodes associated with other nodes through connecting associations or links, either by paired associations, propositions or schemas. The principal value of schemas is that they facilitate making inferences about concepts, but they also enable us to organize and understand new information as well as to infer information missing in recall.

The question whether bilinguals have one or two memory stores is a one that is still unresolved. Transferring information acquired in L1 to the L2 would be difficult because of the independence of the two systems. An early learner would have either to translate information from one to the other or to relearn the information in L2. Anderson's theory states that information has a meaning-based representation and would be stored as declarative knowledge through either schemas or propositional networks. That there should be separate stores is consistent with the notion of domain-specific language skills, which can be acquired either by direct exposure or by training, but communication in that domain in another language would be impossible because of the highly specific nature of the language.

In contrast to this argument for separate memory systems, a common underlying proficiency in certain language
skills is also a possibility, and not everything originally learnt in L1 would have to be relearnt in L2. Since, in cognitive theory, nodes in declarative memory are based on meaning rather than on a direct replication of language-specific structures or word sequences, nodes that access meaning may not be language-specific and furthermore may incorporate features that signal the use of one language or the other. Thus selection of the L1 or the L2 would take place in short-term memory, and would transfer the non-language-specific information to either language by connecting the knowledge to the language forms necessary.

Whereas declarative knowledge can be acquired quickly, procedural knowledge such as language acquisition is a slow process dependent on practice. The representation of procedural knowledge in memory is a key issue in cognitive theory and is contained in what Anderson calls production systems. He argues for a unitary theory of mind or a common cognitive system for all higher-level mental processes, in opposition to some theorists, like Chomsky, who talk of special faculties for language and other symbolic systems such as number. A production has a condition and an action, as in the following example:

IF the goal is to generate a plural (Condition)
and the noun ends in a hard consonant,
THEN generate the noun + /s/ (Action)
Condition-action pairs can initially be represented in declarative form, and gradually, through practice, be compiled into production sets to the point of automatic execution. Production applies not only to grammatical competence, but also to sociolinguistic, discourse and strategic competence.

Anderson goes on to describe the characteristics of three stages of skill acquisition. During the cognitive stage, the learner is instructed how to do the task or attempts it for himself. Activity is conscious, the acquired knowledge is typically declarative and can be verbally described by the learner. The L2 learner engages in conscious mental activity to find meaning in the L2. The learning process at this stage is characterized by intensive attention to the new language and deliberate efforts to make sense.

In the associative stage, errors in the original declarative representation of the stored information are gradually detected and eliminated, and the connections among the various elements or components of the skill are strengthened. Declarative knowledge becomes procedural, but is not always lost in its original representation. Performance begins to resemble expert performance, but is slower and contains errors. This stage corresponds to interlanguage, where the new language is not yet used with complete
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accuracy. Since active attention is being used in strengthening the skill, the amount of attention available for absorbing new information is reduced.

During the third, autonomous stage, performance is increasingly fine-tuned and errors gradually disappear. The skill can often be executed effortlessly, i.e. not at the focus of attention, and there is much less (if any) demand on working memory. Processing is now automatic.

7. 6. 1 Evaluation

Language is thus treated like any other skill. The distinction between conscious and unconscious learning becomes unnecessary. In unstructured learning situations, the learner will parse language into chunks based on meaning or language functions rather than language structures. Language processing without awareness depends on the stage of development of a given skill, and therefore could occur both in the classroom and outside it. Awareness of rules in any case is likely to decrease with increasing competence, as they become less frequently called upon. Finally, viewed cognitively, active conscious processes are a great advance on inaccessible unconscious mechanisms in that they can be described and used to assist learning.
CHAPTER 8

STRATEGIES

8.1 Introduction

Chapters 9 and 10 detail and discuss our research into translation during listening, or on-line translation (OLT), which is a strategy for comprehension. Second-language teachers and researchers typically speak of language-learning and -using "strategies" when referring to the ways in which Ss tackle the problems they face, problem-solving, according to Gagné (65: 58 - 59), being the highest level
of learning. Learning, incidentally, is used here in an unmarked sense and implies active cognitive operations upon concepts, principles and problems. In order to place this investigation in context, we review here what has been written on strategies.

Two kinds of knowledge have long been recognised in philosophy, and more recently invoked in artificial intelligence, cognitive psychology and applied linguistics: declarative, or the language user’s knowledge of linguistic rules and elements (knowing that, which is seen as static in the sense that it cannot be used for communicative purposes in real time, but only activated by procedures used while language is used or learnt. These procedures are known as procedural knowledge, or knowing how, and which do not necessarily operate independently of the type of declarative knowledge it activates.

Ellis has developed this dichotomy, adding that procedural knowledge (knowing how) — consisted of “the strategies and procedures employed by the learner to process L2 data for acquisition and use.” (85: 164), which clearly defines these activities as controlled processes. He divided procedural knowledge into social and cognitive components, the latter comprising various mental processes involved in learning and using the L2. It is within the ‘using L2’ category that we find production/reception and
communication strategies: “The former are defined by Tarone (1981) as attempts to use existing L2 knowledge efficiently and clearly with a minimum of effort, and the latter to do with compensating for linguistic inadequacies in the production of speech.” (op. cit p. 165). Ellis later states

“This chapter ... ought also to consider the reception process, but ... because this is an aspect of the ‘black box’ which has received little consideration, it will be omitted.” (85: 166)

He schematizes the foregoing thus:

![Diagram of processes, strategies and their relationships](Adapted from Ellis, 1985).

Ellis adds the caveat that the metalanguage in this area “is often confusing and vague”, and that researchers
do not use terms like process or strategy consistently. Even he does not truly clarify his terms, adopting Faerch & Kasper's (1980) incestuous definitions for process and strategy, where both definitions contain common terminology. They defined process as 'the operations involved either in the development or realization of a plan', and strategy as 'plans for controlling the order in which a sequence of operations is to be performed'. Ellis admits that 'there is little consensus concerning which behaviours belong to processes as opposed to strategies', but interprets Faerch and Kasper's 'process' as a sequence of operations, and a strategy as a feature of a process (85: 166).

Brown (1980) defines a strategy as 'a particular method of approaching a problem or task, a mode of operation for achieving a particular end, a planned design for controlling and manipulating certain information' (80: 83), and he goes on to distinguish two categories: learning and communication strategies, the former being 'a method of perceiving and storing particular items for later recall'.

Now, Ellis also states that strategies (outlined in Figure 8. 1)

"are not special to the learner. Native language speakers must be considered to use the same strategy types. What distinguishes learners and native speakers is the frequency with which some strategies are called upon." (1985: 165)
Further, it is quite clear that some strategies used by L2 learners (e.g. those identified by DeFilippis, Appendix B. 1) are rarely, if ever, used by native speakers. However, we can observe a variant of the OLT strategy at work when, for example, we listen to a compatriot with a strong regional accent. In the few seconds that we take to adjust to the new sounds (and perhaps unravel unfamiliar uses of words), we may rely on a form of OLT. This observation, however, need not stand in the way of the definition we propose.

We can define cognitive processes as being common to the learning and using of either L1 or L2, namely those psychological operations involving memory, attention, expectations and the rest. Thus processes, as we shall use the term here, are universal psychological operations involved in all language behaviour. In information-processing terms, they are automatic processes. The term 'strategies' can then be reserved for those mental operations activated when input is ambiguous or in some way incomplete, for the (learning or) use of language, whether L1 or L2. Strategies then, are controlled, conscious and are intended to enhance comprehension, learning or retention. Tarone's (1981) definition of strategy as "attempts to use existing L2 knowledge efficiently and clearly with a minimum of effort", while more obviously aimed at speech production, can painlessly encompass the use of the L1, as happens in OLT. A
strategy can consequently be selected and used or not, because the learner is in control of them.

Bialystok also distinguished between processes and strategies in this way. The types of strategies she cites are practising, inferencing and monitoring (see section 7.2), all of which she recognized as voluntary operations. That is, the learner can use them at will.

In Nagle & Sanders' model, controlled and automated processes are the labels attached to the performance of a given (sub)skill. The progress from controlled to automatic performance is a direct consequence of practice. The ways that the learner adopts to achieve automatic performance are the strategies that he adopts. (We cannot say that he is free to choose a strategy, since a variety of factors conspire to impel the majority of learners to translate while listening, in other words to adopt the OLT strategy, and it reasonable to suppose that these and other factors will be at work on other strategic cognitive activities).

Brown points out that learning strategies have typically been classified as transfer, interference, generalization and simplification (80: 84), but are more correctly seen as manifestations of one learning principle, the interaction of previous learning with present. OLT is a comprehension or reception strategy where the learner attempts
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to make new input (learning) meaningful by relating it to his L1 (previous learning). Faerch & Kasper (1988) have called this ‘synchronous transfer’ because it takes place at the moment of speech reception, but want to call it an example of inferencing. They avoid using the word ‘translation’ and point out that there will be high interlingual comprehensibility, or what psychologists call positive transfer, between related languages, such as those in the Romance or Scandinavian groups. It appears that no work has been carried out on languages of unrelated groups, such as between Romance and Germanic, but it is clear that interlingual comprehensibility will be fairly low. [The multiplicity of differences at all linguistic levels between English and Spanish means that much of the transfer is negative. The laboriousness of simultaneously attempting translation, discriminating sounds and determining meaning, makes it a task difficult enough for the bilingual but utterly impossible for the learner to achieve (because of the limitations in brain capacity). It is, we shall argue, a stage in learning-to-comprehend which is better avoided, if this is possible. Simultaneous interpretation is the most difficult of between-language skills, and presupposes a mastery of both tongues, which the OLT strategy-user has by definition not yet attained].

In what follows, it is patent that we have espoused the cognitive cause (because we talk about strategies, a
mentalist concept anathema to the purely-observable-event approach of the behaviourists).

“A cognitive view of SLA does not preclude a contribution from the L1. Rather, as McLaughlin (78) has argued, the use of L1 is merely one manifestation of a very general psychological process — that of relying on prior knowledge to facilitate new learning.” (Ellis 85: 37)

Likewise, we do not use the behaviourists’ term ‘interference’, which is only one aspect of the transfer that can and does take place between L1 and L2. Transfer has two facets: positive, which does not stand out because it is successful, and negative, which does, because it is not.

8. 2 Using introspective data

In order to discover what mental operations learners use, the only means currently at our disposal are those of requiring learners to discuss what they do during any specific activity. Introspection as a scientifically respectable way of determining psychological parameters was long anathema to social scientists, being dismissed as armchair psychology, unvalidatable and unreliable, and researchers in SLA were likewise reluctant to sully themselves with its stigma. In the 80s, however, attitudes to the use of introspective mentalistic data began to change, but not without some rearguard actions against the movement.
Seliger (1983) for example, stated that descriptions of mental processes are little more than post-hoc guessing and inferencing on the learner's part, but conceded that they could be used as a basis for investigation, but not to draw conclusions. Hulstijn & Hulstijn (1984) demonstrated that there was little relationship between a learner’s ability to perform a learning task involving grammatical selection correctly and his ability to verbalize the rule involved.

Cohen (1984) discusses such objections, but concludes that introspection can yield information about conscious strategies, although not, clearly, about unconscious internal processes of acquisition as proposed by Krashen (1982). Cohen is, however, careful to point out that the validity of this distinction is far from proven. Ericsson & Simon (1980) concluded that "verbal reports, elicited with care and interpreted with full understanding of the circumstances under which they were obtained, are a valuable and thoroughly reliable source of information about cognitive processes." (op. cit. p.247).

In what follows, we have to rely entirely on learners' statements for our knowledge.
8. 3 Types of aural reception strategy

DeFilippis (1980) studied listening strategies in 26 students of French, identifying the strategies adopted by skilled and unskilled listeners. First year university students (Ss), many with years of previous learning, were divided according to their performance on the MLA Co-operative Foreign Language Test into the top-scoring 13 and the bottom-scoring 13, the 12 middle scorers being omitted. Ss reported the strategies they used in attempting to solve each of a series of aural comprehension tasks for different types of material devised by DeFilippis. These tasks were:

1A - Audio-pictorial matching;
1B - Question-statement discrimination;
2  - Command execution;
3  - Conversations;
4  - Passages for recall;
5  - Aural Cloze passages.

In all, he identified 12 strategies (see Appendix 8.1). It makes little sense to enumerate the frequency of each one, as the use of a given strategy was dependent not only on the level of listener skill, but also of the task in hand. The translation strategy was never the most frequently used in any given task, but was the only one which
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used mostly by the
unskilled skilled

(3) conversations ........ key words +
role identification +

(4) passages for recall ...
visualization +
subvocalization +
translation +

(5) aural cloze ............ grammar +
role identification +
translation +


was used in all tasks. Furthermore, it was the strategy whose frequency of use most discriminated the skilled from the unskilled in the short tasks (1A, 1B & 2), being extensively used by the unskilled. In the longer tasks, the translation strategy was far less frequently used, but again was far more popular with the unskilled. The strategies best discriminating skilled from unskilled listeners are shown in table 8.1.

DeFilippis also notes that the skilled more often reported "automatic flow" (deriving meaning without translation) and were better able to organize auditory information for recall. He points out that the translation strategy was used four times more frequently by unskilled than skilled listeners, and that some of the former appeared to
use the strategy habitually, "regardless of task complexity", a finding confirmed by Faerch & Kasper (1986). He relates the comparative efficacy of the different strategies to:

1) the correctness of decoding the auditory stimulus;
2) the degree of knowledge of the grammatical and phonological systems and lexicon;
3) the relative ability to retain in memory any portion of the auditory stimulus.

More recently, O'Malley et al (1985) embarked on a wide-ranging investigation into L2 strategies. Through interviews with L2 students and teachers and classroom observation, they identified a comprehensive list of metacognitive and cognitive strategies for a variety of activities including listening for main ideas and facts, and inferencing while listening (inferencing meaning from context and predicting skills). This taxonomy is adhered to throughout all three studies by O'Malley and Chamot et al (see Appendix 8.2). The work was carried out on beginner and intermediate level students of ESL; the beginners had about 20 contact hours a week and may have had around 400 altogether (this is not specified in the article) and were native speakers of Spanish; the intermediate Ss were receiving two hours' English a day. They found that beginners used twice as many cognitive strategies as the intermediate students,
but translation, inferencing and imagery were used three times as frequently by the former.

Translation was the most frequently used by both junior student levels "although translation is generally accepted [by the students] as a highly inefficient strategy for language learning." (1985: 39). In the course of interviews, students frequently mentioned the limitations of OLT. That such awareness should appear, when our findings (see chapter 9), show widespread use of the OLT strategy, may be attributed to the fact that O'Malley was studying ESL students, while our subjects were EFL, and whose opportunities to use the L2 outside the classroom are in comparison drastically limited. Furthermore, the students are not comparable on the basis of the number of contact hours, O'Malley's population of beginners having had around 400 contact hours; our beginners would have had about 160 contact hours. Chamot & Küpper (1989) make the point that "Students in classrooms emphasizing grammar apparently preferred strategies such as deduction and translation, whereas (those) focusing on communicative proficiency tended toward strategies such as inferencing and substitution." (op. cit. 17).

Following the paradigm established by Naiman et al (1978), Chamot & Küpper (1989) also made special studies of eight exceptionally effective Ss at different levels of
learning. They

"used the printed comprehension questions provided before listening to get a mind set on what they were going to hear and call up what they already knew about the topic (elaboration) in order to predict possible content (inferencing). They then listened through the filter of their mind set, using the questions to focus on important content (selective attention) while continuing to call up relevant information (elaboration) to help themselves understand the text, and correcting or confirming their predictions as they listened (self-monitoring)."

(op. cit. 17)

The translation strategy is notable for its absence, emphasizing the probable higher level of proficiency of these eight – two beginners, two intermediate and four advanced. The implication is clear: if effective students do not use translation as a means of achieving comprehension, then we must find ways of steering all students away from this.

The study most relevant to ours is O'Malley, Chamot & Küpper (1989). They conclude that:

1. The frequency and type of strategies used differentiates effective from ineffective learners;

2. Strategic modes of processing can be trained (the first mention in the literature of this possibility);

3. The use of strategic processing can be shown to enhance learning.
Conclusions 1 is of particular importance here, as there are parallels between ineffective—effective and the early and later learner. That is, we may consider that the early learner and the ineffective learner manifest several of the same behaviours.

The translation strategy, then, is one of several which Ss use to achieve meaning. Its use mainly by the beginner and ineffective listener, and principally in attempting to comprehend isolated utterances is significant not only in the implications for teaching the skill, but also in that it underlines the transitory nature of the phenomenon under study.

8.4 The probable reasons for adopting the OLT strategy

The early learner is poorly primed (and often worse trained) to deal with aural comprehension. He comes to L2 equipped only with his L1 and some world knowledge. Our finding (see chapters 9 and 10) that most learners confess to being on-line translators means that their attention is divided between listening to the message and trying to translate it. If they are concentrating on translating the message, they will have little or no time (or attentional capacity) also to relate the new information to their knowledge of the world. Virtually all early learners seem to
Strategies

have a proclivity for OLT, a Herculean undertaking which very few people (simultaneous interpreters) ever manage to do successfully. As we shall see in chapter 9, there are indications that learners only gradually relinquish this strategy, which is arduous in the extreme. Why do so many learners adopt this bottom-up strategy when less strenuous top-down approaches are also available?

Adopting OLT, we argue, is not a conscious or deliberate choice. Avoiding it probably is, and with enlightened teaching may be proffered as a more attractive option. We have identified several factors which steer the learner towards this strategy, but not all of them necessarily operate in each learner or exist in his environment, and only some may contribute. (We have found none which act to entice the learner away from OLT). These factors are psychological and pedagogical, and are closely interrelated. They are:

1. Memory and attention mechanisms
2. Arousal and anxiety
3. Inadequate and inappropriate teaching
4. Transfer from a reading comprehension strategy
5. Inadequate learning
6. Lack of context
7. Expectations
8. 4. 1 Memory and attention mechanisms

In the early learner, comprehension has not yet become (is becoming) an automatic process, and

"the primary resource at the individual's disposal is attention. Attending involves the application of mental energy to processing tasks and may range from focusing on specific features of input to controlled processing for retrieval."

(Nagle & Sanders 1986: 16-17)

Experiments in visual processing have indicated that, when the attention capacity is exceeded, tasks are divided into smaller units as the subject seeks ways of performing. In auditory mode, the analogous process would mean focusing on the word, superficially the obvious minimum unit of meaning, since the listener cannot slow down the input to within their attentional capacity. As Nagle and Sanders point out, however,

"too much sub-division can overload the attention system, filtering out other items and causing a breakdown in processing."

(op. cit. p. 17)

Since words in themselves have little meaning — the phrase will contain meaning — they will be unrelated and hence difficult to remember. The learner, in his drive to comprehend, may store these isolated units in L1 which is far more familiar — meaningful — to him.
We noted in chapter 6 that that there are three separate conditions under which the LTM, which relies heavily on semantic coding, will resort to phonemic coding: 1) when semantic coding is difficult; 2) when the subject is required to perform a demanding supplementary task and 3) when he is given unrelated words and insufficient time to produce semantic links between them. In the translating early learner, all three coincide, and the brain, unbidden, automatically codes phonemically.

Condition 1 will have a particularly great effect when the listener does not know (or recognize) much of the material or has not sufficiently learnt his vocabulary (see 8. 4. 5). OLT is a very demanding supplementary task, albeit self-imposed (condition 2). Condition 3 will also hold if we accept that the listener takes in isolated words; inadequate linking of a word with its significance prior to the listening exercise will require time to make that link. In other words, conditions are favourable for the learner to code phonemically: He then has to re-examine what phonemic material he has garnered (probably isolated, possibly misheard, words), in order to give it meaning. If this involves returning to his original paired associate, L2 word = L1 meaning, this may entail his storing the meaning in L1. This process takes time as well as attentional capacity. And all the while the message continues.
Strategies

It is clear that this approach to deciphering aural material — retaining phonemically, then searching for meaning [and trying to inference links between the (relatively) unrelated words], is a more effortful process than directly accessing the semantic and real world knowledge stores. Attentional capacity is far more likely to be over-loaded, with the consequently decreased likelihood that other processes can take place, a vicious circle.

As if this were not enough, the attentional mechanism, already laden with phonemic coding, is further attenuated by the listener's lack of experience in dealing with this type of material. As listening comprehension is a controlled process in the learner, it requires a considerable expenditure of attentional energy. This reduces the brain's ability to engage in other effortful processes, and if the attentional limit is reached, no other activity, such as accessing any sort of knowledge — which is top-down processing, can occur, decreasing still further the chance of breaking out of OLT, which is a bottom-up process.

8. 4. 2 Arousal and anxiety

It has been shown that when arousal increases, we attend to a smaller number of cues. 'Noisy' conditions can increase arousal and improve performance in certain ways, but impair it in others, since attention is focused on only
some aspects of the environment. A teacher-controlled situation affects arousal, as Hulstijn & Hulstijn (1984) have shown, and we may hazard that the teacher may have both beneficial and detrimental effects on his students' performance. (See chapter 10).

Anxiety also raises arousal levels, and where past performance has been or is perceived to have been inadequate in either absolute or comparative terms, the learner may develop an attitude to listening comprehension which reflects this inadequacy. In our survey (see chapter 10), we asked students whether they became tense during classroom listening activities. Now 'tenseness' may be regarded as (a symptom of) anxiety "often brought on by task overload, [and] can be a major deterrent to the learning of listening comprehension" (Nord 1980: 8).

Other studies (Carrol 1963, Chastain, 1975; see Appendix 8. 3) support our findings, that anxiety correlates negatively with SL learning, although admittedly these were for English speakers learning other languages. Task overload also leads to a lessened ability to 'improvise in a new situation' and results in 'stereotyped habitual and familiar approaches' that may be unsuited to a new situation. We may tentatively conclude that overload leads to tenseness and tenseness to OLT.
8. 4. 3 Inadequate and inappropriate teaching

The correct techniques for the teaching of listening comprehension are still not widely known or practised. An example of the incomprenhension extant among authors, and probably accepted as gospel and practised by many teachers, can be found in Hutchinson’s otherwise excellent “Project English” (1986), winner of the English Speaking Union’s Duke of Edinburgh First Prize. He exhorts teachers to allow the students to read while they listen, which means that, since the visual sense is more highly developed than the auditory, they do not come to lean to rely entirely on the ear. [It has been pointed out that L1 learners are usually ear-dependent, since they cannot read, but that L2 learners have become “eye-dependent” because they can read. They seek confirmation of aural input by reading the script.] Naturally, if learners read while listening they may be lulled into believing that they comprehend the spoken text, but in fact the primacy of visual over aural input ensures that comprehension is via the eye. In any case, the ability to read English appears to be a liability as far as listening comprehension is concerned. (Eastman, 1988).

Teaching listening comprehension is widely regarded as a difficult, frustrating, unattractive and ephemeral activity, and some teachers consequently prefer activities where their rôles are more tangible, such as teaching grammar.
or assisting small group discussions. The teacher may also feel that merely playing tapes is not teaching. His attitude to teaching listening comprehension may therefore be subtly negative, and he may convey his unconscious preference for the more tangible to his students. As Chamot & Küpper say, "students in classrooms emphasizing grammar preferred strategies involving deduction and translation." (1989: 17)

Furthermore, the teacher may not know how to introduce aural material in a manner likely to foster its comprehension in the less proficient learner. Since practice is probably the key factor in comprehension training, it is necessary for the teacher to play tapes several times and still to maintain an unconcerned attitude to the learner's non-comprehension, partly because he cannot force comprehension on a learner and partly to obviate the growth of anxiety or a fear of failure in the learner.

Some teachers have an incomplete grasp of how language works, which may induce them to aim for total comprehension. That is, they believe that comprehension means understanding every word. This leads them to replay tapes more times than necessary, or even analyse or translate the tapescripts word-by-word after, or worse, before, any listening session. The virtually impossible and certainly unnecessary task of capturing every word might eventually
lead to competence in the skill, but is far more likely to lead to overload and anxiety, as well as to unwelcome attitudes to the listening activity. It is, incidentally, a training in bottom-up processing, which is profligate of attentional energy, and may bar the learner from even attempting top-down approaches.

This misunderstanding on the part of the teacher can percolate through to the student. Faerch & Kasper refer to the fact that

"L2 learners have unrealistic expectations about comprehension in a L2, believing that in order to have understood something completely they need to decode each and every linguistic element in the input. ... a misconception of how comprehension normally works in the native language."

(1986: 265)

and attribute this to "inappropriate teaching and learning activities such as looking up every word or using translation into L1 as a method of checking in text comprehension." (1986: 266).

8. 4. 4 Transfer of a reading comprehension strategy

Listening comprehension, like reading, is an encoding operation, and faced with the problem of comprehending aural material, many learners turn to 'aural reading' or
applying the same strategy that they use while reading. They will have discovered that one successful route to meaningfulness in reading lies in word-by-word translation. Since many surface features of English are similar to their L1, they can achieve a measure of reading fluency via translation. With aural material, however, this is extremely effortful and requires great concentration, not only because the student must work against time to consult his mental L1 lexicon or search for meanings, but also because of the morpho-syntactical differences which may exist between L2 and L1. These differences mean that he cannot translate strictly word-for-word, but perhaps by noun- or verb-phrase. This will entail holding up the translation process until the phrase is complete, retaining the phrase as it is translated, while simultaneously attempting to capture parts of the on-going message. Further, he cannot return to earlier contexts for syntactical or semantic analysis because of the fleeting nature of the input.

The foreign reader of English may well be subvocalizing the words he reads, in all likelihood erroneously, and will thus be reinforcing the wrong expectations as to the pronunciation of those words. Aural reading transfers negatively to listening comprehension for two reasons: (1) it ignores the crucial differences in sensory mode, and (2) it relies on word-by-word encoding, which is not the ap-
appropriate level for comprehension.

8. 4. 5 Inadequate learning

The counterpart to inadequate teaching is the fact that students do not recognize the need to overlearn most of the new words and idioms they encounter. It is the less adept learner who uses the OLT strategy, as DeFilippis and O'Malley (1989) showed, and it is fairly safe to assume that less competent listeners are so partly because they:

1) have not associated word sounds with meanings sufficiently closely to reduce access time to meanings; i.e. they do not work with L2 enough;
2) are likely to recognize fewer sounds as words and so are less likely to be sure of what they hear;
3) have less declarative knowledge of L2;
4) are aware of their poor capacity to comprehend aurally and are anxious while listening.

The reason for the need to overlearn L2 meanings is that any given sign must have its significance instantly available; i.e. hearing ‘table/mesa/tavola/tisch’ must yield the meaning as quickly in the L2 as in the L1. This applies as much to idioms as to words. Instant lexical identification can best be achieved through repeated use. Where instant lexical identification does not occur, the listener confirms meaning by seeking the original link by
which he learnt the word, namely its pairing with the L1 equivalent. He translates. The mental effort gives him meaning, but at the cost of time and attentional focus: he has less time to devote to guessing other half-heard words and to attend to the message itself.

Even when the learner has progressed sufficiently to have begun relying on top-down processes, an inadequately learned word or phrase may prompt an L1 search for meaning. Once he has ‘switched in’ the L1 translating programme, the strength of the habit and/or the current state of arousal may keep the encoding process in that translating mode.

Allied to his uncertainty over meanings is his lack of confidence in his ability to comprehend. Being less certain of accurately hearing L2 words, the listener needs commensurately more confirmation of the input. This drives him to try to understand at all costs, and the most obvious route open to him is OLT. Clearly, where a word, its pronunciation and meaning are overlearnt, the listener is sure that he has identified it both from the prior overlearning and the word’s prior context.

The less proficient listener works less at and with L2, and hence has less declarative knowledge (Naiman et al 1975, O’Malley et al 1985, 1989). The significance of this is that he does not reach the stage of internalizing L2
Strategies

syntax and consequently has few syntactic expectations. Thus, the features of L2 which differ greatly from L1, mainly syntactic, are not familiar enough to him; he is still as it were surprised by the appearance of this word in this position. As a result, he is unprepared for the words which arrive in his consciousness, causing him difficulty in contextualizing or building up meaning. An implication of this is that he cannot anticipate structures or meanings. (See 8. 4. 7)

Conrad (1985) found that less proficient listeners direct their attention to and rely more on syntactic cues and are less able to use semantic cues.

"With decreasing proficiency, listeners showed they had to base their expectations of the message on cues closer to the surface of the language. Like L2 readers, they seemed to be faced with so much new information at the syntactic and phonological levels that they were unable to retain and integrate all of this and additionally direct attention to the semantic cues." (op. cit. 67 - 8)

In other words, the early listener is deprived of the opportunity of using semantic chunking processes; his attention is directed to the mass of syntactic and phonological information which inevitably swamps the system. We can argue that, with the attention largely devoted to, and frequently overwhelmed by, phonological and syntactic aspects of input, the learner-listener has little enough at-
tentional energy remaining to access his semantic memory, which is also performed in a manner wasteful of attention energy (using OLT), and so cannot access his real world knowledge store, which would in turn allow him to anticipate meanings. He must therefore deal with L2 aural input as a new topic for which he has no relevant frame. (See 4. 3. 2). He is left with only the 'new' incoming information. We do not know whether he chooses to direct the focus of his attention to syntactic cues or whether he is forced to, but the balance of evidence we present here strongly suggests the latter.

Another aspect of this is that the early listener does not know what aspects of the sound stream to direct his attention to. In Spanish, for example, vowels contribute as much to meaning as consonants. In English (and German), by contrast, reduced vowels reflect the relatively minor role they and their containing syllable play in meaning.

These probable failings in less proficient learners, however, do at least point to ways in which we can train the learner to extract more meaning from aural input, suggesting exercises and learning routines which they can undertake before they start listening. These will be discussed in the chapter 13.
8.4.6 Lack of context

In chapter 2, we examined experimental evidence which showed that at the lowest comprehension level (word recognition), both acoustic and contextual information are brought to bear on input. Of particular relevance is the Garnes & Bond (1976) finding that "when the signal is unclear, listeners use their semantic knowledge to aid decoding." (This work was carried out using native speakers).

The non-native early listener has a less-than-perfect ability to recognize words, so for him the message is in parts at least unclear. The phonological, not to mention the syntactic, system is still unfamiliar to him, and the very unusualness of the sound-flow (not to mention its discrepancy from the orthographic system) is one of the factors which makes him concentrate overmuch on the acoustic message. His attention is focused on trying to recognize the words and initially separate them out from the sound stream. Where the listener does recognize words, these are likely to be isolated, (because he has too little attention capacity to apply to semantic access in sufficient amounts) which means that he cannot accumulate a context for them, except by relying heavily on an inferencing procedure. (O'Malley et al, 1985) This is likely to be erroneous, being based on sparse, inadequate and perhaps miscomprehended premises. Semantic knowledge, which the native or advanced
Strategies

Listener uses to accumulate and anticipate meaning within clauses and sentences, may in any case be incomplete in the low proficient L2 listener, through ignorance of either individual words or idioms.

Echoes of this inability to access the deeper structures of language were found by Olsen & Huckin (1990) in a study of non-native engineering students. Despite having good sentence-level comprehension of English, half the group studied could not produce adequate summaries of a lecture because they could not join the facts they heard into a cohesive argument and show understanding of the speaker's intention. They did not use rhetorical cues and prosodic markers, as did the better listeners, to see the overall point the speaker was making.

8. 4. 7 Expectations

Anticipation occurs on at least two levels, word-recognition and sentence processing. We saw in chapter 2 that words are recognized before phonetic input is complete (Warren 1970, Cole 1973 Marslen-Wilson 1975, Garnes & Bond 1976). As we saw in 3. 7, anticipation or expectation is an essential feature of the ultra-rapid comprehension process in L1.

The ability to anticipate is founded on a deep, over-
learnt knowledge of morpho-syntactical structures and semantic access. Even in the proficient early learner, this knowledge will be incomplete, forcing him to devote relatively more attention to prior and current context. Anticipation also frees the listener's attention to switch to the world and other knowledge in order to aid the comprehension process. On this argument, the learner who has little or no chance to access such top-down processes, cannot anticipate.

An eminently sensible (and totally different sort of) expectation most Europeans have of English, is that the written language will closely reflect the spoken. This fact, that English is effectively two languages, one written and one spoken, seems to be unrecognized, forgotten or assumed by most English or American academics in their discussions of SLA. It is nonetheless an important factor in listening comprehension. Eastman (1988) reports that using a simple phonetic representation with genuine beginners had startling effects on the ease with which learners were able to recognize words in spoken context and the rapidity with which they learnt vocabulary. The implication is that knowing the conventional orthographic representation interferes with lexical recognition and retards learning.

Finally, many Spanish students are led to believe that learning a language is like any other subject — all
declarative knowledge which they can rapidly absorb. They believe this because any language learning they have undergone has dealt entirely or largely with the subject in this manner. The procedural aspects of language are rarely practised because the subject is still (1990) regarded as unimportant, classes are large (rarely less than 40) and procedural activities such as speaking or listening threaten loss of class control.

More seriously, time-consuming practice is marginalized because the grammatical syllabuses are so extensive and poorly conceived that there is little time for other aspects of language learning. We may add to this the fact that many teachers have only minimal notions, or interest in, English pronunciation and may fear that authentic English on tape might make this patent to the students.

This one-sided "bureaucratic" teaching leaves at least two unwelcome legacies: first, the implicit notion that practice is unimportant; second, a dangerous reliance on the written word, which, together with the in-built expectation that pronunciation is related to orthography, creates mental expectations which are never realized.
8.5 Summary

Faerch & Kasper (1986) see translation as 'a misguided post-hoc check on comprehension induced by teachers' and learners' misconstrual of how language works'. While this may be true of reading, translation in listening activities is usually simultaneous with the activity, hence the term 'on-line translating', and so is not a post-hoc check. Furthermore, it appears to us to be the natural outcome of any of the factors listed in section 8.4, all apparently driving the learner in the same direction.

We believe that the factors outlined here are the principal ones at work on the early listener, all virtually obliging him to adopt the OLT strategy. All operate with different strengths at different times in different learners. Furthermore, they are all evanescent, in that exposure, experience or practice cause them gradually to diminish in their effect, until the listener resorts only occasionally to translation as a means to comprehend. We also believe that adoption of appropriate teaching methods will significantly reduce the probability that the learner will adopt OLT. This occupies us in the final chapter.

Finally we summarize schematically much of section 8.4 in an attempt to show the principal relationships between forces at work in the student.
Learning to listen: an investigation into the reasons for student John K. Eastman

Figure 8.2: The relationships between the principal psychological factors involved in listening comprehension.
Figure 8.3: The relationships between the principal environmental and attitudinal factors involved in listening comprehension.
Chapter 9

A SURVEY OF THE TRANSLATION STRATEGY IN EFL STUDENTS

9.1 Introduction

Of the four skills, listening comprehension is the one which presents the Spanish student with most problems. Teaching the skill is also a major problem for teachers. A certain lack of appreciation of the difficulties facing the early learner may be related to the fact that those non-native speakers of English who have reached even a moderate competence in this skill, tend not to recall the difficulties they encountered at the outset. Furthermore, and the fact seems to have been widely disregarded, most writers on the subject did not have to learn English, which is effectively two languages, one written and one spoken.
All European languages except English (and Danish) are largely phonemic, i.e. orthographical conventions consistently coincide with pronunciation. Deeply embedded in the Spanish (French, Italian, German, etc.) linguistic mentality is the expectation that the written text will support or reflect the spoken sound and vice versa. This expectation is rarely fulfilled in English, and the Spanish (French, etc.) student must re-programme his linguistic expectations (apart from morphological, syntactical and other re-programming), and dissociate nearly all written text from heard sounds.

With a view to investigating the translation strategy discussed, we carried out a survey by questionnaire of 2nd, 3rd and 4th year students at the Escuela Oficial de Idiomas, Alicante, in conjunction with a mid-term listening comprehension examination.

9.2 The questionnaire

The population under study, lower to upper-intermediate EFL students, is composed of those whose exposure to aural English is almost entirely limited to what they hear in the classroom; at the phonological level, expectations from their mother tongue have not prepared them for the ubiquitous assimilation, elision and stress-timing characteristic of the English language; their written/read
vocabulary is far greater than their spoken/heard vocabulary; they want to pronounce words the way they are written. Most students have not yet accustomed themselves to the idea that what they hear are words and phrases that are written in a very different way, and which they probably understand in written form.

Syntactically, his expectations must frequently be reversed: adjectives have no plural form and are preposed, verbs are analytically composed (his morphological ending becomes a preposed (pro)noun) often with a separate auxiliary — and an endless list of other fundamental differences. Nor can we talk meaningfully of mediation or intertextuality, because these are largely unformed and unreinforced outside the class. In short, in studying listening comprehension in the pre-intermediate learner, we are examining the early growth of a young skill in hostile ground.

The pre-intermediate and intermediate EFL students (Ss) under study seem to rely mainly on bottom-up processing, to which is added on-line translation (OLT), a comprehension strategy which should make some L1 top-down processing instantly available. However, as we shall see, OLT helps the S achieve understanding only in certain circumstances, in the earlier stages of learning, but later becomes a liability for most learners, because it overloads
the attentialional and memory mechanism.

Personal experience tells us that we resort to translation to L1 in the early learning stages of language learning, but that gradually we cease doing this. What we need to know, where listening comprehension is concerned, is:

1. what listening strategies are adopted;
2. whether listening strategies are associated with levels of comprehension;
3. which listening strategies are to be avoided, and how;
4. which LC teaching approaches are advisable (and which not).

To our knowledge, no similar studies had been undertaken at the time of this survey (1984), and these questions were previously unasked, and in asking them, we were open-minded as to the findings; thus Ss could not say what we wanted them to, because we did not know the answers. Nor did we communicate any of our hypotheses to the teachers who administered the test and questionnaire (the double-blind method).

The method of self-report, discussed in section 8.2, suffers from several limitations, but it is reasonable to
assume that by asking the same questions of a large number of Ss, any irregularities or deceptions will be lost among the larger patterns which might emerge. Even genuine, (i.e., unconscious), self-deception arising from introspection could also be acceptable if Ss acted on these beliefs. Indeed, the relatively large numbers involved provides some guarantee of reliability of results.

Finally, since this was the first investigation of its kind, our conclusions are all tentative. We suggest, infer, have tried to make common-sense interpretations of the data and have simplified analysis as far as possible for two reasons:

(1) We have only rudimentary computational support - insufficient for a sophisticated analysis of such complex data;
(2) We assume only rudimentary understanding of statistical analysis. There is little point in laborious computation of weak non-parametric statistics if the reader is unable to appreciate significance levels. Simple statistics, however, have been applied. (See Appendix 8. 1).

9. 3 The teaching context

The government-run Escuela Oficial de Idiomas in Alicante is attended by adults who want to learn English
(among other languages); i.e. our students are voluntary and self-motivated to learn for a variety of reasons. There are University students of English Philology and secondary school teachers supplementing their exposure to English, employees from various industries and commerce, as well as the merely curious and those wishing to travel abroad. Their ages range from 17 to 60, with the bulk in the age range 18 - 30. The teachers at the time of the study were all Spanish except one American and one Briton.

The objectives are to teach from beginner to advanced levels on a basis of one-hour daily classes to a total of 120 contact hours in four years. We were prevented by law at the time from providing a much-needed fifth year. We mainly use cassette recorders to present aural material in class, but each teacher's (T's) approach and the amount of time devoted to teaching listening comprehension is entirely personal, some making occasional use of video and the laboratory. Even though some Ts are more concerned and would like to spend more time on LC than others, the syllabuses demand that grammar and the other skills be taught too. Of the four skills, LC has historically been regarded as the least important, in the sense that if a S scored well on other parts of his year-end examination, Ts tended to overlook poor listening scores, and allowed the S to go up into the following year. (Each part of our examinations is directed principally at one skill, and each separate
part should be passed; failure in one part means failing the entire examination, which Ts are understandably reluctant to insist on, particularly with Ss who are competent in the other skills). This has meant that Ts of the more advanced levels tend to receive Ss with acceptable or better knowledge of the use of grammatical structures and written and spoken expression, but indifferent-to-poor listening ability.

The situation is aggravated because, of all the skills, listening is the most difficult for the Spanish S. While he can practise grammar, speaking, reading and writing outside class, there is little opportunity to practise listening. (The BBC World Service is poorly received, there were few cassettes available in English, and pop songs provide a sort of English which does not relate well to the material we use (dialogue and monologue) in terms of register, vocabulary or pronunciation, although they undoubtedly give training in the skill and improve it). Furthermore, until 1983 when we began using text-books which introduced new LC teaching methods, Ts had been teaching this skill according to the methods then widely accepted as correct, but which now appear to have hindered the efficient learning of this skill. By presenting short sentences, above all repeatedly, we were encouraging Ss to translate while they listened.
Of course, there is a continuous process of self-selection among Ss, despite differing approaches and standards among the Ts; i.e. better listeners are more likely to pass the examinations, less likely to find the listening activities unrewarding and more likely to continue studying the language. Unsuccessful listeners are more likely to find the listening activity too difficult, and, discouraged, stop learning the language.

9.4 Administration of test and questionnaire

In conjunction with a mid-year February examination, Ts gave a LC test to their own classes. After the test was completed, Ss were asked to complete the questionnaire (see Appendix 9.2), anonymously if they so wished (because of any offence they felt they might give in answering question 8). They were told that there were no right or wrong answers, but that they should try to answer as truthfully and accurately as possible. Ts were asked to give as much unbiased help as necessary in answering the questionnaire. (It was obvious from the data of one class that the T had suggested that Ss should complain about street noise. This data was eliminated from the study).

The test was based on a dialogue in Swan & Walter (1985: Unit 18B. 1), which the Ss heard three times after reading through the comprehension questions (Appendix 9.
3). As the test was given to three different levels of ability (2nd, 3rd and 4th year students), the questions had to cover a wide range of difficulty in terms of both detail and generality, although Ts were instructed to eliminate vocabulary limitations by helping with the comprehension of the questions.

9.5 Students’ strategies of listening

The Ss were grouped according to their answers to Q.2 in the questionnaire. Numbers were assigned to the answers given as shown in Table 9.1.

Q2. I try to translate (at the following levels):

<table>
<thead>
<tr>
<th></th>
<th>Easy</th>
<th>Neither easy nor difficult</th>
<th>Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Most</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>About half</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Less than half</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Nothing</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 9.1: Question 2 in the questionnaire: the numbers 1 - 5 were assigned in analysis to the answers given by each S.

Ss fell into three main groups:

FLATS, who claimed to translate equal or nearly equal amounts at any level, whether 555, 554, 455, 454, 444, 211, 121, 112 or 111:
FALLERS, who claimed to translate the easy more than the difficult (and so called because their Xs fall across the questionnaire page), e.g. 321, 543, 531, etc.,

RISERS, who claimed not to translate the easy but tried to translate the difficult (and so called because their Xs rise across the page, e.g. 345, 135, 124, etc.):

Those whose middle number was higher or lower than any other number, by more than one (e.g. 324, 231), and those who did not complete the question, have been discarded.

Numbers and percentages of the three main groups per year are shown in table 9.2.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FALLERS</th>
<th>RISERS</th>
<th>FLATS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>54 (42)</td>
<td>33 (26)</td>
<td>40 (31)</td>
<td>127</td>
</tr>
<tr>
<td>3</td>
<td>24 (24)</td>
<td>35 (36)</td>
<td>39 (40)</td>
<td>98</td>
</tr>
<tr>
<td>4</td>
<td>9 (21)</td>
<td>5 (12)</td>
<td>28 (66)</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 9.2: Listening strategy by year.

In percentage terms, the 'Faller' strategy becomes
The Survey

We may attempt an explanation for this as follows:-

The Faller strategy is successively less favoured because, as aural English becomes more rapid and complex, the Ss find it less possible or less necessary (because of practice) to translate the easy passages. i.e. increasing familiarity with certain words and phrases means that they do not have to translate them, and switch to Flat or Riser strategies.

On the synchronous data we have, it is of course not possible to deduce unequivocally if there is an evolution, i.e. whether an S progresses from one strategy to the next and what the order of this progression is. However, the data strongly suggest that, if there is a progression, it is Faller-Riser-Flat, and we may argue that Fallers translate the easy because they can, but do not translate the difficult because they do not understand it. Risers do not translate the easy which they comprehend without translation, but attempt to comprehend the difficult by translating it. Flats deal indiscriminately with all levels of material; Flat 111’s claim not to translate at all and Flat 555’s are those who claim to have developed their ability to translate simultaneously. [For brevity’s sake we shall refer to this as the evolutionary theory (of OLT strategy adoption), but with no suggestion that we regard it as proved].
This analysis takes no account of the effect of the teacher on choice of strategy. This factor is dealt with in Chapter 10.

9.6 Comparison of performance at different levels

Comprehension was measured with 35 open-ended questions (see Appendix 9.3), ranging from easy to very difficult. The measure (the 'L.C. test') had to test abilities ranging from lower- to upper-intermediate and was intended to relate broadly to ability. The mean scores and standard deviations on the LC test for each year were of course different:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>N</th>
<th>MEAN</th>
<th>S. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>127</td>
<td>10.44</td>
<td>5.1</td>
</tr>
<tr>
<td>3</td>
<td>98</td>
<td>15.89</td>
<td>4.8</td>
</tr>
<tr>
<td>4</td>
<td>42</td>
<td>17.29</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Table 9.3: Listening comprehension test means and standard deviations for each year. The 3rd and 4th years are statistically not different, and their data can legitimately be combined. We shall do this when no information is lost.
In order to allow comparison of performance irrespective of year and still take the crucial differences between populations into account, we can express each raw score in terms of its relation to its mean; thus for example, a 2nd year score greater than 10.44 + 5.1 (the standard deviation for the 2nd year population) will be assigned a value of +1, and a score greater than 20.65 (= 10.44 + 5.1 + 5.1) will be assigned a value of +2. A 4th year score less than 17.29 - 4.6 will be given a value of -1, and less than 8.09 (= 17.29 - 4.6 - 4.6) will be assigned a value of -2, and so on. These can be called Assigned Values. (See table 9.4).

<table>
<thead>
<tr>
<th>YEAR</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5.34 - 15.54</td>
<td>15.55 - 20.64</td>
<td>&gt;20.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6.28</td>
<td>6.29 - 11.08</td>
<td>11.09 - 20.69</td>
<td>20.7 - 25.49</td>
<td>&gt;25.5</td>
</tr>
</tbody>
</table>

Table 9.4: Ranges of scores derived from year means and standard deviations, expressed as Assigned Values, to permit comparisons between years. The LC test did not have decimal points in the scoring, but they are shown here for precision's sake.

9.7 Analysis and Comment

The 'Flats' scores expressed in this way are shown in table 9.5, which gives the distribution of Assigned Values.
of those Ss who claim to translate all aural material to virtually the same extent regardless of difficulty.

Of the 69 who translate the least, 19 obtained above-average scores, while only 5 high translators scored above average. That is 27% against 17%. The implication, that comprehension improves with less OLT, is clear.

ASSIGNED VALUES

<table>
<thead>
<tr>
<th>Q2. I try to translate</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(easy/=/difficult)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>all (#5*)</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>most (#4*)</td>
<td>5</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>about a half (#3*)</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>less than a half (#2*)</td>
<td>4</td>
<td>15</td>
<td>3</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>nothing (#1*)</td>
<td>7</td>
<td>24</td>
<td>13</td>
<td>3</td>
<td>47</td>
</tr>
<tr>
<td>Totals:</td>
<td>22</td>
<td>60</td>
<td>20</td>
<td>5</td>
<td>107</td>
</tr>
</tbody>
</table>

Table 9. 5: Distribution of scores for Ss adopting the Flat strategy. (Flats are defined as those marking two boxes at the same level, and the third one level higher or lower).

Those with below-average scores (the -1 column in table 9. 5) are distributed through all amounts of translation, but of these 22, fully 12 are 2nd year Ss, and of these, 7 are high translators. This leaves ten below-average performers in third and fourth year who were attempting to translate little in spite of not finding much success.

Within this set of figures is hidden more evidence
for the evolutionary theory. OLT is more laborious than
straight comprehension ('automatic flow'), and on hedonist
grounds we would expect OLT to be abandoned as soon as is
feasible. The figures suggest such a tendency of gradual
abandonment. The proportions of Ss translating less in-
crease each year. Thus low translators rise from 47% in 2nd
year to 69% and 81% in 3rd and 4th years (see table 9. 6).
In 2nd year, the picture is different, about half being
high translators (#4#, #5#) and half low (#2#, #1#).

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>#5#</td>
<td>10 (25)</td>
<td>3 (8)</td>
<td>0</td>
</tr>
<tr>
<td>#4#</td>
<td>9 (22)</td>
<td>5 (13)</td>
<td>2 (8)</td>
</tr>
<tr>
<td>#3#</td>
<td>2 (5)</td>
<td>4 (10)</td>
<td>3 (11)</td>
</tr>
<tr>
<td>#2#</td>
<td>7 (15)</td>
<td>11 (28)</td>
<td>4 (14)</td>
</tr>
<tr>
<td>#1#</td>
<td>12 (30)</td>
<td>16 (41)</td>
<td>19 (67)</td>
</tr>
</tbody>
</table>

Table 9. 6: Those adopting the Flat strategy claim to translate to
differing levels (#5# claim to translate nearly all, and #1# nearly
nothing). Note that nearly half (45%) the 2nd year Ss claim to try to
translate as much as possible, but this proportion decreases with each
successive year.

No (or low) OLT appears to be a strategy related to
greater experience or practice of spoken English, a fact we
can infer from its increasing incidence year by year. This
prompts the question: Why should any learner with relative-
ly little exposure to English, adopt and cling to stra-
tegies of translation which are laborious and yield so
little?
The Survey

ASSIGNED VALUES

<table>
<thead>
<tr>
<th>2nd Years</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5#</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>#4#</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>#3#</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>#2#</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>#1#</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>

12  20  5  3  40

Table 9. 7: Distribution of scores of 2nd year Flats.

We can approach an answer by examining the distributions of scores of the different years. In 2nd year, two groups are apparent (See Table 9. 7).

Table 9. 7 clearly shows that 2nd year Flats fall into two groups (the #5# and #4# combined, and the #2# and #1# combined) with almost identical distributions. The high translators have adopted a strategy which we know to be eventually less fruitful in spite of the comparability in current performance with adopters of low or no translation. We can see that more Ss score poorly than score better than average. So we must conclude that some Ss adopt the Flat strategy in spite of the results it yields, as it is more obvious to translate everything possible — namely to be a Faller). In other words, they appear to adopt this strategy on other grounds than immediate comprehension performance, perhaps with the knowledge or conviction that the ultimate benefit makes current poor performance of little import.
The Survey

ASSIGNED VALUES

<table>
<thead>
<tr>
<th>3 &amp; 4 Years</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>#5#</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>#4#</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>#3#</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>#2#</td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>#1#</td>
<td>3</td>
<td>20</td>
<td>11</td>
<td>-</td>
<td>34</td>
</tr>
</tbody>
</table>

Totals: 10 40 15 1 66

Table 9. 8: 3rd and 4th year Flats' scores according to level of OLT.

Table 9. 8 shows that the majority of 3/4 years are low translators, producing 13 of the 16 high scorers. If the evolution theory is correct, 2nd year high translators will eventually become low translators. Their alternative is to switch to another strategy, which would probably be the Riser, because these are more frequent in 3rd year.

Interpretation of Fallers and Risers is less straightforward, and requires a different approach. The grid that they were faced with (see App 9. 2, question 2), allowed them a great variety of possible answers. Whereas pure Flats had only five ways of answering, and Flats as we have defined them ('near Flats') can find 29 ways, Risers and Fallers had 22 possible arrangements. The question itself is open to interpretation, as what is perceived as 'easy' and 'difficult' will vary from one S to another. Since our interest lies principally in the extent to which intermediate learners translate, we shall probably lose...
little information if we combine the three answers (to question 2) to make an index of Ss' 'Propensity to Translate' (PTI); thus a 543 becomes a 12, and a 113 a 5.

The distributions of Assigned Values for Fallers and Risers are shown in tables 9.9 and 9.10.

### ASSIGNED VALUES

<table>
<thead>
<tr>
<th>P.T.I.</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>3</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>-</td>
<td>3</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>1</td>
<td>27</td>
<td>2</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>3</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>2</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

Totals: 3 10 65 7 2 87

Table 9.9: Distribution of Assigned Values according to Propensity to Translate (PTI) - Fallers.

### ASSIGNED VALUES

<table>
<thead>
<tr>
<th>P.T.I.</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>+3</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>11</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

Totals: 12 46 12 1 2 73

Table 9.10: Distribution of assigned values according to P.T.I. - Risers.
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Tables 9. 9 and 9. 10 show that both strategies seem to work for their adopters, i.e. the more a Faller translates and the less a Riser uses OLT, the more likely they are to obtain higher comprehension scores. (viz. the upper right hand quadrant in table 9. 9 and the lower right hand quadrant in table 9. 10). [Incidentally, this supplies part of the answer to the question why OLT strategies are adhered to; there is scope for improvement. Risers, however, seem to have adopted the more successful strategy: 15 (20%) score 1 standard deviation or more above the mean, while only 9 (10%) of Fallers do. This fact also supports the notion that Risers are an evolutionary step ahead of Fallers. In fact, a P.T.I. of 7 could be 133 (Riser), or 223 (Flat), except for our definition. That is, low P.T.I. Risers are not, in terms of performance, very different from low translating Flats.]

The probable reason for this is that Fallers have to divide their attention between listening and OLT, even for ‘easy’ material. (We have suggested that they do not understand or translate the difficult, but they still have to attend to it to determine that it is difficult), while Risers, who claim to comprehend the easy without translation and so expend less attentional energy on it, thus have more of their attention free to deal with the difficult, whether or not they can translate it.
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We may conclude that both strategies can achieve fairly high levels of comprehension, but that the chance of doing so is greater with the Riser strategy, again supporting our hypothesis that this strategy is a later stage in the evolutionary process. Therefore, the numbers of Risers should increase and Fallers decrease with each successive year (see table 9.2). The data there do not conclusively support this (probably because of the policy tacitly adopted by most Ts, of passing those who are good at the other skills irrespective of their LC ability). The Faller strategy is less favoured in each successive year, although the Riser strategy does not increase correspondingly, since they may also adopt the Flat strategy.

Experience may also play a part. If Fallers translate the easy but not the difficult because they cannot, and Risers do not translate the easy because it is unnecessary, but try to translate the difficult because they are trying to comprehend it, then it follows that Risers have had more practice than Fallers, (or are making better cognitive use of each session).

If experience is a key factor, then those who make this their first choice in answer to Q.6 ("If you do not translate, or only a little, how do you manage to understand?") might give some indication of the contribution of experience. Those who claimed practice as first option
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are shown in table 9. 11.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PTI</th>
<th>STRATEGY</th>
<th>ASSIGNED VALUE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>Flat (111)</td>
<td>1 1 1 1</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Flat (221)</td>
<td>- 1 -</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Faller (422)</td>
<td>1 - -</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Faller (432)</td>
<td>- 3 -</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Flat (544)</td>
<td>- - 1 -</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Flat (111)</td>
<td>- 2 - -</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Flat (111)</td>
<td>- 5 2 -</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>Faller (531)</td>
<td>- 1 - -</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Faller (543)</td>
<td>- 1 - -</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Totals:</td>
<td>2 14 4 1</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Table 9. 11: Ss claiming experience as the first reason for their ability to comprehend.

Table 9. 11 virtually works at the individual level, but it is a worthwhile exercise. The most outstanding finding here is that 13 Ss who claim 'experience' as a major factor in comprehension, claim not to translate at any level of difficulty): that is, 13 out of only 35 in a population of 267, and over half of the 21 who claim experience as the major factor. The distribution of their scores is significantly similar to that of the population of the 35 with PTI 3. ($\chi^2 = 0.39$ - near the value for the 95% level); in other words, they are a representative sample of the 35 PTI 3's. The rest are Fallers with PTIs 8 - 13, and average scores. The fact that they should be Fallers gives an idea of the persistence of the OLT habit in spite of experience.
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We also note that there are no Risers in this group.

Those claiming 'experience' as the first factor also had a distribution of LC test scores approaching the significantly similar to the distribution of scores of the population of 267 ($\chi^2 = 2.21, 90\%$), which suggests that 'experience', as Ss understand the term, does not act as a facilitator of comprehension. (We do not know whether Ss refer to time spent in England, intensive courses or simply years of exposure to the language). However, they believe that experience is the main factor, and, even if it has no real effect, this is worth noting.

9.8 A comparison of the strategies' relative merits

In order to examine the relative success of the different strategies we can now compare the LC test scores for each one. Table 9.12 contains the basic data from which the relevant information is drawn.
### The Survey

**ASSIGNED VALUES**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>+3</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>FALLERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>7</td>
<td>44</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>54</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>4</td>
<td>14</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>1</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9</td>
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<tr>
<td>RISERS</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>5</td>
<td>20</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>5</td>
<td>24</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>ALL FLATS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>12</td>
<td>20</td>
<td>5</td>
<td>3</td>
<td>-</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>6</td>
<td>22</td>
<td>9</td>
<td>2</td>
<td>-</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>4</td>
<td>18</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>28</td>
</tr>
<tr>
<td>FLAT 111's</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>1</td>
<td>12</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>17</td>
</tr>
</tbody>
</table>

Table 9.12: Distributions of Assigned Values, all years by strategy.

The only statistically significant result is the difference between 2nd and 3rd year Fallers ($\chi^2 = 9.91$, 5% sign.), showing that the Faller strategy produces better results at 3rd year level. Our interpretations will have to be based on statistically non-significant data and will therefore be very tentative.

We note that the percentage of above-average scorers increases:

- Fallers (7 out of 87) or 8%
- Risers (16 out of 84) or 19%
- Flats (25 out of 107 or 23%)

which lends credence to evolutionary theory.
Table 9.13: Below- and above-average performers by strategy and year.
Percentages expressed are of year and strategy total. Where numbers are very small, percentages are not given, as they are unrepresentative and would be misleading.

Table 9.13 highlights the extremes of performance by strategy and year. Here, once again, we have to resort to comparing percentages, since raw numbers from populations of different sizes are difficult to ‘read’. Overall, both Riser and Flat strategies produce a greater proportion of above-average scores than does the Faller strategy. The Flat strategy also yields a high proportion of below-average performances, which is largely attributable to the large number of below-average performers in 2nd year.
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The Faller strategy, then, appears to be one with few chances of allowing its practitioners to achieve high levels of comprehension and greater chances of performing poorly. It is not surprising to see relatively fewer Ss adopting it in 3rd and 4th years.

The Riser strategy, on the other hand, yields a good proportion of above-average listeners in 2nd year, as well as producing few poor performers. In 3rd and 4th years, however, the Riser strategy yields as many above- as below-average performers. The Flat strategy has the best record in 3rd and 4th years, but a poor one in 2nd year.

Finally, taking population score distributions we can determine which strategy is the most successful. (See Table 9. 14).

<table>
<thead>
<tr>
<th>ASIGNED VALUES</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>+3</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fallers</td>
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<td>12</td>
<td>66</td>
<td>6</td>
<td>1</td>
<td>-</td>
<td>87</td>
</tr>
<tr>
<td>Risers</td>
<td>-</td>
<td>12</td>
<td>46</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>74</td>
</tr>
<tr>
<td>Flats</td>
<td>-</td>
<td>22</td>
<td>60</td>
<td>20</td>
<td>5</td>
<td>-</td>
<td>107</td>
</tr>
<tr>
<td>Flat 111's</td>
<td>-</td>
<td>4</td>
<td>23</td>
<td>6</td>
<td>2</td>
<td>-</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 9. 14: Score distributions according to comprehension strategy.

Statistically, Fallers perform significantly worse than Risers (χ² = 6.8, significant at 5%). Risers also seem to do better than Flats, although the difference does not quite reach 5% significance. Risers have 21% above-0
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scorers as against only about 8% for Fallers and 23% for Flats. Flats produce the greatest proportion of low scorers (20%), with Fallers and Risers having only 16% low scorers each. This makes Flat 111’s the most successful and Risers next.

9. 9 Is there an evolutionary process?

This comparison (table 9.14) provides some evidence supporting the evolutionary theory, but is not sufficient. More support of an indirect nature may be found in the Ss’ reactions to the classroom activity of listening.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FALLERS</th>
<th>RISERS</th>
<th>FLATS</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  %</td>
<td>N  %</td>
<td>N  %</td>
<td>N  %</td>
</tr>
<tr>
<td>2</td>
<td>24 44</td>
<td>12 36</td>
<td>9  22</td>
<td>45 35</td>
</tr>
<tr>
<td>3</td>
<td>12 50</td>
<td>21 60</td>
<td>16 41</td>
<td>49 50</td>
</tr>
<tr>
<td>4</td>
<td>4  44</td>
<td>1  16</td>
<td>4  14</td>
<td>9  21</td>
</tr>
</tbody>
</table>

Totals: 40 46 34 46 29 27 103 38

Table 9.15: Ss claiming tenseness and anger during the listening activity. All percentages refer to the appropriate population, i.e. 24 represents 44% of 2nd Year Fallers, and 40, 46% of all Fallers.

Questions 7 and 8 (Appendix 9.2) deal with these reactions. Here Ss reveal whether the activity is one that they enjoy or can manage (‘I relax’, ‘I concentrate’), or one that produces tenseness or even anger in them. (See table 9.15).
The overall figures show that levels of tenseness remain high among Fallers, while Flats report the least tenseness in all years. Tenseness is lowest in 4th year (self-selection, practice ?), where even the sole Riser represents only a small proportion of all Risers.

We would expect 3rd year Ss to have a lower incidence of tenseness than 2nd years, but its comparatively high incidence in 3rd year may be caused by either of two factors. High proportions of tenseness in 3rd year may stem from the greater demands put on the Ss (longer tapes, faster speech rate) and their consequent search for a more adequate strategy to which they are not yet accustomed. This explanation is less likely than the fact that 2nd year Ss were learning to listen with a new approach (Swan & Walter), which trains Ss in the recognition of previously learnt words and phrases embedded in aural material which is often longer and faster than material presented to 3rd years. This means that 2nd year Ss had been encouraged to translate before listening, which effectively persuaded them away from using the Faller strategy, and may also explain the relatively high proportion of Flats in 2nd year. The more systematic training they had may also account for the lower proportions of tenseness at that level.
9.10 Discussion and conclusions

The administration of the questionnaire was subject to some teacher variation in the amount of help given with the questions. The LC test itself had to cover a broad range of ability, and is open to criticism as to its fairness, the sheer number of questions, and lack of validation. However, as the scores have been used only as a broad guide to ability, and not as a precise measure, this need not undermine the overall validity of the findings.

The incidence of different strategies in successive years and the associated scores suggests that Ss switch (whether deliberately or not) from one strategy to another as they improve in the skill. That is, from sheer exposure to English, they make the serendipitous discovery that they do not have to translate those words and phrases that they have become familiar with. They can then leave their translating faculty to await less familiar words or phrases or even unknown words, (which by definition they cannot translate, but the very attempt at which diverts their attention from the on-going stream of sound).

Although a follow-up study will have to be carried out to confirm or refute these suggestions (by identifying individuals), it seems reasonable to suggest that most Ss progress from Faller to Riser to Flat as their proficiency
at listening develops. Some appear to choose the Flat strategy early in the learning process, that is, in 2nd year, even though its early selection is prejudicial as far as immediate test performance is concerned. This may be attributable to the new and radically different approach to the teaching the skill in Swan and Walter.

The Faller strategy, both because it is less frequently adopted by higher-level Ss and because it is associated with lower scores, seems to be adopted by the less assiduous learner. He admits to translating the easy, which suggests that he does not have instant access to meanings of even the more common words. Repeated use of words in reading and written exercises strengthens the word-meaning association so that mediation by translation into the L1 equivalent becomes unnecessary. Where the association has been made, comprehension is 'automatic', as it does not require laborious translation. The Faller seems not to practise other aspects of the L2.

The Riser, however, does. He does not need to translate the 'easy' because meanings are accessed or understood more or less as rapidly as if they were in his L1. Since less attentional energy is absorbed, some remains to cope with the 'difficult'. With less attention given over to translation, more can be devoted to comprehending. The association of higher scores with lower P.T.I. Risers (see
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Table 9. 10) supports this contention.

The Flat strategy at the high translating end (*4*, *5*) means that these Ss claim to have achieved an advanced ability in simultaneous translation, but from this analysis seems not to be adequate approach. Further, it seems to be a policy which is effortful and is not associated with high performance. Such tenacity may be explained by personality factors and beyond the scope of this study. Alternatively it may be the case that high translators believe that they translate all or nearly all, but in reality are Risers, a conjecture we can neither prove nor disprove. The low-translating Flats (*1*, *2*) seem to be at or near the end of the learning process leading to full comprehension, as they are abundant in 4th year.

As far as the teaching of listening is concerned, practice or simple, motivated exposure to the spoken language appears to be the key. However, the comparatively poor showing of the Faller strategy implies that teaching approaches should aim at preventing the S from adopting OLT, perhaps by allowing the S to translate before listening, by pre-familiarising Ss with phrases embedded in ‘too difficult’ texts, or by encouraging Ss to aim at partial, not total, comprehension.
CHAPTER 10

THE ROLE OF THE TEACHER IN STRATEGY ADOPTION.

10.1 Introduction

The investigation analysed in the last chapter was synchronous, and we can only infer from it the diachronous process, but our findings strongly suggest that the Flat strategy is the final stage of a progression from Faller to Riser to Flat.

We do not know why these strategies are adopted when they are (nor even whether strategy adoption is deliberate, although we identified several factors (see chapter 8.4).
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which all incline the (unwary) listener towards adopting OLT. However, considering that the material used with each successive year involves longer passages, longer sentences, more extensive vocabulary and more complex constructions, comprehension via on-line translation should become less viable (because of limitations in attentional capacity in the brain), and with increasing exposure, less necessary, we can reasonably conjecture that the S stops translating familiar, often-heard words and phrases first (the 'easy'), before other parts of the aural material.

This step, of not translating mentally parts of the aural material, may be taken earlier or later in the learning process because of several factors:

(1) the teacher's (T's) approach to the listening activity may make it an easier step to take, by spending comparatively more time on the skill, thus giving more practice, by using such techniques as pre-sensitization of words and phrases (translating before listening, playing longer passages without a break, prohibiting the reading of the script simultaneously with aural presentation, etc.). We can call this encouragement to pure reliance on the ear 'teacher push' (T push).

(2) As the aural material becomes longer, more com-
plex and faster, the S cannot rely on simultaneous on-line translating and storing; he must comprehend instantly more and more of what he hears in order to keep abreast of the input. This involves a change to the Riser or Flat strategies. If he is forced to adopt a new strategy because of the nature of the material rather than the T's approach, this factor may be called 'material pull'.

(3) The S's personality will also play a part. Ss with a more flexible turn of mind (roughly 'field independence', Witkin, 1962) are more likely to perceive new characteristics of what they hear, namely that they can comprehend some elements without translation, and so are more likely to adopt a new strategy sooner. Less mental flexibility would account for the fact that some Ss cling to less suitable strategies longer than necessary — (e.g. Fallers in 3rd and 4th years).

The last factor is beyond the scope of this study. As teachers we can do little to change our Ss' basic psychological natures, even though they are of vital concern to the prediction of linguistic abilities. Our aim should be to find the best means of providing maximum progress in the minimum time, treating personality as 'given'.
10. 2 The teacher

While the T's approach to training the listening skill, his view of its importance and hence the amount of class time he devotes to it will affect his Ss' abilities, not all the glory (or blame) for their progress (or lack of it) can be laid at his door. The T can only suggest and encourage; the S plays his part by accepting and using what the T offers, but in the final analysis, it is the S who must do the work.

However, as the questionnaire and the test were given in February, some four or five months into the academic year, some reflection of the effectiveness of the T's approach to the training of listening should emerge. One way this can be revealed is by examining the proportions of Ss adopting the different strategies under each T.

The previous chapter showed that Fallers were associated with fewer high scores than Risers, and adopters of both strategies tended to diminish in the more advanced classes, suggesting that these strategies are largely abandoned for another, as outlined in Table 10. 1 (p. 263). The presence of a high proportion of Fallers would signify that the T's approach (unwittingly) perpetuates this limited strategy, for instance, if the T permits Ss to read during listening, thus preventing the S from having to rely
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purely on his aural sense; or if he breaks the material into easily translatable chunks, rather than playing longer stretches; or if he fails to contextualize the text, suitably facilitating scripts (Schank & Abelson, 1977).

Our focus here lies in attempting to assess whether
(1) the Ts' approach to the teaching of listening encourages the adoption of one strategy rather than another (T-push), or
(2) Ss adopt new strategies independently of T's approach, the nature of the material itself forcing a change of strategy — 'material-pull'.

10. 3 Analysis

Statistical analysis reveals that the distribution of scores for 2nd year Ss is not normally distributed, but for 3rd and 4th years it is. Furthermore, there was no statistically significant difference between the last two groups, which permits the pooling of the 3rd and 4th year data for calculation purposes. We are now dealing with the basic data in Table 10. 1:
Table 10. 1: Distribution of listening strategies by year.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FALLERS</th>
<th>RISERS</th>
<th>FLATS</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>2</td>
<td>54</td>
<td>(42)</td>
<td>33</td>
<td>(26)</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>(24)</td>
<td>35</td>
<td>(36)</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>(21)</td>
<td>5</td>
<td>(12)</td>
</tr>
</tbody>
</table>

There is a difference significant at the 1% level ($\chi^2 = 12.69$), between 2nd year and the pooled data of 3rd and 4th years. This means that the decrease in the Faller strategy and increase in the Flat between levels is highly unlikely to be due to chance results, and suggests that a real adoption of the flat strategy takes place at the expense of the other strategies.

Table 10. 1 gives an overall view of the population under study. Its importance here is to demonstrate the highly significant (at the 1% level) movement from Faller to Flat strategy from second to higher courses. This finding tells us that adoption of the Flat strategy is a real event, and not due to the population sample.

We can hypothesize that:

1. Ts with high proportions of Flats at lower levels (despite poor LC scores) may be encouraging the most beneficial strategy for the long term. Therefore poor mean scores in their classes need not necessarily reflect poor teaching;

2. Ts with relatively high proportions of Fallers and Risers and low proportions of Flats in more ad-
The Teacher

Advanced classes may be regarded as encouraging mistaken strategies.

A year-by-year break-down of strategy-types for each

T yields no consistent effect. (Table 10. 2)

<table>
<thead>
<tr>
<th>T</th>
<th>Fallers n</th>
<th>%</th>
<th>Risers n</th>
<th>%</th>
<th>Flats n</th>
<th>%</th>
<th>Total</th>
<th>Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>37</td>
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<td>37</td>
<td>8</td>
<td>6.87</td>
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<td>4</td>
<td>57</td>
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<td>29</td>
<td>1</td>
<td>-</td>
<td>7</td>
<td>15.9</td>
</tr>
<tr>
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<td>9</td>
<td>50</td>
<td>1</td>
<td>-</td>
<td>18</td>
<td>11.7</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<td>17</td>
<td>9</td>
<td>39</td>
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</tr>
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<td>6*</td>
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<td>32</td>
<td>37</td>
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</tr>
<tr>
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<td>20</td>
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<td>20</td>
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<td>-</td>
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<td>1</td>
<td>-</td>
<td>4</td>
<td>57</td>
<td>5</td>
<td>6.28</td>
</tr>
</tbody>
</table>

Totals: 58 33 40 131

Table 10. 2: Distribution of strategy-types of listener by teacher. (2nd Year). Percentages for small numbers have not been given.
* These teachers have two 2nd year classes:

Table 10. 2 shows that proportions of Fallers vary little from T to T. There is more variability in the other strategies, which might be taken to indicate that Ts have little influence on choice of the S's first strategy, but otherwise little meaningful can be deduced.
The Teacher

<table>
<thead>
<tr>
<th></th>
<th>Fallers</th>
<th>Risers</th>
<th>Flats</th>
<th>Total</th>
<th>Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>15</td>
<td>3</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>17</td>
<td>7</td>
<td>58</td>
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<td>7</td>
</tr>
<tr>
<td>11</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>45</td>
<td>6</td>
</tr>
<tr>
<td>12*</td>
<td>7</td>
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<td>12</td>
<td>40</td>
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</tr>
<tr>
<td>Totals</td>
<td>23</td>
<td>36</td>
<td>38</td>
<td>97</td>
<td></td>
</tr>
</tbody>
</table>

Table 10. 3: Distribution of strategy-types of listener by teacher. (3rd year). * These teachers have two 3rd classes.

In comparison, 3rd year classes (Table 10. 3) have far smaller proportions of Fallers. Ts 2 and 7 have the lowest proportions of Fallers and hence associated higher mean scores, but Ts 2 and 11 have high proportions of Flats, but while the former has a high mean score, the latter has the lowest. Ts 9 and 10 have high proportions of Fallers, which should lower the mean scores of their classes, but this does not obtain.
The Teacher

<table>
<thead>
<tr>
<th>T</th>
<th>Fallers n</th>
<th>Fallers %</th>
<th>Risers n</th>
<th>Risers %</th>
<th>Flats n</th>
<th>Flats %</th>
<th>Total</th>
<th>Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>33</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>50</td>
<td>7</td>
<td>14.57</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>22</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>77</td>
<td>9</td>
<td>20.1</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>25</td>
<td>6</td>
<td>75</td>
<td>8</td>
<td>18.7</td>
</tr>
<tr>
<td>13</td>
<td>5</td>
<td>26</td>
<td>2</td>
<td>10</td>
<td>11</td>
<td>58</td>
<td>20</td>
<td>17.6</td>
</tr>
</tbody>
</table>

Totals: 9 5 27 4 45

Table 10. 4: Distribution of strategy-types of listener by teacher. (4th year).

High proportions of Flats are associated with high mean scores, but we can deduce little more from Table 10. 4 mainly because the numbers involved are too small.

These data are not conclusive about T-push, although material-pull, exposure or practice appear to exert a strong influence on the adoption of strategies in each succeeding year. However, we can analyse the distributions of strategies in classes taught by the same T, and compare these with the overall distributions of strategies in each year. Since the material used by all Ts is the same within each year, the effect of material-pull may be regarded as neutralized, subject only to variations in its treatment by individual Ts. Where differences from the year distributions are consistently different for a given T, we have evidence for T-push; where such differences are inconsistent, we can hypothesize that Ss adopt the strategy which maximizes comprehension, i.e. independently of T-push but within
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the possibilities of the material. Where between class
differences are so small as to be significantly similar, we
could also argue that T-push exists. (See Table 10. 5).

<table>
<thead>
<tr>
<th>Year</th>
<th>T</th>
<th>Fallers</th>
<th>Risers</th>
<th>Flats</th>
<th>$\chi^2$ difference: between classes</th>
<th>year dbn</th>
</tr>
</thead>
<tbody>
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<td>2</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>1.47</td>
<td>2.3</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>not sign.</td>
<td>not sign.</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>6</td>
<td>2.08</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>not sign.</td>
<td>not sign.</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>-</td>
<td>11.07</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5% sign</td>
<td>not sign.</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>6.15</td>
<td>3.37</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>5% sign.</td>
<td>not sign.</td>
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<tr>
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<td>7</td>
<td>5</td>
<td>0.63</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95% same</td>
<td>99% same</td>
</tr>
</tbody>
</table>

Table 10. 5: Distributions of strategy-types in classes taught by same Ts.
(2nd and 3rd years).

There are no significant differences (Table 10. 5) from the year distribution of strategies, so once again we
have no evidence for T-push. Ts 7 and 10 have significant
differences between classes, with one 'good' and one 'poor'
class each, which points to Ss being the determiners of
which strategy they adopt. T 12 has two classes which per-
form significantly similarly to each other and to the year
distribution, providing the only hint of a consistent ap-
proach and T-push, but this may be due more to T 12 teach-
The Teacher

ing a substantial proportion (30 out of 98) of the sample studied. The balance of evidence is that T-push is not strong; i.e., the Ss seem to adopt strategies independently of their Ts' approach.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fallers</th>
<th>Risers</th>
<th>Flats</th>
<th>Others</th>
<th>Totals</th>
<th>X² Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>6.18</td>
</tr>
<tr>
<td></td>
<td>year 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.19 n.s.</td>
</tr>
<tr>
<td></td>
<td>year 3</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>13</td>
<td>10% sign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.47 n.s.</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>11</td>
<td>3.63</td>
</tr>
<tr>
<td></td>
<td>year 2/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.1 (2.5%)</td>
</tr>
<tr>
<td></td>
<td>year 3</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>12</td>
<td>not sign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.96 n.s.</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>-</td>
<td>9</td>
<td>5.18</td>
</tr>
<tr>
<td></td>
<td>year 2/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.6 n.s.</td>
</tr>
<tr>
<td></td>
<td>year 3</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>12</td>
<td>10% sign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.96 n.s.</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>year 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.97 2.5%</td>
</tr>
<tr>
<td></td>
<td>year 3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>not sign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.04 (5%)</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>year 4</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>95% same</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.3 n.s.</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>37</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>year 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.96 n.s.</td>
</tr>
<tr>
<td></td>
<td>year 4</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>5</td>
<td>1% sign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.92 n.s.</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>7.87</td>
</tr>
<tr>
<td></td>
<td>year 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.78 (95%)</td>
</tr>
<tr>
<td></td>
<td>year 4</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>5% sign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.86 n.s.</td>
</tr>
</tbody>
</table>

Table 10.6: Comparisons of strategy distributions in different years taught by the same Ts. There is a $\chi^2$ of 11.07 (sign at 0.5%) between the two classes of T 7, but non-significant differences from year distribution of strategy. (T6, also with two classes, did not keep
data from each class separate, so analysis as for T7 is not possible).

This finding (that T-push is not a strong factor), is supported by data in Table 10.6 where comparisons are made on the basis of the same T teaching different years. If T-push were strong, we should find few or no between-class differences, even though there is a significant difference between 2nd year and the others. The only evidence pointing to discernible T-push is T9’s data, with no significant differences between classes but significantly ‘favourable’ strategy distributions as compared with both year distributions. All other Ts show non-significant differences from year distributions. Significant differences between years 2 and 4 are to be expected, but no consistent differences from year distributions are found, again suggesting that T-push is not strong.

Further light is thrown on the Ts’ approach to the teaching of this skill if we look at Ss’ reactions to the classroom activity of listening itself (Question 7 in App. 9.2). Here Ss reveal whether the activity is one that they enjoy or can manage (‘I relax’, ‘I concentrate’), or one that produces tension or even anger in them. Since the number (10) of Ss admitting to an anger reaction is relatively small, this figure has been included under ‘tense’ in table 10.7.
Table 10.7: Numbers of Ss claiming tenseness during the listening activity. Their means and standard deviations are compared with Ss who do not claim tenseness. 'Stat. signif’ce' gives the values of ‘t’ (See appendix 9.2 for a description of the ‘t’ test); asterisks mean that there is a real, not accidental, difference between the groups (* = 5%, ** = 2.5% *** = 1%). For explanation, see text.
The Teacher

These data also show why T11, with a high proportion of Flats, had such a low score for his 3rd year class: 75% of his Ss reported tenseness, which lowered their scores to being almost significantly worse than the population. Likewise, Ts 9 and 10, with a high proportion of Fallers, achieved high mean scores, the reason being that their tense Ss scored only marginally less than the non-tense Ss.

Statistical analysis shows some significant differences (the asterisked values of 't') in the performance of tense and not-tense Ss. We can interpret this as indicating that the T's approach to the listening activity is such that it prejudices the performance of the tense Ss, since tenseness generally lowers performance. The exceptions, Ts 2 and 7, while having comparably high proportions of tense Ss, seem to channel the tenseness into performance equal to or even better than Ss who do not claim tenseness. (T6 also produces above-average performances for nearly all his 4th year Ss, however, despite the significant 't' score).

Where percentages are shown in the right-hand column, these give the extent to which both groups coincide. Thus 95% means that the two groups are virtually the same in performance, 85% less so, and 10% that they are very different, but not significantly so in statistical terms. Where 't' scores are associated with high percentages we may infer that the T's approach is not one which prejudices the weaker S.
The Teacher

High levels of tenseness seem to be justifiable where high scores obtain, since the T turns the tenseness to good account. Where scores, and therefore Ss' performances, are low however, e.g. Ts 3, 5, 6 and 11, the T cannot be harnessing tenseness and may even be using it counter-productively.

Reactions to the classroom activity of listening are related to the S's competence: tenseness and anger are not reactions we have when listening to our mother-tongue, and these tend to be counter-productive, as we show below. Certainly the overall effect of tenseness is to lower LC scores. Table 10. 8 gives the relevant data.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Q 7</th>
<th>Fallers</th>
<th>Risers</th>
<th>Flats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>mean</td>
<td>s.d.</td>
<td>n</td>
</tr>
<tr>
<td>2 C</td>
<td>34</td>
<td>9.5</td>
<td>3.83</td>
<td>20</td>
</tr>
<tr>
<td>T</td>
<td>25</td>
<td>9.83</td>
<td>3.47</td>
<td>12</td>
</tr>
<tr>
<td>3 &amp; 4 C</td>
<td>16</td>
<td>16.94</td>
<td>5.64</td>
<td>18</td>
</tr>
<tr>
<td>T</td>
<td>18</td>
<td>14.94</td>
<td>4.25</td>
<td>22</td>
</tr>
</tbody>
</table>

Totals: T 43
Totals: All 94
Percent T (46) (47) (29)

Table 10. 8: LC scores according to listening strategy for those who 'concentrate' (C) and those who are 'tense' (T). 3 & 4 year Flats have a difference significant at the 5% level; 2nd year Flats are near that significance.
Comparing C with T mean scores, we note that

(1) Risers, both tense and others, score highest among 2nd years,

(2) 2nd year Fallers claiming tenseness do marginally better than the non-tense, the only tense Ss to perform thus in any group,

(3) 3rd and 4th year Flats do best at their levels, although non-tense Fallers still perform well; and

(4) that tenseness during listening generally lowers scores (with the exception of 2nd year Fallers).

That tense 2nd year Fallers should score slightly higher than their non-tense companions goes some way to explaining the attractiveness of this strategy and its possible appropriateness at this stage of their learning. i.e. tenseness seems to have no lowering effect on performance. The percentages of tenseness are highest among Fallers and Risers and lowest among Flats, supporting the hypothesis that the flat strategy is a later stage.

The raw figures also reveal the fact that the number of tense 3rd and 4th year Fallers and Risers is greater than those who are not tense, lending support to our thesis.
The Teacher

that these strategies are not suitable for the difficulty-level of the material they must comprehend.

10. 4 Conclusions

The distributions of LC strategies adopted by Ss differ markedly between lower and upper intermediate levels, Fallers predominating at the lower level and Flats at upper levels. We hypothesized that adoption of a given strategy could be influenced either by the Ss' need to maximise comprehension (material-pull) or by the T's method (T-push). Little evidence has been found for T-push, even when measured in terms of the amounts of tenseness per class, but some evidence was found (in one T's classes) that tenseness could be harnessed to improve comprehension. We infer that most Ss switch from one strategy to another in line with the steadily increasing complexity, pace of delivery and length of text — 'material pull', i.e. early strategies of translating aural material become both less workable and less necessary (via growing familiarity with all levels of the language — phonological, lexical, syntactical and semantic) together with accumulating knowledge of scripts (Schank, 1977) and expectancies (Oller, 1974).

It seems that the Faller strategy appeals to the lower intermediate S because it gives him a higher degree of comprehension sooner. Tense 2nd year fallers are the
only the group to score higher than their non-tense colleagues. In other words, the Fallcr strategy is attractive because being tense does not impair comprehension. T-push, perhaps in the form of the repeated presentation of short, isolated sentences with the aim of total comprehension, may also strongly incline the S to become a Fallcr by providing conditions which allow him to relate what he hears to his mother-tongue.

This strategy becomes less and less feasible as aural texts become longer, rate of speech faster and constructions more complex, and the S is forced by material-pull, or naturally begins by practice, to develop direct comprehension, that is, to relate sounds to meanings in the foreign language; he begins to think in the foreign language.

We find no consistent evidence to show that T has much control (T-push) over which strategies their Ss adopt. Analysis of Ts teaching two classes at the same or different levels shows that they are as likely to have ‘good’ distributions as ‘bad’ (in terms of proportions of strategies adopted).

It is clear that the sooner S adopts the flat strategy the better, despite the fact that its practitioners initially have poor LC scores. How the T can assist in this is dealt with in chapter 13.
Chapter 11

OBSERVATIONS FROM PERSONAL EXPERIENCE

11.1 Introduction

The purposes of this chapter are to give a more personal cast what has largely been an arm’s length assessment of others' work. We consider the various components of the scene: The students, the teachers and the system they have to work in, their roles and attitudes, some difficulties of the language, and the sort of material we should use.

My observations of the scene are an evaluation of the situation as I find it; they are mostly critical, but with the best intent and not, I think, unjust. They make up a lamentation, for it is almost impossible to change a cult-
Observations

They are included with the aim of providing a part-explanation, in conjunction with section 8. 4, for our discovery of widespread OLT, a strategy that is barely mentioned in the studies by O'Malley et al (1988, 1989).

11. 2 The listener

11. 2. 1 The listener's L2 history

The proportion of OLT users which emerged in our survey (chapters 9 and 10) is very high as compared with other studies, and is not entirely due to the ESL/EFL difference we have previously alluded to, nor to the factors in section 8. 4. We believe that the high incidence of OLT is also due to the form of teaching Ss had received prior to their E.O.I. classes. As a consequence, we at the E.O.I. have to deal with a 'shop-soiled' product as far as listening comprehension is concerned, and have to engage in what amounts to massive re-training in an attempt to wean the Ss away from a misguided strategy which is an entrenched habit.

Many of the Ts of English at EGB and BUP levels in Alicante are of indifferent quality (pace several islands of sincere endeavour and excellence) as regards their domination of the spoken language, and all are furthermore
Observations

restricted greatly by the circumstances in which they teach. Apart from having to contend with large classes (of around 40), yawning indifference to the subject on the part of more than half their Ss, there is also the low esteem in which English has been held as compared with science and mathematics. This attitude has slowly been modified in recent years with the approach of full integration into the EEC and recognition of the importance of English as its first language. The general passivity of the Ss and their minimal academic effort also seem to sap much of the enthusiasm Ts may originally have felt. Even a good T cannot be effective with Ss who do not learn.

As if these disadvantages were not enough, English syllabuses, in common with those of most other subjects, in terms of aims, ground covered and rote learning required, are unattainable by the majority of Ss, to the extent that most simply renounce any attempt to achieve them. In attempting to complete the syllabus, the T is obliged to pass through (or over) it at break-neck speed, with little regard for the capacities and lack of motivation of their pupils.

The unrealistic bureaucratically-inspired demands of the syllabus are so immense that, in order to make a pretence of meeting them, the T has no time for practice in class. In many cases, teaching descends to the word-by-word
Observations

translation of extracts from (supposedly enthralling) literary works. Much of the teaching is carried out in L1 and demands a massive L2 vocabulary, mostly of little practical or everyday use, and much grammar, which for the most part is poorly learnt. In short, language learning is reduced to declarative knowledge. The bureaucratic requirements of the system find no place for such ephemeral activities as speaking or listening, which could mean, among other things, loss of class control.

Curiously, one of the outcomes of this approach to the subject is a remarkable accuracy in spelling. 'To', 'too' and 'two' are rarely confused, for example, as natives sometimes do. What mistakes do occur, reflect Spanish orthography — de for 'the' or 'they', dese or dis for 'these', orther for 'order' as a result of subvocalised (mis)pronunciation, or the unfamiliar double consonant misplaced — *dissapear or omitted — *stoped. The confusion over 'come/came' seems to arise out of inadequate learning, the absence of the relevant phonemes in Spanish and the fact that neither word's phonological realization relates to its orthographical form. Close attention to orthographical correctness works vigorously against a successful start to LC, given the Spaniard's deep-rooted phonemic pronunciation of all that he reads, the variety of phonological realizations of the written vowel (see 11. 3. 1), and the inherent irregularities in the English language.
Another by-product of the educational system in general and what I call the "bureaucratic approach" to teaching, is that Ss believe that they can adequately learn a language in the same way as they learn any other subject: by rote learning, preferably on the eve of the examination. They seem to have no conception of the value of practice (or of learning anything for a lifetime), for which we noted there was neither time nor inclination in EGB and BUP classes. For Ss, linguistic knowledge is all declarative.

Procedural knowledge, or knowing how, is essential to language learning just as it is to mathematics; this means practice in applying or using formulaic expressions, grammatical structures, vocabulary and the rest, whether by reading, writing, speaking or listening. The aim of practice is the automation of short routines in order to free attentional capacity (in LC) to deal with the less frequent or more unusual structures, phrases and words.

Most of our Ss, then, are products of a system which asphyxiates curiosity or any interest in learning. They:

1. Are accustomed to translating written passages from English to Spanish;
2. Are written-word-based (compared with British children who come to writing via listening, and a large minority of whom are poor at spelling);
3. Have little or no practice in speaking or hearing...
spoken English, and so are little aware of the disparity between the two;
4. Have some interest in or reason for furthering their knowledge or ability in English, but little idea of the study required.
A small proportion may not have suffered a "bureaucratic" indoctrination, or for some reason have a fairly clear idea that language learning does not mean word-for-word translation. Their principle listening strategy, of not using OLT by dint of adequate amounts of study, rapidly divorces their L2 from their L1 (and already in their second year were 111 Flats). This minority apart, most bring to our four-skills-based teaching the entrenched habits of their previous learning, mainly the slavish translation of everything to L1, and it is these habits which we must try to expunge and replace by retraining.

11. 2. 2 The listener's rôle and responsibilities

"Just as the speaker is endowed with intentions in speaking, we must assume that the listener is endowed with intentions ... to pay attention, to make a maximum effort to interpret what the speaker is saying, to try to construct an interpretation which represents as nearly as possible the speaker's point of view and to formulate ... the desired response ..."

Brown 86: 287 - 8

and we can do no more than assume. Concentrating on L2
aural speech is fatiguing, however, and it would be gratifying if Ss were readier to signal this, or boredom with any classroom activity. Indeed, one responsibility the listener should have, not only in LC activities, but throughout his schooling, is to indicate his non-comprehension or any justified disagreement with the T. He is, however, only too aware of the unfortunate fact that the T corrects his examinations, and instead of there being a cheerful camaraderie and open communication between T and S, there is a sycophantic political dance, in which the S tries to appeal to the T as a wonderful person whom the T would be inhuman to fail. The logic seems to be 'If you like me as a person, you won’t fail me; if you fail me, you don’t like me.' Many Ts enjoy this state of affairs and so encourage it, making no attempt to signal a distinction between their appreciation of the person and his performance in the subject. The institutional measures which exist to overcome any flagrant miscarriages of justice tend not to work as intended. Attempts to redress an injustice are inevitably seen as a criticism of the T, whose peers often close ranks in order to uphold his decision, reject the complaint or smooth over the affair.

One solution to this unhappy state of affairs is for no T to mark his Ss' examinations, for some form of objectivity to be injected into the system. This would result in an improvement in the relationship between T and S. It
would enable them to concentrate their efforts on working as a team to surpass the barrier of the examination standard, now external to them, rather than to invest so much time and effort in the footling political minuet which now obtains. Most Ts resist this move towards objectivity, however, as it removes the only power they wield. Without imposition of change from above, the status quo will remain unchanged.

For the genuinely, not politically, motivated learner, there exists a psychological contract with the T. He expects the T to explain, clarify and train. But the S, too, must fulfil his side of the bargain, which includes a willingness to apply himself to the subject and to the learning and practice of syntax and vocabulary in exercises and reading. His failure to learn thoroughly makes him difficult or impossible to teach, and makes listening an attainable skill. On the other hand, T’s demands should be reasonable, like not requiring the rote learning of decontextualized, low-frequency words. We later examine some implications (12. 1) which indicate the necessity for the listening skill of overlearning vocabulary in context. Ur (1984) says:

‘He may know much of the vocabulary but often is not familiar enough with it to recognize many words when they occur in context. S learns written and spoken forms carefully pronounced, but does not learn what they sound like rapidly
spoken, in unemphasized position or juxtaposed with other
words which affect their pronunciation.'

Our italics (op. cit. p. 18)

(Our italics). One of our exercises (13. 5) attacks this
problem.

11. 2. 3 Motivation

We have assumed that the listener is motivated be-
cause of his voluntary presence in the Escuela. Motivated,
that is, to learn English in all its aspects. As far as his
motivation to comprehend any specific passage, we have also
assumed it to be part of his overall aim to learn to com-
prehend the aural material presented to him. It is clear,
however, that the activities associated with any listening
session are intended to motivate him, by supplying him with
information sufficient to permit comprehension, questions
to titillate his curiosity. There may also be some social
pressure from his peers.

In this context, subject matter is, in a sense, irre-
levant, as it serves merely as a vehicle for the language.
Given that any class contains Ss of differing interests. We
must assume that inevitably some topics are of little in-
terest to some, with a corresponding lowering of motiva-
tion.
11. 2. 4 Semantics

The S comes to L2 with an intact, readily-accessible form/meaning system. OLT is one manifestation of his having attached the L2 form/meaning system to his L1, rather than to the concepts themselves. While this operates (tolerably) well with objects-referent and adverbs, any extension of this approach to other parts of speech is misplaced. It is not sufficient, however, for the S to pair L2 meaning with the object or idea. The bond has to be made so strongly that the L2 form is as rapidly accessed as the L1. Making L2 independent of L1 involves the overlearning (by over-use) of all words and phrases S encounters.

11. 3 The English Language

11. 3. 1 Phonology and orthography

We made the point earlier that, for a variety of reasons, Ss typically put little effort into language learning. English requires even more effort to learn than many other European languages because its sound system is so different, and its orthographical system is inconsistent and often illogical, as well as downright misleading as a guide to pronunciation, since it betrays expectations. The novice learner must simultaneously adjust to both these factors, effectively having to learn two languages, not
English as a stress-timed language differs from syllable-timed languages like Spanish, in possessing, and to a more noticeable extent in its informal use, the characteristic of perceptual saliency, or markedness of morphemes. Typically, salient morphemes are (or are parts of) those content words which carry most of the meaning in any given utterance. Equally important is the fact that unmarked or reduced monosyllables, the 50 or so function words, reduce to schwa or short 'i', which are extremely short in duration, and compose a significant part of the spoken (and written) language.

Perceptual saliency has a confounding effect on the Spanish novice learner. In the first place, the novice learner does not realise that he has to attend to them, and even when told, finds it a difficult task, for it means that he must at the same time attend far less to the reduced syllables. The rapid pronunciation of the reduced syllables gives the impression of very high speech rates, particularly to the speaker of a language where the syllable is typically well pronounced. This apparent rapidity overawes the L2 listener at the start and may even cause despair. The Spanish listener, brought up to rely on most syllables for information, naturally applies the same principle to English, and his re-training must include a...
A large element of deliberate focusing of attention on the salient morphemes and equally deliberate relegation of reduced syllables to peripheral attention. This is tantamount to ignoring some of the input, which with his imperious need to comprehend, runs counter to S's instincts. The S usually 'listens at the wrong level', namely the syllabic, and overloads his short-term memory, bringing the comprehension process to a halt. While our training should 'lift' him to the lexical or clausal level, he will under stress revert to this earlier behaviour, as we saw in chapter 7.

The pervasiveness of this feature is underlined by Woods' (1978) calculation that about 50 function words make up over 30% of all English texts, and they may contribute even more to elementary texts. (See table 11. 1.) Most of these reduce to schwa or virtually disappear. In fact, vowel reduction is so extensive and so foreign a feature to the L2 listener that T should make it explicit and constantly refer to it. Of course, this only makes it part of S's declarative knowledge. In order to incorporate it into his procedural knowledge store, he can resort to RSL exercises (see 13. 5) and practise and learn sample sentences. The syllable-timed habit in some Ss is so strong, however, that time speaks against a complete training in this; some Ss persist in non-reduced production even after an extended stay in the USA or the UK. However, failure to produce stress-timed language does not seem to prevent its
comprehension, but it logical to suppose that it slows the learning process.

<table>
<thead>
<tr>
<th>a</th>
<th>do</th>
<th>his</th>
<th>my</th>
<th>the</th>
<th>will</th>
</tr>
</thead>
<tbody>
<tr>
<td>am</td>
<td>does</td>
<td>I</td>
<td>of</td>
<td>their</td>
<td>with</td>
</tr>
<tr>
<td>an</td>
<td>for</td>
<td>if</td>
<td>on</td>
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<td>must</td>
<td>that</td>
<td>were</td>
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</table>

Table 11. 1: Unstressed function words (from Woods 1978). Except for those containing 'i', most reduce to schwa.

Monosyllabic content words, on the other hand, are invariably stressed, and polysyllabic ones usually contain one stressed syllable (or two in four-syllable words). Unstressed syllables typically convey less information than stressed, (another lesson to be learnt from RSL exercises).

The reduction of markedness in less informative morphemes is called sandhi-variation, and sandhi processes "will occur only at normal speed of speech, and will be distorted or obliterated by any slowing-up process." (Pei, 1966: 238). Of the three main types of sandhi-variation in English,
Observations

- contraction (e.g. gonna, who'd've done it)
- assimilation (she(y)ate fast, the(y)oldest, /sidaun/, awright, /steipm-n/, /d-un t ju)
- reduction (a glass 'a' milk, a piece ' ' paper).

The last is the most pervasive and the biggest potential obstacle to comprehension. According to Hatch, one of the "aspects of input which promote comprehension and/or language learning" is "fewer reduced vowels and fewer contractions" (1983: 183). Henrichsen (1984) demonstrated that the presence of sandhi-variation significantly reduced comprehension, and the effect was greater on less proficient learners. She notes that "The basic assumption is that learners perceive salient forms more readily, focus attention on them and thus acquire them earlier." (op. cit. 106).

In our experience of Spanish learners, this does not obtain. Even at First Certificate level (fourth year), the majority of Ss have some difficulty with sandhi, simply because they have not been taught to hear and use stress and rhythm. However, I believe we should not tailor the language to simplify our teaching task, but rather train our Ss to use these features from the start. After all, since reduced syllables usually carry very little information, we can direct our Ss' attention away from them and train them to concentrate on the stressed syllables, which would reduce their attention load.
Observations

This does not mean that teaching Ss to recognise and use perceptual saliency will not "make certain features of input more comprehensible and more liable to become intake" (op. cit. 106). On the contrary, our experience suggests [only 'suggests': exercises involving saliency are only a small part of the aural training Ss must undergo and cannot be isolated as having a specific effect] that pronunciation training at word- and phrase-level does have beneficial effects on rates of learning to listen. These are the read-say-and-listen (RSL) exercises. (See 13. 5)

We turn now to the infamous non-correspondence between orthography and pronunciation, which is yet another burden for the novice learner. Indeed, we have demonstrated that by exposing Ss only to phonetic written forms greatly helps recognition of the spoken word, reduces the learning load enormously, and permits accentless production (Eastman, 1988).

The written English consonant is only relatively stable, having typically only one realization, or if more, highly similar forms. All consonants (except f, j, v, x, y and z) have zero realization in a few words, usually of low frequency, but also confusingly in some common words which are unavoidable for the beginner (e.g. know, knife, half, all words with final ‘r’, listen, often and write).
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As an example of the reliance on consonants which some learners do develop, the following anecdote is illuminating:

An older English ex-patriate went to her favourite bar in San Juan one Friday evening (traditionally pay-day in England, and therefore a day of heavy spending in pubs). “Pay night tonight, Miguel,” she said gaily. After a short pause, the look of puzzlement on “Miguel’s” face suddenly vanished. He ducked under the bar and emerged smiling broadly, to deposit triumphantly a packet of peanuts before her.

Gimson (1970) gives the various realizations of the different vowels, which are summarized in Table 11.2.

<table>
<thead>
<tr>
<th>Written vowel</th>
<th>Phonological realization</th>
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<td>5</td>
</tr>
<tr>
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Table 11.2:*This simplified representation includes those cases when the vowel is affected by following 1, r, w and y, and the lengthening effect of final -e. It excludes 17 double vowels with 47 realizations.

It gives us, as teachers, pause for thought, and sympathy for the S, to consider those words where different
realizations of the same vowel occur: (marmalade, eleven), or different vowels are homophonic (villages).

The discrepancy between written and spoken forms (most of the few reliable exceptions being monosyllabic words containing 'e' not ending in semi-vowels 'w' 'y', 'on' and 'off') adds incalculably to the learning load. The learner of a phonemic language like Spanish can learn the meaning and pronunciation of a content word on a paired-associate basis, but the learner of English (and Scandinavian languages) must learn a triad. (See figure 11.1).

L1  
| table |

L2  
| mesa /mesa/ |
| table /teibəl/ |

Learner of Spanish Learner of English
A B

Figure 11.1: The representation of what must be learnt: paired-associate (A) and triad (B)

This may seem to trivial, but the former (A in Figure 11.1) involves one equivalent and one association, while the latter (B) involves two equivalents and three associations. The picture is further complicated if we consider a function word like 'can', which has weak and strong forms.
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(three semi-equivalents and five associations, at least until S relies only on the stable consonant. To our knowledge, there has been no psychological research comparing the difficulty of learning triads as opposed to paired-associates, but it is patent that the mental effort is much greater for the former.

This extra learning load is further complicated by the memory/recall system Ss are likely to use. As long ago as 1935, Baugh in his A History of the English Language wrote "the foreign student ... generally acquires the language to a much greater extent through the eye" (p.390), and this is still true today. Since the Gutenberg revolution, we have become far more reliant on visual input, and our aural faculty has commensurately withered. Thus we have developed a dependency on visualizing as an aid to memorizing. If you can 'see' a word, you are more likely to remember it than if you cannot. We have only anecdotal evidence that more than half of pre-intermediate Ss visualise the sentences they are about to utter, and this partly accounts for their persistence in pronouncing phonemically. This in turn maintains the gap between what they expect to hear and what they do hear. Furthermore, we have seen that English consonants are not fully reliable indicators of pronunciation, and vowels hardly at all. Therefore visualising an English word is not only more difficult but also misleading if successfully achieved. The S is therefore ob-
Observations

liged to develop his aural memory at least to some extent, until he has created some kind of link between the two Englishes, written and spoken.

If remembering and discriminating sounds non-existent in the mother-tongue is difficult enough, then adding an inconsistent and misleading orthography presents the phonemic language speaker with very considerable problems. His 'work' will sound like 'walk' which will rhyme with 'talc', his 'would' will sound like 'woolled'. These habits spring from his long training in saying what he reads, and reveals that he visualizes what he says. In a way, in it surprising that there are not more confusions – consider for example no/now/snow, or rough/trough/through. So what has production to do with listening difficulties if no link has been demonstrated between the two? We can only claim that, with little context or lexicon, probably no access world knowledge, and possibly a poor lead-in to the material, aural expectations should be as accurate as possible, being one of the few weapons the listener has.

11. 3. 2 What to listen for

It should be clear from the fore-going that the low proficient listener is attempting to listen to the wrong parts of the message, namely all of it. At the surface lev-
el, he is attending indiscriminately to all syllables. Only later does he begin to select words and phrases high in meaning content centred on salient, stressed syllables, effectively ignoring parts of the message, and using his inferencing skill and his real world knowledge to achieve comprehension. This has the two-fold advantage of reducing the material to be processed (reducing the load on STM and attention capacity), and giving himself the time and capacity to process it.

So while vowels have a definite contribution to make to overall meaningfulness in Spanish, in English their rôle is negligible, and for the learner, confusing. We have seen that their multiple realizations are fickle and in any case carry very little information. Abbott (1986) cites Gimson as saying that we can reduce all our vowels to schwa and still retain a high degree of intelligibility. In other words, it appears that the Spanish student of English must learn to listen for very different linguistic features from those he uses in his mother-tongue.

Meara (in Cook 1986, pp.151 - 55), presents evidence which hints that the psycholinguistics of word recognition in Spanish may be different from that in English. He points out that Spanish word structure is different: words are longer and tend to resemble other words more closely because of the limited phoneme repertoire; morphological in-
formation in nouns, adjectives and verbs is far greater; and the orthography is simplicity itself. Meara writes:

"a good case could be made out for each of these factors being an important influence on the way Spanish speakers learn to handle words ... the general lack of distinctiveness in Spanish words might make it important for native speakers to pay more attention to the information provided by vowels."

(op. cit. p. 155)

Bullard (1985) provides some indirect support for the argument that current L2 learning methods develop the word recognition skill to a higher pitch than in the native. His subjects were both native speakers and high proficient L2 speakers of French and English. Using decontextualized content words, he found that they were all able to identify more L2 items than L1 items. He concludes that L2 learning is word-oriented and language learning the learning of words, not discourse. He recommends that word-based comprehension should be treated as a step towards discourse comprehension, or a more global approach to listening comprehension.

Similarly, Byrnes, Fink and Roman (1982) recognize that beginners should learn to become cued to boundary phenomena rather than identify individual words. However, they do not specify how this should be done. Again, RSL exercises should train the S to listen for the items which
carry most of the meaning. These could direct the attention to meaning groups which include the (usually reduced) function words.

Several writers (Ur 1984, Garnes & Bond 1980, and Urbain 1981 among them), have pointed out that intonation and stress are important aids to comprehension. They point to the focus of meaning and divide speech into thought groups. They also "supply the grounds for certain kinds of expectations ['I don't mind her seeing John; it's Ned I object to.' (Ur, 1984: 14)]. But, she adds, "the subtleties of stress and intonation are difficult to teach." However, the beginning and intermediate Spanish listeners' concerns in comprehension are far more basic, it being a major achievement simply to recognize the words and phrases. In our experience, intonation is only occasionally used even by the more advanced listener, in spite of our efforts.

To our great misfortune, we have no parallel to the German doggerel

Zwei Chinesen mit dem Contrabas,
Sassen auf der Straße und erzählten sich was.
Da kam die Polizei,
Und fragte was ist denn das -
Zwei Chinesen mit dem Contrabas.

where all the vowel sounds, when uttered either /oi/, /u:/
or whatever, produce, so they say, the different German regional accents. The closest equivalent, and as an object-lesson on the still communicable nature of even grossly mutilated English, we can instruct Ss to utter a sentence or two with a biro in their mouths or their teeth clenched, but it is a poor substitute for the German rhyme. Clenched-teeth speech has the effect of reducing the vowels to a sound approaching indeterminacy.

11. 3. 3 Speech rates

The previous section amounts to a plea for few concessions to be made in terms of speed of speech. Sandhi processes would be corrupted, the language falsely simplified; tackling the problem (of the S's difficulty in capturing meaning by learning to relegate reduced syllables to peripheral attention) is postponed.

In authentic speech (and well-scripted and acted pseudo-authentic speech), pace varies. An important point will be delivered more slowly, while less important parts are frequently more rapid. Asides, comments, clichés and some common phrases fall into this category, and it is precisely these that give most difficulty.

Unfortunately, it is not quite as simple as this. A slower rate may indicate the speaker's attitude: urgency
may be conveyed by a rapid rate, and hesitancy, doubt or boredom, sympathy and encouragement are associated with a slower pace. Where shared knowledge is assumed or the speaker imagines that the hearer knows or can predict some information, a faster pace is often used. Propositional evaluators (such as ‘But what we’re really looking at here’) will precede the accompanying proposition, and consonant deletion and sandhi processes at work, will make them more difficult to comprehend.

For intermediate levels and below, this speaks for the use of pseudo-authentic recordings. Where such rapid phrases occur, S must learn to ignore them, and although he is unlikely to be able to obey simple instruction, there are implications for special exercises using authentic materials and instructions which will be easier to heed to pay no attention to these phrases.

11. 4 The teacher

11. 4. 1 The teacher’s rôle

The teacher’s rôle, if he is to teach listening comprehension well, is an extraordinarily delicate one. He is faced with human beings competent in L1, but whose non-comprehension in L2 discomfits them, since they appear to be mentally deficient. Their inability to perform in L2 what
they can do without even thinking in L1, makes them feel inadequate, even stupid, and they sometimes inadvertently say or do things irrelevant to the situation. T therefore often has to display sympathy, understanding and tact. If an atmosphere of light-heartedness can be established, where faux pas are laughed off with no loss of face, so well and good, but each class takes on a mini-culture of its own, composed of the personalities and interactions among the Ss and between them and the T, and is not entirely controllable.

As far as teaching listening comprehension is concerned, T should make explicit that Ss' aims should be to think as much as possible in L2 avoid OLT (even while reading) train their L2 into an independent thought form, and that this takes considerable effort and time. (all of which only the S, not the T, has control over).

T's aim should be to train the skill avoiding the growth of anxiety. Perhaps the surest way of achieving this is by treating slow progress with insouciance. Similarly, any material that is not well comprehended can be treated as of little account — it is in reality of little import that a given passage has not been comprehended. The importance lies in the exposure, the practice, the trying. T can attempt to discover why there was a failure to comprehend:
S may be uninterested in the topic, have a headache, be distracted by a personal problem. Complaints usually centre on the quality of the recording, ambient noise or rapidity of speech. (if the last, the S is still in all likelihood operating at lexical level) - it is never S's inability. Of course, such inquests should be lightly and briefly undertaken, for if T persists, S will receive the unconscious message that understanding was after all important, and become concerned. Likewise, passages should be played in their entirety (unless too long for the memory span) from beginning to end, and rarely more than three times, as more playings also suggest that comprehension is all-important.

The language T uses should be L2 as far as possible, as this increases L2 exposure to the maximum. Such language is no longer 'just' an exercise, but purposeful, real communication. Commands like "Open your books at page ... " will incidentally generalize to all commands, and reinforce (S)VO structures. Anecdotes, stories and reminiscences all provide practice on the take-it-or-leave-it basis essential to anxiety-avoidance. The one exception may be grammar explanations. These must be clear and unambiguous, and since class time is at a premium, and metalanguage required (not the sort of language Ss will either need or use), it is more time-efficient to perform these in Ss' L1.

On the grounds that we should steer the S away from
OLT at all times, we do not support the idea of teacher-talk. Inevitably we will unconsciously make concessions, but these should be lexico-grammatical, not in speech-rate. Where a S does not understand, he will simply ask his neighbour - in L1 - or imitate him. It is also preferable for Ss to operate in L2 wherever possible, although a L1 enquiry is better than none.

11. 4. 2 On not being the sole source of 'punishment'

The relatively recent advent of delegatory styles of teaching in the classroom parallels and follows the adoption of similar styles of management in industry. McGregor’s theory Y management style, based on positive values of trust, an assumption of competence and responsibility on the part of the worker, the manager’s confidence in his own abilities and consideration for his subordinates as sentient human beings, finds echoes in classroom practices, where the S is assumed to be self-motivated and can safely be delegated responsibility and tasks, such as small group discussion and pair-work, without a need for constant vigilance by T.

This management style brings with it the opportunity for the T to cease being the sole source of reward and punishment. In autocratic societies/companies/classrooms, communication was downwards from the head of state/manager/-
teacher, and upwards in the form of inaccurate reports or lies: In democratic ones, communication flows in all directions. [In non-motivated classes this could equal chaos or loss of class-control]. Thus, in classes where delegation of responsibility reigns, Ss will be attentive to events, and be able to show their appreciation (positive feedback) and supply peer-group esteem, which is just as important to the S as appreciation from T. They can also suggest corrections (negative feedback) to other Ss' (possible) errors, relieving T of the task, or revealing a point of miscomprehension, which T can then deal with.

In a psychologically healthy environment, S will also question possible errors made by the T (upward communication). [I personally encourage this by making deliberate mistakes when writing on the board, in an attempt to train Ss not to accept passively all that I write, to challenge me, to remain alert, as well as to highlight their typical errors. This flies in the face of all their school training, and upsets the cultural norm of politicking, but seems to have positive results. Spanish Ts can use this technique to mask the occasional mistake they unwittingly make, but sometimes are faced with genuine challenges to their authority and knowledge]. In the delegatory classroom too, control and direction of activities is no longer the sole prerogative of the T, and can be partially a matter of joint decision.
11. 4. 3 Strategies

One duty of the T is to impart any knowledge, which may help S to find a more efficient route to comprehension, which signifies in turn that he should be abreast of the latest developments in the world of education. When we consider Ss’ mistaken preconceptions about language learning in general, their proclivities to OLT in particular, and the apparent intractability of teaching listening comprehension, one important duty is to instruct Ss in what strategies successful listeners adopt. Fortunately, these are conscious, controlled activities which are instructible. O’Malley, Chamot & Küpper (1989) outlined the strategies distinguishing high from low proficient listeners and claimed that they (the strategies) can be trained (1989: 422) and enhance learning, with the added advantage that they do not appear to differ from general strategies used with other skills such as reading and problem-solving.

Among metacognitive strategies that distinguish good from poor listeners, the key process is monitoring – maintaining awareness of the task demands and information content – supported by selective attention or focusing on specific information anticipated in the message, and directed attention or focusing more generally on task demands and content; elaboration or relating new information to prior knowledge; inferencing, or using information to guess...
at meaning or complete missing ideas. Attention was also affected by fatigue (from daytime jobs), a factor Te should bear in mind when planning classes.

Effective listeners were aware of the moment they stopped attending and made an effort to re-direct their attention to the task. Ineffective listeners stop listening when they encounter an unknown word or phrase, and then do nothing, which is not a strategy. Effective listeners listen for intonation and pauses, phrases and sentences, whereas ineffective listeners listen for each word or words and phrases; they rely on bottom-up processing. Effective listeners use top-down processing but bottom-up processing when needed. They also infer meanings from context, take notes and evaluate what they have understood. Translation is only briefly mentioned as 'a tool that was often problematic.' (1989: 431)

They also have more prior information available than ineffective listeners, have it better organized, access it more efficiently. The elaborations they made were three-fold: using world knowledge, personal or self-questioning (about the aural material) and anticipating; ineffective listeners make fewer elaborations and do not relate new information to their own lives.

We have made the point (chapter 8.3) that the inef-
effective listener may simply have had less experience than his effective counterpart. To put it another way, O'Malley may be distinguishing slow learners and quicker learners, so telling S about what the effective listener does may tell him what short cuts there are, but this in itself cannot ensure that he will take them. Rather we must rely on our training exercises to steer S in the direction we know to be the best.

11.4.4 Feedback

Knowledge of performance is essential in skill-training. In the case of listening comprehension it is unavoidable, because S is aware of how much he has understood, although he still needs external confirmation from peers or T. We have dealt elsewhere (Eastman 1987) with the need for the careful grading of material for remedial training, as the demoralizing effect of making no improvement serves only to fuel anxiety and negative attitudes to the activity.

One tendency in the non-improving listener, is to concentrate even more on the phonological and lexical levels of the aural message, which of course only compounds his problem. Relaxed listening (13.8) or using syntactically simpler passages and a greater amount of pre-sensitization usually solves this problem. It is, however, difficult to have the listener raise his skill level to where
he can access his semantic and real world knowledge stores when he is highly motivated and anxious, and has a well-established habit of ‘bottom-up’ listening.

Some writers (Kalivoda 1980, Sheerin 1987), worse still, authors (e.g. Hutchinson 1987) and teachers argue that listeners should be allowed to follow a transcript while they listen “as an indispensable part of the process whereby the relationship between the written and spoken language ... can be perceived and gradually assimilated” (Sheerin 87: 128).

In my opinion, this is the worst procedure imaginable. The written/spoken relationship should be assimilated using written exercises as a start-point. In attention terms, reading while listening only increases the (over-)load. Ss will input the information visually because they can reiterate and translate (stronger, older habits) and take their time. It is easier. They will not comprehend via the ear, nor learn to do so, because our cultural training is directed towards absorbing information visually, not aurally. The closest we should come to the written text might be an L2 summary using synonyms as far as possible, presented before, between or after listening sessions, never simultaneously. If Ss are habituated to reading verbatim what they hear, or come to expect a transcript of all they hear, their reliance on the ear will be delayed.
11.5 Material

As we stated in chapter 1, here we consider only audio-tapes as a medium.

11.5.1 Types of speech

Oral language can be divided into four categories:

1. spontaneous free speech typical of most informal conversations;

2. deliberate free speech, more characteristic of discussions and interviews, retaining some of the interactions of (1) but being more informative;

3. oral presentation of written texts as in newscasts and lectures;

4. oral presentation of rehearsed scripts such as occurs in theatres or film productions.

Of course, the elementary step of identifying which category any given passage belongs to is important insofar as it helps to establish frames or scripts in the sense of eliminating unlikely ones.

Pseudo-authentic, studio-produced dialogues purporting to be category 1 but in reality category 4, have been typically used in elementary and intermediate text books.
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Genuine free speech on tape is arguably unsuitable for teaching: apart from being difficult to produce, they may be overfull of anaphoric reference, shared knowledge privy to the interlocutors (as Labov pointed out, 5. 4. 1). hesitations, false starts, superfluous micromarkers, incomplete constructions and sometimes asides incomprehensible even to the native. Since to the learner these all represent sounds to be attended to, their net contribution to advancing the skill is negative, contributing to fatigue.

Porter & Roberts (1981) argued that pseudo-authentic texts are too unreal in too many dimensions to be useful. Their intonation was sometimes exaggerated, they were often in RP (estimated as spoken by 3% of the population, Hughes & Trudgill 1979), assimilation and elision were minimal, sentences were usually complete, there was no ambiental noise or interruptions, the pace slow, the language formal.

Today, many of these objections have been met, with the result that artificiality is reduced to a minimum. Besides, Porter & Roberts fail to recognize that a fundament of skill training is breaking the skill into parts, training them and assembling the parts step-by-step. RP has the enormous advantage of being neutral vis-à-vis the accents that abound, and from there it is easy enough to step away into variants.
Observations

Authentic texts have their place in ELT, but are arguably better carefully located according to their difficulty and length in such a manner that they contribute positively to learning rather than proving too difficult and demoralizing to the S or requiring much class-time. Furthermore, we can point to the fact that all listening to taped speech is eavesdropping, whereas in real life the S would be able to participate, and by interacting, change the course of what he hears.

Categories 1 (pseudo-authentic), 2 and 3 are, then, the most useful for the early-to-intermediate listener. Each type determines to some extent the sort of tasks required of the S. Social transactions lead to modelling of dialogue as a speaking exercise in class; more informative dialogue such as giving directions would require following a route on a map; informative nontransactional monologue might yield the recounting of an argument or summarizing the content.

11. 5. 2 Rate of speech

In spite of Henrichsen's (1984) clear demonstration that sandhi-variation, a characteristic of normal speech, reduces comprehensibility more for the low proficient listener, we can see no logic in protecting the beginner from normal rates of speech. It is after all fundamental to
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spoken English. Adequate preparation via RSL exercises should remove most difficulties that might occur.

Sandhi variation is a result of English spoken at a normal rate. Exposing Ss to passages swept clear of potentially confusing grammatical incompleteness and excessive ellipsis is a positive move, but simplifying passages by artificially lower speech rates, as proposed by Harvey (1984) or providing lengthy pauses (Kalivoda 1980) opens the door to OLT, a stage both avoidable and to be avoided, as we saw in chapter 9. Slowing speech will also lull the S into a false sense of achievement. Even the proposal to insert pauses at phrase and sentence boundaries will encourage OLT. Rather than slowing speech, we can resort to more complete preparation and shorter texts.

Using normal speech rates should steer the S away from attempting OLT and towards listening for stressed syllables. S's inability to comprehend normal rates of speech derives mainly from his inability to access meanings quickly enough, and from the unaccustomed sandhi-variation in English. The solution then lies not in slowing speech rates, but in accelerating lexical access through over-learning meanings, and learning the spoken forms of words in contrast to their written forms. The other variable to manipulate is the length of the text.
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11. 5. 3 Length of passage

Call (1985) showed that the memory span for L2 is shorter than for L1. The implications for training are clear: in the early stages, sentences must be simple or periodically have at most one post-posed subordinate clause, until the memory span is sufficiently developed. By analogy, long-term storage may also require training, with the implication that passages will at first be short and only become longer as the skill develops. This too needs careful judgment, because, as O'Malley (1989) showed, length of listening task is one factor that causes Ss to stop attending.

Although the S will come to tolerate longer passages, where these passages contain connected argument or the S is required to retain detail, he should be provided with written support in some form. Failing this, he will have to take notes (See 13. 9.)

11. 5. 4 Accent

By the same token as not shielding the learner from the vicissitudes of sandhi processes, so we should not be concerned about exposing Ss to different regional or class accents from the start. These vary almost exclusively in vocalic realization, an exception being the trilled ‘r’ in
Observations

Scots. Using different accents is one way of driving the learner to rely more on consonants. In any case, as Dudley-Evans & Johns (1981) observed "... regional accent does not noticeably hinder overseas Ss' comprehension."

11. 5. 5 Difficulty

Rixon (1981) makes the valid point that we should grade the Ss' activities, not the language. This means that any aural text is usable at any level. Of course if we are to optimize our use of time by maximizing what the S will be able to gain from any given text, we shall guide our selection of material by such considerations as topic interest, vocabulary, structures and the rest. The point remains, though, that so long as we avoid making unreasonable demands on S, any text with suitable tasks can be fruitful.

As we have noted elsewhere, the beginner in search of meaning tends to concentrate on content words in search of meaning rather than function words, which leads to comprehension of detail at the cost of the argument of the text. It may be this little-known factor which lead to Olsen & Huckin's (1990) finding that, despite good sentence-level comprehension, some of their Ss could not produce coherent summaries of an engineering lecture. (Perhaps, too, they relied on the disjointed comments written on the board).
It follows that material of the more discursive type, while not necessarily more difficult to understand per se, will more beneficially be placed later in the syllabus, when content words have been fully absorbed and S can turn his attention to cohesive devices. Elementary material will more often be dialogue or simple short stories.

11.5.6 Subject-matter

It is important for the material to have some interest for the listener. Usually this is achieved by placing familiar characters in situations which 'merely' provide practice, represent situations which the S is likely to encounter, or develop a story about characters established in the course book being used.

Porter & Roberts (1981) emphasize the use of authentic materials of situations which S is likely to encounter, which provides a strong motivation to comprehend. They recommend station announcements, weather forecasts, news-casts, radio advertisements and extracts from conversations (to encourage topic-guessing).

Sometimes factual summaries of historical events provide good bases for practice. It matters not whether the topic is known to the S, since if it is, he can establish a frame in L2 parallel to that already established in L1, and
if not, he can learn something via L2, which also provides its reward. We are, after all, in the business of education.

At higher levels it is easier to incorporate topics of wider adult interest and of a controversial nature. These lend themselves to connected argument requiring a longer memory span, attention to function words, and note-taking.
Chapter 12

COMMENTATIONS ON THE FINDINGS

In this chapter we highlight and comment on the most relevant research findings in chapters 2 - 10 and relate them to the beginning stages of learning to listen to L2.

12.1 Mispronunciations and context (chapter 2)

Conclusions of experiments using mispronounced words, misperceptions and shadowing techniques can give us clues to the difficulties faced by learners. Here we may understand 'mispronounced' to mean (for the listener) a word partly heard or not pronounced in line with his expectations.
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1) Words are accessed by the sounds that begin them: [Marslen-Wilson & Walsh 1978]. First syllable mispronunciation produced longer recognition times than second syllable mispronunciations, which implies within-word prior context [Cole & Jakimik 1980: p. 29].

Comment: This underlines the importance of intimate familiarity with the phonological realization of individual words, especially of those having reduced vowels in the first syllables.

2) Both semantic context and acoustic information influence speech processing:


Comment: Points 2 & 3 emphasize the necessity for the learner to be (over-) familiar with phonological realizations and meanings of all his L2 lexicon. This has major implications for learning exercises.

4) The concept of cascading context - "any variable which causes a word to be recognized faster will also cause the following word to be recognized faster [Cole & Jakimik 1980: p. 29]."

5) Context appears to facilitate word recognition. The appropriateness of its word-choice reinforces the system's
confidence in its own decision-making process. Where contextual constraints are greatest, confidence is greatest. [Marslen-Wilson: p. 37].

Comment: Contextual constraints can only apply when the context is comprehended: the more the listener correctly recognizes, the more he comprehends, the fewer doubts he has and hypotheses to make about what he has heard (= systemic confidence). This means that syntactic-semantic knowledge must be (nearly) complete.

6) Mispronounced words are restored when the prior context is syntactically congruent; this also demonstrates context-induced expectancy (‘compeiny’).

[Marslen-Wilson 1975: p. 12].

Comment: This underlines the importance of context and syntax to the inferencing of incompletely-heard (= mispronounced) words. It also means that recently-learnt vocabulary (less than fully familiar to the learner) can be embedded in context that should be fully understood.

7) While clear acoustic information permitted Ss to hear correctly semantically incongruous words, when the message was acoustically unclear. Ss ‘heard’ the semantically appropriate word, showing that semantic knowledge is brought to bear on inadequate phonetic material [Garnes & Bond 1976: p. 12].

Comment: This indicates that any degradation of sound source (whether due to equipment inadequacies, speech rate or accent) will force the learner to rely heavily on inferencing from semantic knowledge, which
therefore must be in a high state of readiness. It also means that some linguistic inadequacies can be tolerated, namely momentary lapses in any part of the system.

8) Fluent on-line restorations indicate that top-down constraints, like using syntactic and semantic knowledge, are primary operations in the comprehension process [Marslen-Wilson & Welsh 1978: p. 15].

Comment: This indicates the value of listening practice, and the over-learning of both syntax and meanings, are fundamental to the skill. There is little permissible time-margin for doubt in comprehension.

9) Top-down processes operate at above word level, creating expectations about subsequent input. [Marslen-Wilson p. 37].

Comment: These processes only come into action when the learner dominates the phonological recognition level and unerringly identifies at least the keywords. Instant lexical identification and meaning application comes from automating via practice. Keywords usually form part of information units which are predictable from context and real-world knowledge.

12. 2 Misperceptions, ambiguity and the clause

Browman [3. 2] also worked with native speakers, and we may use her findings on misperceptions as pointers for
the broad categories of misperceptions L2 listeners make. She found that:

10) **85% of misperceptions involve a single word.** [p. 44].

Comment: This means that the word is an important perceptual unit. Any misperceived word in a partly comprehended context may yield inaccurate inferences (or nonsense) about the message.

11) In polysyllabic words, there are more consonantal errors in unstressed syllables than in stressed: vowels are less frequently mistaken in unstressed syllables. [p. 44].

Comment: Unstressed syllables are part of a larger unit, whether word, phrase or complete information unit. They contain less information and are poorly pronounced. There are only two unstressed vowels which rarely affect meanings if exchanged.

12) Errors occurred more in medial position than in initial than in final position. [p. 45].

Comment: This is based on data from native speakers. Data for L2 learners have not been published but would probably show more errors in initial position. Since words are accessed by the sounds that begin them and Spanish learners tend to pronounce what they see, they mispronounce and (we infer) anticipate different pronunciations from those they in reality receive. This phenomenon will be especially noticeable with words beginning with unstressed syllables.

Misperceptions will be reduced if listening materials are composed largely of vocabulary that is well-known to the S, with some un-
knowns which can be either easily inferred or ignored without risk of undermining global comprehension. This means that listening comprehension material should ideally advance in small increments into new lexical territory, partly to confirm pronunciations, and partly to minimise the chances of failure. In practice, this rarely happens. The implications for over-learning all meanings and pronunciations are obvious.

13) The facilitatory effects of prior context (3.3.3) on lexical access and ambiguous word processing are well-established, and the demonstration that these effects can extend even from a preceding sentence (Swinney & Hakes, 1976) allows us to appreciate the size of the task confronting the learner.

Comment: Lexical ambiguity may well be a frequent occurrence for the L2 listener. Non-comprehension or doubtful comprehension of words, whether for phonological reasons or from insufficient vocabulary learning will decrease the amount of context available to him. The poorer the comprehension, the less information he will have as a basis for inferencing, and the more inferencing and conditional accessing he must undertake. Consequently the probability of him making an erroneous interpretation increases. Lexical ambiguity increases processing complexity for native listeners, so we can only guess at the size of the load the L2 listener attempts to carry. When we also consider that the native has available some measure of expectation of up-coming context, which aids him in the disambiguating process, and that the L2 listener will in all probability have none (since he is concentrating on processing what words he can in the immediate prior context), the immensity of his problem is all too apparent.
14) Flores d'Arcais found that more processing took place when a subclause preceded a main clause. [pp. 53 - 4]. Clause processing will be affected by factors such as clause length and syntactic complexity. (See also point 20).

Comment: There are obvious implications for listening material; preceding subclauses should be at a minimum in the early listeners' programme, since he does not yet anticipate up-coming syntactic structures, meanings or use pragmatic information. The same caution might be exercised with the use of passive structures.

15) Bever's clause theory, supported by click-displacement experiments and the finding explicit relative clause markers are easier to process, proposes the clause as the perceptual unit. [pp. 56 - 7].

Comment: Although this may not always be the case, Marslen-Wilson's 'complete information units' being another candidate for the perceptual unit, it is sufficiently frequently supported in research to warrant treating the clause as a comprehension target.


Comment: Given that the L2 learner actively uses pragmatic information late in the learning process (and probably after dominating the syntactic/semantic levels), this means that listening materials should
proceed from simple to complex, and that more subtle structures should be introduced with care. However, carefully chosen dialogue with very obvious pragmatic content could be used to assist LC in the early stages.

17) The hold mechanism [p.67] was proposed as a means of re-interpreting meanings when a late-arriving word forces it. It is reasonable to suggest that, given the incompleteness of prior context, because of less-than-perfect familiarity with syntax and possible misperceptions, the L2 listener may often have to rely on such a mechanism in his inferencing.

Comment: Since he cannot yet indulge in on-line processing with the certainty of a fluent listener, he may be forced to review periodically his accumulated context in order to disambiguate before (or after) transferring the abstract meaning to the LTM. This view implies that the L2 learner must have more, and more frequent, recourse to a hold mechanism than a native speaker. Constant use of this device will inevitably distract him from subsequent input, constituting another factor reducing his ability to comprehend through attentional overload.

12. 3 Comprehensible input hypothesis

18) Krashen's input hypothesis (4. 3. 4) rests on a purely inductive approach to learning. While this is highly desirable, it ignores the limit of time, assumes that all Ss are capable of thinking inductively (and with more or less the same rapidity), and that more rapid learners are not im-
Comment: Deductive forms of language learning - first the principle, then its application - are no doubt the most efficient approaches to learning in terms of time, but this is to overlook the need for redundancy and that the principle must be stored in the unconscious (Krashen 1982), or become automated (Schiffrin & Schneider 1977). This means practice. The alternative inductive approach, where S is exposed to large amounts of language from which he infers the structures and rules much as a child learns L1, is not feasible because of time restrictions, the fact that learners differ in intelligence and some the ability to think inductively.

If for no other reason than keeping the class more or less homogeneous in terms of its progress, some compromise is necessary. This usually means that after some exposure to satisfy the inductive thinkers, the principle is made explicit, confirming the inductive thinkers' hypotheses and satisfying the incomprehension of the deductive thinker. Practice then follows.

This compromise approach to grammatical instruction fortunately meets (some of) the requirements of procedural training. The listening comprehension cycle (contextualization, pre-sensitization, exposure and feedback) can be used as a precursor to the teaching of the principle, which is followed by another exposure and feedback session.

12. 4 Discourse levels (chapter 5)

19) Studies of memory for discourse [p.114] have shown that, while verbatim memory is poor (Jarvella 1971), memory about some aspects, like gist and syntactic information) is good (Bates et al 1981). Other studies show that we retain
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conceptual, not propositional, models of what we have heard.

Comment: The studies indicate that these conceptual models use notions more appropriate to the context, but which have verbal representation. How can the L2 learner store any notion if he has no more appropriate representation for it? He must either store verbatim (ruled out by Jarvella), or in L1. The ability to store more appropriate notions (i.e. to have sufficient L2 vocabulary) may be related to fluency at the storage level, not the production level, but in any case emphasizes the importance of expanding L2 vocabulary.

20) Dooling's work [p. 117] showed that prior context is not always facilitatory, increasing the processing load through the need to integrate new with prior information. (See point 14).

Comment: Implications here are for accessing real world knowledge, which helps to explain why more knowledgeable Ss seem to perform better sooner than those with less knowledge. (They will also have better study habits), which suggests that they will work more with L2.

This finding speaks again for pseudo-authentic materials.

21) Bransford & Johnson [p. 118] showed that giving a title was beneficial for comprehension.

Comment: Any aural text should be given contextualisation, and providing a label is a minimal form of this. It creates mental set or a set of expectations as to semantic field. Thus a headline which states theme or indicates content ('Mugging', 'A bank robbery'), facilitates
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S's mental approach to the task, perhaps by supplying a script or frame.

22) Referential links in discourse [p. 119]. Lack of explicitness of antecedent or ellipsis are aspects of the opacity of discourse which provokes inferencing, presupposing a command of semantic/syntactic processing.

Comment: While writers of elementary listening comprehension material are wont to reduce to a minimum the inferences which beginners have to make, this aspect of discourse may not have received the attention it should at intermediate levels.

Although elsewhere we argue that the language should not be simplified (at least the sandhi processes) to meet learning difficulties, it is arguable that textual explicitness requires some control at lower and intermediate levels. Where inferencing, which presupposes lexical recognition and semantic/syntactic domination, is still an occasional and fragile subskill. Again this points to the need for care in the scripting of discourse.

23) The facilitatory effects of macromarkers (Chaudron & Richards, Olsen & Huckin) [p. 122] seem to result from their structuring the argument, giving cohesion to the discourse. Even some proficient listeners could recall only a series of isolated details, not the whole argument, and we have suggested that this may be an intellectual skill, not a linguistic one confined to L2.

Comment: These findings indicate a requirement for a very long memory span and highly organized memory storage. It implies both memory for
detail and a simultaneous extracting ability for the major points in an extended argument. If the S is unable to carry out such operations in L1, he is highly unlikely to do it in L2, and we must accept that this is beyond the scope of our training. If the extracting ability is present in L1, then it will probably automatically transfer.

24) Micromarkers did not assist comprehension at discourse level. [p. 122].

Comment: This is another argument for avoiding authentic material at the early stages and supports the use of pseudo-authentic. The early learner still attends to all words, since he has yet to learn to use intonation and pace change to relegate such asides to peripheral attention.

25) Tyler & Marslen-Wilson demonstrated that the meanings of words are established on-line. [p. 125].

Comment: This reinforces the point made earlier, that L2 meanings must be instantly available, as they are in L1. The implications for exercise involving vocabulary, pronunciation and use could not be clearer: Ss must practise all words and structures to an overlearnt state.

26) The comprehension process does not rely on the components which linguists use in their analysis of language, but recovers significance in any way it can. [p. 125].

Comment: It is still useful to apply linguists' labels to components of the process so as to permit discussion, but we should constantly remind ourselves that they are but—convenient labels. The comprehension process is a delicate mad scramble — 'delicate' because it is
easily perturbed by mispronunciations, misperceptions, ambiguities, ellipsis and the rest, 'mad' because it would appear to use input in a seemingly unorganized way, and 'a scramble' since it is a race against time.

27) Bransford & Franks confirmed for listening comprehension what was already known about written communication, that communicational clarity is related to the amount of information per clause or sentence, there being an optimum, and a limit to what can be transmitted. Also that integrating new information into memory involves some loss of detail. [p. 127].

Comment: This reminds us of the limits to both the processing system and the memory, which in turn must circumscribe the sentential structure and the sorts of questions we ask about texts. (We must assume that such points are constantly borne in mind by script-writers for all pseudo-authentic material).

28) Labov's work on interpersonal interaction and implied meanings springing from knowledge shared by the interlocutors has implications for the selection of listening materials. [p. 139].

Comment: Some authentic texts contain references to personal or cultural knowledge requiring on-line interpretation perhaps only available to a native. Lengthy explanations of such points are not always convenient due to the limits of time, which would make them unsuitable for teaching.
29) Beaugrande pointed out that knowledge of the real world and of other texts is used to flesh out the original message. [p. 140].

Comment: Comprehension questions on the finer detail of a passage may be unadvisable, since with the original wording purged and possible elaborations from general knowledge, the accuracy of comprehension may be difficult to determine.

12. Memory and attention (chapters 6, 7 and 8)

30) The characteristics of STM [pp. 145 - 6] are that it is limited in span and the time that it can hold materials, which it does in phonemic form. Its content is easily displaced or lost and must be semantically identified and sent to LTM to be retained and make way for new material.

Comment: The brief rôle played by STM emphasizes the essentiality of accurate perception of the message. Ss must be taught to recognize strong and weak forms, and learn thoroughly word meanings and pronunciations to reduce both the probability of using OLT and the delay in fitting meanings to what they have heard.

31) Pronounceability increments capacity in STM [p. 150]. and syntactic chunking reduces the memory load.

Comment: The fact that many English phonemes do not exist in Spanish may constitute for the early learner another hidden obstacle to listening. Pronounceability could be an articulatory aid to retaining speech during processing before transmitting it to LTM. If the learner cannot do this, his retention difficulties increase. This suggests practice with sounds non-existent in L1 (minimal pairs) with the aim of reducing this inhibitor.
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Syntactic chunking pre-supposes accurate perception and the capturing of meanings, as recognition alone of a structure will not yield meaning. Until key words in a phrase can be reliably captured, chunking cannot take place and overload avoided.

32) The LTM [pp.147 – 50] relies on semantic coding, stores meanings in some abstract form and retains them by relating this new information to prior knowledge. It will store phonemically when certain conditions obtain.

Comment: If S does not learn the meanings and realizations of content words and weak and strong forms of function words both embedded and in isolation, he will suffer overload and store phonemically. This phonemically stored information must be re-examined for meaning before it is lost, which means diverting attention from the incoming message and further loss of input. It can also lead to seeking meanings in L1, which in turn may involve storing in L1.

The conditions for phonemic storage (a simultaneous, demanding task and insufficient time to produce semantic links), are precisely those which occur in the OLT strategy user and/or the low proficient listener who cannot make rapid semantic links. Whereas the OLT strategist chooses to translate, phonemic storage forces the listener to use the hold mechanism and review what he has stored, if he has time. This again emphasizes the need for overlearning L2 meanings and avoiding OLT.

33) Complex grammatical structures hinder the learner [p.150].

Comment: Grammatical gradation of listening material from simple to complex must be observed throughout the elementary to intermediate...
stages in order to maximise comprehension, provide positive feedback and create learner confidence. However, if complex material is used, simplified comprehension activities can still provide beneficial practice. (See 11.5.5).

34) L2 memory span is shorter than span for L1, and the amount of input that can be processed increases with proficiency. [pp 151 - 2].

Comment: This implies that passages will start by being short but gradually increase in length with proficiency level. 'Short' does not mean single sentences, however, as this tempts S to translate it. A dialogue of four turns might be regarded as a minimum.

35) Memory for L2 syntax is the best predictor of proficiency in the listening skill. [pp.151 - 2].

Comment: The argument on which this finding is based is that units are defined syntactically as words, phrases or clauses and interpreted semantically, the exact words being lost. It is argued that syntax is therefore far more important than the semantic contribution. However, both processes are interactive, for if meaning cannot be attached to the structure, the structure can only be recognized and retained with difficulty. Such a statement loses sight of this interdependence. (see chapter 14. 2).

36) Memory is thought to be divided into two stores, the semantic (learnt) and the episodic (personal experience, world knowledge). [p.153].

Comment: Some Ss appear to believe that they can learn enough simply
by listening to a teacher and that study is largely irrelevant. Much language learning involves procedural knowledge (akin to episodically stored events, but repeated), which means practice. Listening to a teacher may mean storage in episodic memory, but practice will reinforce its retention.

37) Attentional capacity varies with task demand, mood and arousal, [p.158], and increases with development of the skill. [p.170].

Comment: Special care must be taken to ensure that the tasks facing the S are within his capacity but still challenging (arousing) in some respect. As teachers, we can affect mood and arousal by creating an atmosphere and possessing an attitude both to him and to the activity that is soothing (anxiety-reducing) and conducive to learning.

38) Mental operations vary in their attentional capacity requirements. [p.157].

Comment: Skills are composed of sub-skills, most of which become automatic with enough practice, probably beyond the level of good performance (overlearning). The exercises proposed in chapter 13 provide this practice.

39) Extraverts are affected beneficially by 'noise'. Introverts are not. [p.164].

Comment: This means that the former will tolerate greater amounts of stimulation with fewer adverse effects then the latter. Teachers could benefit from knowing some facts about how personality affects performance.
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40) Overarousal (stress) narrows attention to central information [p. 164, 183], and allows only automatic processes to function [p. 169 - 70]. Controlled processes are greatly diminished and ‘irrelevant’ cues are excluded [p. 165], particularly in the low to middle proficient listener [p. 166] since the high proficient learner focuses selectively on key words and phrases important in context [p. 166 - 7].

Comment: One of the factors which make listening comprehension difficult, stress creates problems because the early learner has not yet established what is central to the message and what can safely be eliminated. Nor has the learner yet developed automatic processes. This indicates training in attending to salient elements, the stressed syllables (RSL exercises). It also means that we must re-focus S’s attention on larger units - word groups and complete information units. This can be done in the pre-sensitization stage (11. 6. 2). We are training S to select from the input (developing Færch & Kasper’s central processor [p. 185] or Anderson’s selection stage. [p. 191].

41) Attentional overload leads to selection of a smaller perceptual unit [p. 183], usually the syllable, hence the belief that the speaker speaks too quickly.

42) High anxiety causes stimulus generalization [p. 164].

Comment: This emphasizes the need for care in the approach to teaching the skill, as it is a form of stimulus discrimination.
The learner does not isolate L2 from previous learning, but brings all means at his disposal to bear on L2 learning [p.173].

Comment: No. The L2 listener is isolated from previous learning by attentional overload: He creates attentional overload by attending to syllables by being stressed and by using OLT and so cannot access previous learning.

Bialystok's comment 'brings all means at his disposal' signifies that the motivated learner brings all his knowledge and abilities to bear on the situation. Once he has learnt to attend to larger units and automates other subskills, he will be able to access real world knowledge.

44) Bialystok places great emphasis on functional and formal practising. [p.175].

Comment: The former increases exposure via talking and listening; the latter moves linguistic knowledge from the explicit (controlled) to the implicit (automated) store, repeated use producing automatic routines.

45) Acquiring procedural knowledge is a slow process dependent on practice, which converts controlled processes into automated processes. [p.175]. Practice makes the subskills automatic [p.162].

Comment: Practice: One of the major keys to language learning.
46) Mental processes are usefully seen as either controlled or automated, the former by dint of practice becoming the latter [p. 177].

Comment: LC in the mother-tongue is automated, and the learning of this in L2 means the automation of what is at first controlled. As a controlled process it overloads focal attention and causes the process to stop.

47) Nagle and Sanders' model distinguishes between implicit and explicit linguistic knowledge stores, the former being automatically accessed, the latter involving an intentional search. [p. 179].

Comment: The more a learner practises, the more linguistic knowledge stores move towards being automated. At the humblest level, this signifies instant access of meanings from phonological input at the lexical level, with major implications for overlearning vocabulary and syntax.

48) Overloading the attention channel in visual processing leads to the subject subdividing his task into smaller units. Analogously, in aural processing, this would mean attending to the word. [p. 180].

Comment: If S attends at the lexical level, he assures overload of the system. He blocks syntactic chunking, which is a means of reducing load, and presupposes attending to higher levels, namely complete information units.
49) It still has not been demonstrated whether memory is language-specific or not. If it is, all our knowledge in L1 would have to be transferred to L2. [p. 189].

Comment: Anderson comes down on the side of there being one knowledge store. It seems that declarative knowledge is stored as meanings independently of language, and is available to both L1 and L2. Indeed we can explain in L2 what we have learnt in L1, the only problem being the availability of terminology.

50) Strategies are controlled processes used by both native speakers and learners, the only difference being in the frequency with which they are used. Some strategies, e.g. OLT, may be counter-productive by not steering the learner along the path to automatic performance. [pp. 197, 199, 200].

Comment: As controlled processes, strategies operate at the conscious level. Teachers should tell Ss which strategies are available and which undesirable, as well as training Ss in the use of the best ones and steering them away from the worst.

51) The translation strategy is seen by Ss as highly inefficient, but was found to be preferred by Ss in classrooms where grammar was emphasized. [p. 208]. Effective Ss do not use the OLT strategy. [p. 209].

Comment: The cultural belief that all scholastic knowledge is declarative, large classes and grammatically biased syllabuses are probably the main reasons for the concentration on grammar and translation in
EG8 and BUP. Ss who come to the EOI bring their beliefs, habits and strategies, which do not adapt well to listening and speaking. The fact that in listening they are overloaded [p.213] also drives them to stereotyped habitual responses, namely to attempt to translate what they hear.

52) The correct techniques for teaching listening comprehension are not widely known or practised [p.217], and some grossly mistaken techniques are still suggested by authors.

Comment: Even armed with sound techniques and procedures, the teacher may find teaching listening comprehension ephemeral. It is impossible to tell whether a S is listening or day dreaming; he cannot be forced to listen. Nor is it easy to overturn cultural beliefs about study or the value of practice.

53) We identify several factors which impel the L2 listener to adopt OLT. They are of three types: psychological, pedagogical and self-inflicted [pp.208-224].

Comment: Limitations in the attention-memory system, anxiety, insufficient practice and transfer of inappropriate training combine forces to induce the learner to adopt OLT. Added to these, failure to automate meaning access by not working with L2, entails the listener having very little context, cannot access his non-linguistic stores and so cannot relieve the burden on the system by anticipating what is about to be said.

The only solutions to this situation are to exhort S to use the language and advise him not to translate.
54) The low proficient learner, (the unskilled listener), does not work at or with L2 sufficiently. Therefore he never reaches the stage of internalizing L2 syntax [p. 222], and has less declarative knowledge about L2 (and possibly the world).

Comment: If T can ensure that his Ss are often successful in their tasks, they might be persuaded to study more. This implies making syllabuses of a size that can be covered by the majority.

55) S is unfamiliar with L2 phonology and prosody and does not know what aspects to select from the soundstream, so he tries to attend to all sounds (or syllables). [pp. 223 - 4].

Comment: RSL exercises aim to train Ss in turning his focal attention on salient syllables and relegating unstressed syllables to peripheral attention.

56) Where S confirms meaning by reference to the original paired associate {cat = gato, catch = coger}, he is likely to retain the message in L1.

Comment: S will come to associate L2 word with the referent object or the concept (not the L1 symbol) if he uses the word frequently and meaningfully. In practice, this means writing and reading, since there are few opportunities for speaking and listening.
57) The survey identified three different OLT strategies which seem to reflect developmental stages of the same strategy. We called these fallers, risers and flats respectively.

58) The survey found that 83% of respondents attempted to translate to some extent.
Comment: O'Malley et al's studies do not give precise figures, but the translation strategy was considered to be problematical and appears to be used by an insignificant proportion of the Ss they studied. This discrepancy we put down to the grammar-translation teaching approach in Spain.

59) Overall, the survey data suggest that the more fallers translate, and the less risers and flats translate, the better comprehension scores they have.
Comment: As the comprehension test had not been validated, these results are not as clear as we should wish, but the tendencies are observable, and we would expect them to be stronger with a properly validated test. The results also show that better scores in each strategy are possible with practice, giving the user the illusion of improvement. However, table 9.12 also shows that the faller and riser strategies become less viable (have lower comprehension scores) in each successive year. That is, they fall as the listening tasks become more complex and longer. Furthermore (table 9.13), the flat strategy yields low comprehension returns in second year, which makes it less attractive in the short term. However, in third and fourth years it decidedly comes into its own. It is associated with about half the tensesness and anger (measures of anxiety and frustration) overall, with the effect being particularly noticeable in the lower two years.
60) The T’s method of teaching (T-push) does not appear to affect Ss’ choice of strategy, but it does affect their attitude to the activity, as measured by the proportions of tense Ss. However, there is also some evidence that tense-ness can produce better comprehension scores rather worse, suggesting that T-push can have beneficial effects on LC learning.

Comment: These findings should be considered in the light of the facts that (1) Ts tend not to devote as much time to the listening skill as it requires, and (2) we knew nothing about strategies or the existence, avoidability, harmful effects or reasons for adopting OLT.

61) The basic teaching and conditions dispose Ss to OLT.

It is highly probable that methods adopted by EGB/BUP Ts contribute greatly to OLT adoption. That is, the prevalence of deductive methods and training Ss to translate written texts and minimal exposure to aural English readily transfers to the listening skill.

62) Ss’ misapprehension of what listening involves and his habituation to low standards of acceptability conflict with the demanding nature of the skill.

Comment: The mistaken attitude to learning in general (minimal effort) and to language learning in particular (believed to be like other learning, it is thought to be easily-learnt declarative knowledge) is another factor which virtually forces S to find any (in this case the only) means of seizing and retaining what little he understands.

Even if all the psychological and cultural factors goading him towards OLT did not exist, the mere fact of not knowing sufficiently well (almost instantaneously) the meanings of most words, and of not having worked enough with structures, would be sufficient to make S
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resort to OLT. His only means of comprehending is by searching his L2 – L1 lexicon for those words he has managed to identify. If fortuitously these are correctly identified, he may be able to guess or inference some global meaning. Thus while a T may accept inaccurate and slow translations of written material in class (allowing a low level of acceptability), LC must be carried out accurately and instantaneously, or there is no comprehension. Comprehending speech must be done at the unrelenting speed of the speaker.

63) English differs from Spanish in being syllable-timed and non-phonemic. (Morphological and syntactic differences pale into insignificance in this context, probably because words are delivered so quickly that their recognition and identification provide most of the meaning). The first signifies sandhi processes and involves learning to attend centrally to stressed syllables, and the second effectively means that the listener must learn two Englishes—the written and the spoken.

Comment: How do people born to a language which coincides almost completely in its written and spoken forms manage to convert read to heard English, which involves virtually discarding the treacherous vowels (and some consonants occasionally) as pronunciation and comprehension guides? The answer here is, with difficulty. Fortunately there seems to be little connection between comprehension and production. Thus the learner who says what he sees and imports syllable timing to his spoken English can still be an accomplished listener. However, it is the assumption of our exercises (chapter 13) that his task will be made easier if he can pronounce L2 correctly. This is based on the arguments that if he can produce it, he will learn to listen to himself, a skill which will generalize to listening to others, and that his expectations will more closely match what he will in fact perceive. English orthography simply aggravates an already difficult situation.
The second objective of this study, "to provide a rational basis for the teaching of listening comprehension based on known facts," requires that we extract skill training procedures from the findings given in the previous chapter. Several of those points have direct implications for the sorts of routines the S should carry out in order to progress steadily towards aural comprehension. The types of exercises implied are outlined here, after the classroom listening session is discussed.
13. 1 Introduction

"Comprehension teaching at the moment,... is very much a hit-or-miss affair. The student is presented with a text associated with some task and told to get on with the task. If the task is not performed very well,... there is little the teacher can do but give the assignment a low mark and tell the student to 'do better next time'. All the teacher can do 'next time' is provide yet more practice." Brown 1986: 286

"Although the processes which underlie listening and reading have been the focus of research, the development of instructional guidelines are [sic] ripe for investigation."

Gilsan 1988: 9

"The distinction between declarative knowledge and procedural knowledge has both theoretical and practical importance for SLA. Knowing about language as a grammar system (rules underlying syntax, semantics and phonology) is not a sufficient condition for knowing how to use a language functionally."

O'Malley, Chamot & Walker 1987: 295

It should become clear in the sections on exercises that the listener's over-riding principles are to listen only for what he can understand, to pay no heed to what he cannot and to avoid OLT while he listening. New vocabulary should be learnt before listening. His aims are to avoid overload and to establish from the start the habit of listening for key words, and later, key phrases. Given the typical SVO structure of English (especially in the earlier stages), this should permit relatively painless, relatively
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easy. inferencing. This principle, or listening strategy, should be explicitly given by the T and clearly understood and strived for by the S.

13. 2 Teaching listening comprehension

"... a teacher cannot teach a student to listen. He can only help him to practise and learn."

(Geddes 1981: 80)

For making maximum use of time and Ss' chances of exposure, T needs to take four steps:

1. Contextualization
2. Pre-sensitization
3. Exposure to aural message
4. Feedback

At intermediate level and beyond, step two is, or should be, superfluous, apart from the teaching of new words and phrases too difficult to infer from context.

13. 2. 1 Contextualization

"... one of the problems with the notion (context) is that it is by no means clear just what 'context' consists of, nor how competent listeners determine what aspects of context are relevant."

(Brown 86: 284)
Context, so plentifully supplied on video tape, in establishing shots, body language, facial expressions and the like, permit a degree of contextualization lacking in audio-tapes. To compensate for this, some context must be given. The simplest way is to give the message a title or headline which directs Ss' mind set to the events and outcomes and therefore the vocabulary which may transpire. A brief description of the characters, their ages, relationship and attitudes, and if relevant, the time and place of action also helping the mise en scène. Where predictions are confirmed, the need to process every word should be reduced, in turn allowing the S to access real world knowledge and make further predictions. Useful, too, is the process of asking Ss to predict what may happen, which encourages the production of vocabulary which may arise, as well as possible events. Even asking for words related to the given topic should assist in this process.

Visual support also helps to contextualize and reinforce the message, assists prediction and can indicate comprehension where Ss draw or write on the paper. This can take any suitable form such as graphs and diagrams which must be completed, pictures which may (not) summarize the passage, routes to be followed on maps, faces which may be persons referred to. For more abstract themes, such support might consist of the key words and phrases from each paragraph.
Arnold & Brooks' (1976) work with children found that the effect of visual support material before listening significantly affects comprehension and recall of otherwise inexplicit prose. Mueller's (1980) study showed that comprehension was improved if the visual cues before or immediately after presentation of a passage. Furthermore, he found that visuals enhanced comprehension in inverse ratio to Ss' proficiency. It appears that visual support is far more useful to beginners who can make less of linguistic cues.

Written comprehension questions and working on closely-related topics but in different modes will also provide context to an imminent listening activity. Thus, for example, a reading exercise serves as a useful preface to a listening text.

13. 2. 2 Pre-sensitization

Particularly useful at the lower levels is the presentation of vocabulary items and phrases which are new or infrequent in usage. This has the twin advantages of hinting at events and reducing the number of possible events. It is best done by presenting on the board new or key words or phrases in phonetics which the Ss repeat several times before the translation is given. (Translation before listening is acceptable). This exercise (RSL: see section
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13. 5) should facilitate explicit guessing about the topic. After the passage has been heard for the final (third?) time, the spellings can also be given.

13. 2. 3 Exposure to the aural message

The tape is played once: at lower levels it is salutary to ask what words and phrases Ss heard. All offerings, right or wrong, should be accepted as right, or at most met with a quizzical look from T. This rather unethical procedure is to avoid quashing Ss’ enthusiasm. A variant on this is to use the zero-feedback technique, where all answers are met with a neutral gesture by T.

The tape can then be played a second time, the Ss repeating and amplifying the words and phrases they have heard. Finally, if necessary, the tape can be played a third time. Playing it any more will suggest that comprehension is important, and will sow the seeds of anxiety in those Ss who have understood little.

The exercises and tasks Ss carry out while listening to the aural message should not require too much processing capacity, or attention will be distracted from listening, which is always the superordinate activity. Thus diagrams, graphs and maps will be simple, even puerile when seen in isolation, but they will have some element of challenge.
They may be accurate and await confirmation through understanding, or omit some information to be supplied by S.

13. 2. 4 Feedback

Feedback is implicit; those who have grasped the gist will already know, and will need confirmation that they are right. Those who have not understood will also know it, and T must try to single these Ss out to ask them simple questions to give them some reward for whatever little they have grasped. This can take the form of How many people? Where were they? Male or female? Was one angry? and the like.

Ss can then be encouraged to report what happened, complete statements about the passage, summarize it, choose or create a title, either in groups or as a class exercise. Producing a written summary takes too long, and as homework is too removed in time from the hearing to yield an accurate précis. For those who have understood little, it is advisable to assure the S that it is unimportant.

Written comprehension questions can also be used. These can take a variety of forms (comprehensively listed in Ur, 1984). The questions should vary in difficulty, coincide in order of occurrence of events, and avoid detail except where this is vital (e.g. flight numbers and times). Brown (1986) points out that failure to answer such ques-
tions does not necessarily mean that S has not comprehended the passage, as he may not have understood the specification of the task, or he may be unable to reflect in the task the extent of his comprehension.

To avoid the questions merely testing, class discussion can be used to clarify the correct answer, for it is beneficial, especially at intermediate levels, to examine miscomprehension, which may have arisen from mishearing or misreading. Discussion is particularly useful as the class rarely has a shared experience.

Some writers, e.g. Sheerin (1987) argue that transcripts should be made available during or after the listening activity, particularly for remedial work. In our opinion, this is a grossly misguided strategy, for if Ss know they will be able to read the script, they will not make so much effort to comprehend the aural version. They certainly need confirmation of what they have heard, but the limited time can be put to better use and continue in the same aural mode, by discussion and question-and-answer, with the T playing only a minor part. Where a S errs, T can question the veracity of the erroneous statement, leaving the class to discuss and correct it.

Furthermore, it is not, in our opinion, of transcendental importance that the learner should end up with a 100%
correct version of what he has heard. Brown & Yule's (1983) "reasonable interpretation" should be sufficient, and even if this is not reached, any fastidious attempt to labour some point of exactitude places too much stress on the need for S to reach full understanding and may engender anxiety as he compares his relatively poor version with his colleagues'.

13. 2. 5 Integrating the skill

Dirven (1981) points out that in normal language use, listening and speaking are intermixed, while in FL learning they are often separated. While this is inevitably true of those intermediate LC exercises provided with multiple choice questions, we should give Ss an opportunity to discuss or comment on such passages. At pre-intermediate levels, listening exercises are often related to real-life situations (such as buying something in a shop, listening to forecasts or train/plane announcements). Class exercises such as interviews, rôle-plays and walk-round surveys also provide useful vehicles for listening/speaking integration.

Working on the same or closely-related topics, but in different modes, such as reading short extracts or summaries or writing on the subject serve to integrate an imminent listening activity. This, however, has the disadvantage of reinforcing mispronunciations (since Ss may subvoc-
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alize as they read or write) and may require preceding pronunciation (RSL) exercises.

The aural passages used may practise a particular structure, extend vocabulary about a specific topic, or merely reinforce past work. Conversations, interviews, news and documentaries are excellent bases for post-listening activities where Ss can express their own feelings and attitudes orally or in writing, writes Glisan (1988: 14). Debating in groups, class discussions, group problem-solving, interviewing in pairs, changing the passage to fit one’s own ideas, writing character sketches and essays all contribute to relating this skill with others. They reinforce syntactic and semantic knowledge and assist the process of internalizing the new information.

13. 2. 6 The language laboratory

The laboratory has its place, but its use must be carefully directed. Since one of our aims in teaching listening comprehension is to wean S away from OLT, our work will be undone if S tries for 100% comprehension and progresses through a passage listening to it phrase by phrase, and pausing to translate it.

For those Ss who have not responded adequately to the training we give in the classroom, however, the laboratory
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might provide remedial exposure and practice. However, S
must be adjured to listen to whole paragraphs or several
sentences of dialogue to avoid translating wherever poss-
ible, and to lower his comprehension target to capturing
only the gist of the passage. Further, we believe that if
he limits himself to two or three passes and works on a
large variety of material, he will benefit his skill far
more than if he intensively works a few, or even just one
passage. If S is to listen to longer stretches of disc-
course, there seems little need for a laboratory, a simple
cassette recorder sufficing.

It is difficult; however, to regard laboratory list-
ening as an activity with as much potential benefit as re-
relaxed listening (13. 8). S's whole attitude in approaching
laboratory work, unless he is advised to the contrary, is
likely to be a grim, tense "I'm going to understand every-
thing", which means bottom-up listening, while what we need
to train is top-down listening. Top-down listening for the
low-proficient learner should start from a "let me see how
much I can get from this", taking a holistic, casual att-
itude.

13. 3 Basic Training

Deliberately disregarding input not instantly mean-
ingful runs counter to S's typical aim to extract the max-
Training Listening Comprehension

The minimum amount of information from the message by listening to every syllable. Anxious or not, the S may find this paradoxical and a difficult feat to manage, but he will be assisted to a considerable extent in training this strategy if he listens to material which he knows to be beyond his capabilities and where his listening strategies are relatively modest. (See section 13.6)

The principles have an implication that T will play whole dialogues (of say 4 - 12 lines) in class, or whole meaning units, not single sentences. If he uses the laboratory, S should likewise play extended extracts, not short single phrases (which he then translates), before playing the next extract. This tactic is closer to real-life listening and should discourage the adoption of OLT.

The disadvantage is that S may at first feel that listening to texts from which he can only glean the occasional word is not beneficial, particularly if, after the third hearing (our suggested maximum for any text) he has not improved much more than after the first. However, repeated trials with a variety of texts should show an increment in the number of words recognized, reflecting the improving ability as a function of his lowered anxiety level, greater relaxation and comprehension targets which he is obliged to lower.
When these three changes have occurred, and S may well be unaware of their having happened, the number of comprehended words and phrases increases steadily, and from the aggregations, S can make ever more confident inferences about the whole text. In the early stages, salient content words and phrases are caught, mainly nouns, adjectives and verbs. Gist comprehension begins to appear at about the same stage as function words and adverbials within phrases. From this point, S should be able to proceed unaided and should rarely resort to (or relapse into) OLT.

Some training at the recognition (not production) level should also be given. Minimal pair contrasts, particularly of problematical vowel sounds, are probably essential to the Spaniard with his smaller vocalic range. Abbott & Wingard (1981) advocate minimal pair exercises being done in context, as this aids the learning process. So we give:

The hat on the table.
The hut on the hill.

as contrasts in meaningful contexts which simultaneously reinforce meanings.

Identification is also necessary, but need not become an exercise proper. For example, the S should learn that ‘do not’ and ‘don’t’ (two different sound clusters), are different in register, formality or emphasis, but not mean-
13. 4 Overlearning and using syntax and vocabulary

Overlearning means automating; here the aim is to use words in contexts so often that hearing them instantly accesses their meanings to consciousness.

As so many of our commentations in chapter 12 indicate, (e.g. 8, 9, 26, 30, 31, 32, 38, 40, 44, 45, 50, 51), the S will greatly reduce his listening problems if he works with L2, writing sentences meaningful to him which use the structures and vocabulary he has been exposed to. Once these are corrected by T, he can then underline the stressed syllables and cross out the schwas, have T check this, and use them as a RSL exercise.

This is a time-consuming but more intelligent way of overlearning vocabulary (and syntax) than rote learning paired associates (L2 with L1, which encourages OLT), because he is relating words to each other in L2, and to his personal experience.

*My flat is on the third floor.*

*Yesterday I bought a shirt and a pair of trousers.*
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He could also deliberately try to use function words.

*I like my shirt, but my brother doesn't.*

13.5 Read Say & Listen (RSL) exercises

These exercises are based on the assumption that comprehension is a product of both input and expectations. Where the listener's expectations are in line with what he hears, he is more likely to comprehend than if they are inaccurate. Accurate expectations make the listener less dependent on the phonological aspects of input so that he applies less attention capacity to the signal, thus freeing capacity for top-down processing.

These are probably most crucial for the early learner. Their aim is to teach S to focus his attention on the stressed syllables in phrases (or salient meaning-load items, and to relegate unstressed syllables to peripheral attention. They also teach the rapid pronunciation of reduced forms and perhaps the S to listen to himself.

The principle is to have the Ss repeat rhythmically (at roughly equal time intervals) the stressed syllables of a phrase (perhaps one which will occur in an upcoming passage), and then to repeat that with the reduced syllables
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interposed, but without losing the rhythm. This can all be repeated with increased pace until Ss are saying the phrase at native rate. Intonation can also be incorporated.

So

Peop thought earth flat.

/æl/ /θætbi:/ /wæz/
or

Who off when rrived? No was.

/wəzθætbi:/ /is/ /juə/ /bædi/

Ideally Ss should be taught to do this from day 1, but syllabus and time do not permit.

Building long phrases can also fit in this type:

I THINK

I THINK that there MAY

I THINK that there MAY be inTElligent LIFE...

and sometimes ‘back-chaining’ is helpful:

OPen the WINDow

GOOD enough to OPen the WINDow

I WONDer if you’d be GOOD enough to OPen the WINDow

The exercise can be adapted to single polysyllabic words to inculcate the idea that most words have one stressed syllable, the others being reduced to schwa or short ‘i’. E.g.

The word ‘America’ contains two /æ/. Cross out those
syllables which are pronounced /ə/:
iron  century  paper  correct
adults  fibre  important  machine
Africa  countries  serious  somebody
Germany  industries  elephant  Canada

Now underline the stressed syllables.

(from Swan & Walter 1984)

As practice and reinforcement of contentious pronunciations, the exercise might focus on different suprasegmental patterns:

A: WHERE do you LIVE? B THESE BOOKS are CHEAP
A or B?
Green eyes are nice  Jill works at home
First on the left  Six pounds of meat
Four pints of beer  She's got a cold
Why did you go?  What have you done?

(from Swan & Walter 1984)

13. 6 Prediction exercises

Expectations determine how we reconstruct our existing knowledge or schemata to internalize new information. Now prediction becomes feasible only when syntactic chunking and peripheral-attention-relegating processes leave
spare capacity. This implies that the less proficient learner is unlikely to be able to avail himself of these processes. However, in conjunction with other exercises, we should begin to make them occur.

The exercises that can precede a listening activity to train prediction may be carried out in groups or individually. They include:

- ordering pictures showing scenes from the passage;
- predicting likely events and vocabulary;
- thinking about or discussing the topic;
- for T to tell a parallel version of the story, then stopping halfway through a sentence to allow Ss to suggest completions, T perhaps using preposed sub-clauses, Ss supplying the main clauses.

Watts (1986) developed these outline ideas suggesting that sentence completion could target a single word, including connectors, as well as clauses, and even the sentence following one read out by T. At discourse level, given the topic title, Ss can suggest how a speaker might organize his speech. (This is parallel to paragraph planning in composition writing, with obvious implications for post-listening activities at intermediate level).

13. 7 Post-listening activities
Apart from tasks begun during listening and discussing the reasons for answers, comprehension questions must obviously be asked. T can do this orally, varying the difficulty and type of question according to the competence level of the Ss and the complexity of the passage. This has the advantage of providing more aural activity for the other Ss and permits T to identify those who have understood less. [Where a passage appears to be too difficult or unstimulating. T should not hesitate to end the activity as briskly as possible. It is unwise to allow Ss to associate boredom or frustration with an activity which is already difficult enough].

Written comprehension questions, not of detail, which Ss will have read before listening to establish mental set, are simplest when requiring yes/no or true/false answers. As with all written questions, these should not be verbatim extracts from the passage, but rephrased, using synonyms and different structures. These take the form of declarative statements and require a minimum of writing to indicate comprehension.

Multiple choice answers should also be paraphrastic, and can be made to vary in difficulty by the degree of semantic differentiation between the choices. Multiple choice has the advantage over free responses (apart from being objective and quick to mark) in that they are precise and can
be carefully prepared. Free responses written by the S are sometimes so vaguely expressed that it is often difficult to know whether comprehension has occurred. This form of response is obligatory, however, at the highest level of questioning, which requires S to give his opinion, attitude or subjective reaction to aspects of the passage.

If T confines himself to affirming the correct answers, he provides feedback, but is merely testing. Where it is clear the passage has been comprehended, this is sufficient. In most cases, however, Ss require more information. They need to know why their answer is wrong and why another is right.

13. 8 Relaxed listening

Comparison with his peers' patently higher levels of comprehension creates a pressure for results in the less proficient but motivated listener. This can serve to make him attempt to apply the mistaken strategies of the past. One method of overcoming this is to remove social pressure by listening at home.

If S listens to world news in his L1 and then to the world news on the BBC or VOA, some of the items will coincide. If his aim at first is solely to listen for those words which he can recognize (the names of countries and
world leaders), and not to concern himself with other content details, and he does this daily over a period of several weeks. He should find his comprehension extending beyond names. Feedback here could be for him to count all the words he recognizes, and to keep a daily record. As he improves, he may even begin to write down words and phrases.

A further advantage of this approach is that the task is always limited in time — about ten minutes. If the broadcast is recorded and repeated, however, this will make it a chore and remove any enjoyment. There is no testing, S cannot be right or wrong, and S should learn to associate listening with a non-anxious state.

There are various features of this approach to remedial listening that are worthwhile emphasizing. One is that the activity requires little or no preparation. The listener must rely on only closely-related, specific world knowledge or schemata established in listening to the news in L1. Being recently learnt, they should be easily available for reference and constitute a readily attainable target. Another is that no concessions are made in terms of rate of speech; the language and its delivery are intended for competent listeners. This means that there is no time for OLT if S attends to his task (and later to keep abreast of the information). If S does switch to OLT he should train himself to recognize the fact, and that he may have
missed more new information than he has gained from translating. He will come to recognize that he must choose between OLT and redirecting his attention to the speaker. In other words, the listener is left without his accustomed sources of comprehension and is eased into new habits.

An argument against using broadcasts has been mooted by Geddes (1981), who suggests that because newscasts are written discourse read aloud, not spontaneous, they do not meet S's needs. In terms of the sort of listening they will eventually require, this is true. Here, however, we propose listening to broadcasts primarily to reduce anxiety, but with the side-benefit of practising identifying words and phrases in running speech, a very basic subskill which will generalize to all listening.

13.9 Note-taking

Taking notes while listening is a distinct skill that can also be trained. As it requires attention-switching between message and activity, it presupposes a higher level of proficiency. Ideally it involves noting the key ideas of the previous paragraph or block of ideas while attending to those of the current one, although this appears to be a skill not necessarily available to all. More accessible is noting the key ideas of the previous or current sentence. Experiments in writing coherent stories while listening to
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disparate material indicate that this skill is trainable to a far higher level than most Ss would ever need.

Training in note-taking can be carried out with passages new to Ss, but using vocabulary and syntax well within their capacity, and familiar topics, these factors being raised one at a time until S can satisfactorily take notes on material at his level. S's ability to reconstruct the meaning or main thrust of the passage from the notes would constitute the task target.
Chapter 14

EARLY LISTENING COMPREHENSION:
A DEVELOPMENTAL MODEL

After studying the literature, and with my first-hand experience of the difficulties faced by Ss. I consider that I can make a formal statement of the principal factors involved in the process of learning to listen, at the same time placing OLT in the context of other strategies.

14. 1 Introduction

Of the many models and theories of listening comprehension, none looks at the diachronic progress of listening, and none addresses the difficulties facing the early learner, so none is truly applicable to teaching. Here we propose a model which combines the relevant psychological, experiential and linguistic factors involved in the L2
A developmental model

learner-listener's Herculean struggle to achieve a reasonable level of comprehension.

Previous attempts to outline the progression of the listening skill in L2 learners are lineal and over-simplistic. They implied a steady advance from non- to full comprehension passing through various stages of ability, which belies the real non-lineal nature of progress, and hides the difficulties learners experience in reality.

Rivers (1968), for example, proposes six stages (figure 14. 1) which appear somewhat aleatory and merely taxonomic, and which do not fully describe the stages which the

1. Stream of undifferentiated noises;
2. Gradual perception of order and regularity in rise and fall of voice and in breath groups;
3. Recognition of familiar elements (at phonological, lexical, syntactic levels) but inability to recognise interrelationships;
4. Recognition and selection of essentials of message without retention;
5. Understanding and interpreting message without retention;
6. Understanding and interpreting message with retention.

Figure 14. 1: Rivers's stages of development of listening competence (1968).
A developmental model

learner passes through. Our experience is that learners recognise breath groups or pauses but can make little use of them at that stage: whether or not they recognise rise and fall, they do not appear to use them for comprehension purposes until very much later in the learning process. Admittedly intonation may be used at an unconscious level, but if so, it does not have to be taught and is therefore of no concern to us. In stage 3 it is difficult to know how a learner can recognise syntactic elements without also having some comprehension at the lexical level. We also find that learners retain isolated words and phrases from stage 3 onwards and are capable of producing them after hearing a text before reaching stage 6.

1. Streams of sound — zero comprehension;
2. Isolated word recognition — minimal comprehension of general content;
3. Phrase/formula recognition — marginal comprehension;
4. Clause/sentence recognition — (minimally functional comprehension of content);
5. Extended speech recognition (general comprehension of unedited speech).

Figure 14. 2: Taylor’s stages of listening comprehension.

Taylor’s system (1981) is likewise linearly progressive, but has the advantage of being more descriptive
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in its denomination of the stages. (Figure 14.2). He does
at least base his comprehension levels on the recognition
of units of increasing size.

Andersen (1980), in discussing comprehension from a
psychological point of view, proposes three stages: perception, parsing and utilization. Perception concerns conver-
sion from sound to a word representation, parsing conver-
sion from the word representation to a meaning representa-
tion, and utilization the use to which the comprehender
puts the meaning of the message. While Andersen is refer-
ring to the cognitive processes undergone by the fluent
comprehender of his own language, he makes the point that

"... comprehenders sometimes parse sentences by considering
the meaning of words alone and not the syntactic information
conveyed by the sentence ... [and] combine both syntactic and
semantic cues in order to interpret a sentence." (p.335).

Conrad (1985) likewise cites the finding in native listen-
ing and reading research that "comprehension depends on the
effective use of surface cues in integrating new inform-
ation into the semantic context of the message." (p.60)
14.2 The contribution of syntax and semantics

There is probably no identifiable separate stage of syntactic parsing in the native listener, as he has learnt L1 with semantics and syntax inseparably linked. That he has to be taught L1 grammar is sufficient support for this statement. However, in the L2 learner, there most definitely is a separate stage — at least until he nears fluency. However, we present arguments to support our position of random access to both stores, but that there is an observable order of use in most learners.

The interrelationship of syntax and semantics in L1 is, as we have noted, an extremely intimate one. L2 teaching methods under the structuralist régime meant that syntax and semantics were stored comparatively separately, but the communicative approach attempts to minimise or even eliminate any separation. The extent of any separation depends on the S's stage of learning and on the efforts which he makes to combine them, e.g. by practice or RSL exercises. So the L2 learner at or below sentence-level comprehension may be able to access L2 syntax and semantics only as separate stores, a process which he does not normally require in L1. In fact, fluency may reflect a native-like union of syntactic and semantic stores.
The importance of the semantic aspect of language comprehension was emphasized by Marslen-Wilson and Tyler:

"... semantic constraints are almost twice as effective as syntactic constraints alone in speeding response times." (1980: 32)

and

"... semantic dimensions of processing throughout the sentence ... [occur] even at the very beginning of the sentence where the syntactic dimension has very little effect." (1980: 41)

In this light, when Marslen-Wilson and Tyler state

"... the recognition of each word, from the beginning of an utterance, is directly influenced by the contextual environment which that word is occurring." (1980: 2)

they are referring to the high proficient or native listener, and describe the learner's ultimate target. The ease with which the proficient listener comprehends compared with the less proficient, is explained by the same authors:

"... semantic and syntactic constraints reduce the size of the initial decision space so that less acoustic-phonetic input will need to be processed before a single word can be selected." (1980: 32)

Constraints in the early learner are still sparse since his knowledge is limited, so he must devote a large proportion
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of his attentional capacity solely to the identification of content words. As this becomes easier through practice, he requires less attention for the task.

Marslen-Wilson & Tyler's subjects were native listeners. Two of Conrad's experimental groups were not, and she found that L2 learners used syntax to a far greater extent than natives. Although her research is seriously flawed in its methodology (she used a reading cloze test to check listening, allowing Ss to use both syntactic and semantic context which they may not have comprehended aurally), her finding might be true and does not contradict our argument.

There is also some evidence (Bullard 1985), that near-fluent L2 listeners are better than natives at comprehending poorly pronounced content words excised from context, i.e. they are more skilled at word restoration than natives. He infers that if natives do not need a highly developed ability to do this, then L2 teaching gives undue bias to content word recognition. At discourse level, Olsen and Huckin's (1990) findings suggest that the failure to attend to function words and discourse markers is the source of Ss' inability to summarise an argument coherently. In other words, their concentration on content words permitted comprehension only of a series of isolated facts.
A developmental model

We use these observations in our model, which attempts to encompass the non-linearity of progress, identify the stages with more precision and indicate when top-down processes come into play.

14. 3 The model

Postulate 1: The listener uses all available knowledge (linguistic and other) to comprehend as much as he can.

In L1 this will include visual cues in body language, facial expressions, gestures, auditory cues (tone and loudness). Syntax and semantics are not differentiated in L1, each being learnt in terms of the other. In L2, however, syntax is invariably taught by example, involving only token contact with vocabulary, (except in the best communicative classes), but meanings are for the most part learnt in contextual isolation, which means that these knowledge stores will play relatively distinct roles and occupy more of the attention channel until the learner combines them through practice.

Postulate 2: The listener accesses his different types of knowledge while listening as and when they are required: there is no specific order of access or use.
A developmental model

The early L2 listener's accessible non-linguistic knowledge is greatly limited because his attention span is absorbed with accessing linguistic knowledge. This deprives him of the ability to anticipate and to relate this information to previous knowledge.

Postulate 3: The L2 listener gradually learns to use more aspects of L2 with greater rapidity as a direct result of exposure to and practice in L2.

There is broadly an order in which different aspects of L2 become available to him during the learning process. Once these aspects have come to be habitually accessed.

<table>
<thead>
<tr>
<th>Operational level</th>
<th>S uses</th>
<th>Ability level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse/argument</td>
<td>all knowledge</td>
<td>intellectual*</td>
</tr>
<tr>
<td>Paragraph</td>
<td>most knowledge</td>
<td>proficient/native</td>
</tr>
<tr>
<td>Sentence</td>
<td>keywords &amp; phrases</td>
<td>intermediate</td>
</tr>
<tr>
<td>Clause</td>
<td>keywords &amp; phrases</td>
<td>pre-intermediate</td>
</tr>
<tr>
<td>Lexical</td>
<td>occasional keyword</td>
<td>beginner</td>
</tr>
<tr>
<td>Syllable</td>
<td>?</td>
<td>beginner</td>
</tr>
</tbody>
</table>

Figure 14.3: The L2 listener's operational levels at different stages of learning.

'*intellectual' is a label intended to imply a level which lies beyond full comprehension. It involves comprehension and simultaneous evaluation, criticism, the detection of logical flaw or weakness in the speaker's argument, and the preparation of rebuttals. It has as a pre-
A developmental model

requisite a memory for both verbatim detail as well as overall discourse or argument. It can also involve comprehension of the ulterior motive of the speaker's intention (as in e.g. politics). [This is derived from Olsen & Huckin, 1990].

y they are used on demand, as specified in postulate 2. The aspects he uses determine his span of attention or operational level, which are successively larger information units, as Taylor (1981) suggested. (See Figure 14. 3).

The 'operational levels' are arranged in an order of progression, but this should be understood to indicate the path of advance only in the broadest terms. During any given listening session, the learner may well be jumping from level to level as the input demands it. Thus, he may be capable of working at a given level, but where a text presents a comprehension problem, he will dip to a lower level, for example to search for and translate to L1 a relatively little used or unfamiliar word. Similarly, sentences and clauses vary considerably in complexity and information content and should be refined.

[At pre-intermediate levels, learners seem to stay at this lower, less efficient level rather than reverting instantly to their highest operational level. This is probably due to the relative safety — albeit more mentally taxing — of a familiar habit]. The intermediate learner at a more advanced stage seems to overcome this, presumably because the higher-level habit is sufficiently tried and tested, or because, with some spare attentional capacity, he is more
likely to be aware of the fact and force a switch back to the more efficient level].

Postulate 4: Progress in the skill is not a steady progression, suffering reverses at all stages before it reaches fluency.

These reverses will be caused either by the occasional non-use of a recently acquired operational level which has not yet become habitual or by any of the psychological or material-related factors mentioned below.

This will be reflected in the typical advance-plateau-advance characteristic of all learning curves.

[Learning plateaux are thought to occur while the learner is consolidating and developing previously absorbed knowledge and abilities (or subskills); the plateau provides the launch pad for the next quantum leap in learning. For LC, this scenario is complicated by the varying nature of the material used. All the ingredients of the material vary from tape to tape (vocabulary, syntax, voice, speech rate, topic), as well as the learner's psychological state — his knowledge of and attitude to the topic as well as his awareness of past performance at listening. His performance at intermediate stages is dependent on the fragile, incomplete state of his skill and his incomplete linguistic knowledge, which will in turn affect his perception of his current ability, his confidence and how well he performs next time].
Postulate 5: The L2 listener at any level below native will resort to OLT as a comprehension strategy.

This tendency will be particularly pronounced where his previous language learning has had a strong grammatical and reading bias, and he has not automated meanings, pronunciations or syntax.

In other words, an unidentified word (unknown, incompletely learnt or half-recognised) is likely to precipitate a search of the L1 - L2 lexicon. This is less probable in the more proficient learner, who directly (i.e. without OLT) comprehends more context and can therefore more readily infer meanings of unidentified words.

Diminution in the use of OLT comes about from the listener:

1. Learning both meaning and pronunciation of more words (and phrases) and being able to access them directly and instantly;
2. Comprehending more context which permits a greater measure of inferencing;
3. Having a thorough knowledge of principal L2 syntax;
4. Being able to think in L2;
5. Being exposed to spoken L2.
OLT will remain as a strategy for low-frequency words until a true bilingual state is achieved.

Postulate 6: Anxiety before and during class listening sessions is more likely when:

1. The learner is less proficient than his peers;
2. The texts are poorly, or not, introduced;
3. He aims for 100% comprehension;
4. The T engenders stress.

Postulate 7: As the learner uses more advanced operational levels, he frees attentional capacity, which can be used to switch in other knowledge stores and strategies.

Comprehension strategies other than OLT may appear in approximately the following order:

1. Deduction, or the conscious application of L2 rules;
2. Inferencing from a message incomplete because of unknown or unidentified words or phrases. This will be used to a far greater extent than in L1;
3. Anticipation of meanings: This can only be used when non-linguistic knowledge stores can be accessed.

Figure 14. 4 outlines the operational levels at which knowledge stores and strategies can be accessed.
A developmental model

<table>
<thead>
<tr>
<th>Operational level</th>
<th>Knowledge store</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse/Argument</td>
<td>speaker's intentions</td>
<td>logical analysis</td>
</tr>
<tr>
<td></td>
<td>cultural, topic, world</td>
<td></td>
</tr>
<tr>
<td></td>
<td>scripts, schemata</td>
<td></td>
</tr>
<tr>
<td>Paragraph</td>
<td></td>
<td>prediction/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>anticipation</td>
</tr>
<tr>
<td>Sentence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clause</td>
<td></td>
<td>inference</td>
</tr>
<tr>
<td>Lexical</td>
<td>syntax</td>
<td>deduction</td>
</tr>
<tr>
<td>Syllable</td>
<td>meanings</td>
<td>translation to L1</td>
</tr>
<tr>
<td></td>
<td>L1 phonology</td>
<td></td>
</tr>
</tbody>
</table>

Figure 14. 4: Approximate levels at which knowledge stores and strategies begin to be accessed.

Classroom observation tells us that early L2 learners first identify salient content words, then phrases and only later function words (which Pickett and Pollack (1963) showed were most poorly articulated because they carry least information). Thus where Figure 14. 4 shows meanings being accessed before syntax, it might more accurately show the situation as in Figure 14. 5.
A developmental model

<table>
<thead>
<tr>
<th>Operational level</th>
<th>recognition of</th>
</tr>
</thead>
<tbody>
<tr>
<td>sentence</td>
<td>L2 function words</td>
</tr>
<tr>
<td>clause</td>
<td>L2 content phrases &amp; words</td>
</tr>
<tr>
<td>phrase*</td>
<td>L2 syntax</td>
</tr>
<tr>
<td>lexical</td>
<td>L2 content words</td>
</tr>
<tr>
<td>syllable</td>
<td>L1 phonology</td>
</tr>
</tbody>
</table>

Figure 14.5: The approximate levels at which different linguistic features come to be identified.

*phrase = Marslen-Wilson's 'complete information unit.'

14.4 Prosody and pragmatics

It is not clear yet at which levels the learner begins to make use of the prosodic features of English. In any case, some of these features appear to be too subtle for most early-to-intermediate learners of stress-timed languages to appreciate: these features also make a relatively minor contribution to total information in the message, which is the S's prime concern. However, they may, throughout training, be absorbed unconsciously and contribute implicitly to comprehension from an early stage. These
A developmental model

features (or different aspects of them) may contribute to
comprehension in different ways at different levels. We
suggest a possible framework for them and their applica-
tions in Figure 14. 6.

<table>
<thead>
<tr>
<th>Operational level</th>
<th>prosodic factor</th>
<th>application:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse/argument</td>
<td>intonation</td>
<td>speaker’s sincerity,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>attitude</td>
</tr>
<tr>
<td>Paragraph</td>
<td>intonation,</td>
<td>emotional involvement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(amazement, exasperation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>paragraph ends</td>
</tr>
<tr>
<td>Sentence</td>
<td>intonation</td>
<td>grammatical structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>speech act modality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(politeness, etc)</td>
</tr>
<tr>
<td>Clause</td>
<td>suprasegmental stress</td>
<td>clause boundaries</td>
</tr>
<tr>
<td>Lexical</td>
<td>stressed syllables</td>
<td>key words</td>
</tr>
<tr>
<td>Syllable</td>
<td>pauses</td>
<td>sentence/clause</td>
</tr>
</tbody>
</table>

Figure 14. 6: Proposed applications of prosodic and pragmatic features.

The aforesaid should not be taken to deny that learners are totally deaf to prosodic features. Pre-intermediate learners do recognise instantly a speaker’s affective state where semantic content is easily understood. (There is a whispered telephone conversation between lover and married woman in Swan and Walter’s Book 2, which second year Ss immediately and correctly react to). Most texts, however, are relatively high in meaning-content and low in affectivity,
A developmental model

and S is too preoccupied with the former to show reactions to the latter.

14.5 Summary

The model attempts to outline the progress undergone by the L2 listener. As his proficiency, operating level or span of attention increases, different linguistic features, strategies and knowledge stores become available to him. Figure 14.7 diagrams these.
Diagram 14. 7: The levels at which linguistic features, knowledge stores and strategies as the dominant factors at different stages in the listening process are accessible to the L2 listener. (The blank areas above and below the interrogation marks indicate irrelevance to the process).

Of all the factors which play a part in learning to listen, on-line translation is the most seductive and probably the least helpful.
Chapter 15

CONCLUSIONS

Research previously carried out points to the comprehension process beinginteractive, using the on-going phonological input as a basis for the application of linguistic and other knowledge stores to extract meanings. These ‘top-down’ knowledge stores are assumed to correspond to semantic, syntactic, pragmatic and real world knowledge, and when working fluently, permit the listener to anticipate what is about to be heard. Semantic context facilitates subsequent word recognition and syntactic context permits a chunking process, probably using units of information not necessarily coincident with the clause, to take place. The chunks are shipped from the short-term memory to the long-term memory, and seems to be stored conceptually, not verbatim.
Conclusions

A crucial element in the learning process is attention, whose capacity is limited and varies according to several factors, the most important limiting factor being stress. Stress has the effect of narrowing attentional focus to central information, which the S must learn to recognize. Even the unstressed learner’s attentional capacity is overloaded until he recognizes what the central information is.

Other findings from previous research:

1. The comprehension process does not use the components which linguists use, but recovers significance in any way it can.
2. Words are accessed by the sounds that begin them.
3. The clause and complete information units appear to be the level at which L1 comprehension takes place.
4. Memory span is shorter in L2 than in L1, probably because pronounceability is a significant factor.
5. Exceeding attentional capacity means that input is divided into smaller units, namely the word, which is relatively meaningless in isolation. Attempting to comprehend at this level overloads the system, causing breakdown in the comprehension process.
6. Long-term memory usually codes semantically and relates new information to prior knowledge.
7. The long-term memory will also store phonemically
when the task is semantically difficult, when there is a demanding supplementary task to be carried out, when input is formed of unrelated words and when there is insufficient time to produce semantic links. These four conditions all obtain in early L2 listening, forcing phonemic storage, which in turn requires re-examination of input to extract meaning.

8. Overload can create anxiety, which raises arousal levels. Raised arousal levels reduce the number of cues the listener can attend to.

9. System overload means that S has no capacity left to access scripts or real world knowledge. This information would help the comprehension process by permitting anticipation.

10. Inability to access prior knowledge also means that input must be treated as new information.

As a result of my investigations, I believe that the Spanish S finds aural comprehension difficult because:

11. He does not overlearn meanings and pronunciations of words to achieve automatic instant access to them.

12. His previous training is grammar-translation based and he naturally attempts to apply a translation strategy (OLT) to listening. This supplements the psychological processes which also incline him towards OLT.
Conclusions

13. He is insufficiently familiar with syntactic structures.

14. His expectations are that English is pronounced phonemically.

My survey revealed that:

15. OLT is widely used, in contrast to studies of ESL Ss.

16. OLT is a controlled process which overloads the comprehension system, probably because it operates at word level, which is below the ideal level.

17. OLT is consciously avoidable, is a problematical strategy to use in that it raises stress levels; it may also delay the start of automatic 'direct' comprehension.

18. We discovered that OLT users improve in their ability to translate on-line, which augments their comprehension.

19. Those who avoid OLT in the early stages do not at first comprehend as much, but at higher levels comprehend more than their OLT-using peers. They also report less stress.
Conclusions

Teachers at EGB/BUP levels have little option but to adopt a grammar-translation approach. Our survey results suggest that:

20. Ts at the EOI do not influence the S's adoption of OLT, rather that this is a natural outcome of S's early training.
21. Ts can affect levels of tenseness by their attitudes to the listening activity. Where resulting tenseness is low, comprehension scores are higher; where tenseness is higher, comprehension is usually lower, but T can use tenseness to increase comprehension.

We also believe that Ts:

22. May not insist enough on pronunciation exercises or on Ss overlearning meanings and pronunciation of all vocabulary.
23. May not insist on Ss pronouncing words, phrases and sentence correctly.
24. Should discourage the adoption of the OLT strategy both explicitly and by their approach to training.
25. Should train Ss to focus only on what they can instantly comprehend and ignore all other sounds.
26. Should tell Ss to aim for gist or global comprehension, that is, less than 100% comprehension.
Conclusions

27. Do not give enough practice in listening.
28. May not introduce aural material in optimal ways or pre-sensitize Ss to new vocabulary.
29. Should contextualize all listening material adequately.
30. Should not express concern at S's failure to comprehend, in order to avoid creating anxiety.
31. Should not permit Ss to read scripts of aural material before or during listening, and rarely afterwards.
32. Should use mainly pseudo-authentic materials with no micromarkers: main clauses should precede subordinate clauses, and any new lexical items be embedded in very familiar contexts. Texts should also be carefully graded in length and complexity.
THE BASIC PERCEPTUAL UNIT.

It seems that each experimenter becomes convinced that the basic perceptual unit is that which his experimental spotlight illuminates. At what level is the basic perceptual unit to be found? or more trenchantly, do we yet know enough to affirm the level at which the basic perceptual unit lies?

Lehiste (1972) provided an extensive review of the experiments directed at establishing this level. She rejected Wickelgren's (1969) claim that the context-sensitive allophone constitutes the basic unit of perception, and suggested instead that the minimum element of speech perception must be located at the subphonemic level, but without precluding the processing of larger size segments.

Some model-makers adopt the word as indivisible unit (Forster, Morton), while Marslen-Wilson and Cole seem prepared to accept as basic unit the growing string of phonemes which make up syllables and syllable-bits until a word is recognized. While the former encounter theoretical problems on this score, the latter two do not.

Fodor & Bever (1965) and others provide evidence for the processing of syntactic units, (whether clause or sentence), leading Lehiste to the conclusion that
"listeners use grammar actively to impose syntactic structure on the speech stimulus as they hear it. Listeners respond in terms of the underlying structure of the sentence rather than its surface structure."

(1972: 211).

However, she concludes that there are two levels of processing: **Primary processing** which is equivalent to auditory and phonetic analysis, and **linguistic processing** which is phonological and syntactic analysis. The latter is dependent on the former but may take place concurrently.

While Lehisle nowhere includes semantic influences as bearing on the segmentation process, Neisser (1967) refers to the need for the listener to have a set of semantic rules as well as phonetic, phonemic and syntactic ones.

Marslen-Wilson's interactive model proceeds from the basis of phoneme recognition, and word recognition by context and linguistic knowledge. Expectancies are simultaneously created at a level greater than the word, implying that the perceptual unit is a moveable feast. That is, the receptor unit takes the most appropriate unit at any given point in the message, and, working on the principle of least effort, is likely to prefer the largest unit available. They called this the 'complete information unit', and suggested that it is these which are shipped off to the long-term memory. This concept tallies with the finding that we remember meanings, not verbatim strings of words.
DEFILIPPIS' LIST OF LISTENING STRATEGIES

(Unpublished doctoral dissertation)
University of Chicago. 1980

The following strategies were identified among learners of French as aids in comprehension:

1. Cognate. - S relates SL word to English word with same root and meaning.
2. Contextual inferencing. - S uses preceding, current or following sentence to infer meaning of unknown word or expression.
3. Flow. - S states he can derive meaning without translation.
5. Grammar. - S uses knowledge of SL grammar.
7. Key phrase/sentence. - S identifies one as an aid to processing.
8. Key Word. - S uses one as an aid to processing.
9. Organizer. - S uses or creates a title to promote retention.
10. Particularizing. - S uses repeated listenings to add detail.
11. Personalization. - S identifies with people, action or setting.
12. Phonological. - S uses knowledge of phonological system.
14. Repeated listening. - S uses this to promote understanding.
15. Role identification. - S seeks to establish the speakers' roles.
16. Subvocalization. - S mentally repeats the input.
17. Translation. - S translates.
18. Visualization. - S visualizes people, action or setting.
19. Vocalization. - S repeats the input.
O'MALLEY’S TAXONOMY

O'Malley et al (1989) studied eight selected high school Spanish-speaking learners of English and in interview noted their strategies. They discuss only qualitative results.

<table>
<thead>
<tr>
<th>Ineffective</th>
<th>Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attentional factors</strong></td>
<td></td>
</tr>
<tr>
<td>began translating and stopped attending</td>
<td>aware of inattentiveness and redirected attention to task</td>
</tr>
<tr>
<td>thought about meanings of unknown words or phrases</td>
<td></td>
</tr>
<tr>
<td><strong>Chunking or parsing portions of text</strong></td>
<td></td>
</tr>
<tr>
<td>listen for word</td>
<td>whole sentences and phrases</td>
</tr>
<tr>
<td>consistently bottom-up only</td>
<td>consistently top-down</td>
</tr>
<tr>
<td></td>
<td>bottom-up when required</td>
</tr>
<tr>
<td><strong>Inferencing</strong></td>
<td></td>
</tr>
<tr>
<td>translate words but doing this appears difficult or problematical</td>
<td>from context</td>
</tr>
<tr>
<td></td>
<td>retain unencoded words for later inferencing</td>
</tr>
<tr>
<td><strong>Prior knowledge</strong></td>
<td></td>
</tr>
<tr>
<td>more available, better organized accessed more efficiently used to comprehend and recall</td>
<td></td>
</tr>
</tbody>
</table>
Elaboration

- fewer elaborations
- do not relate to personal knowledge

Familiarity with topic

- often abandon
- relate to world knowledge

O'Malley et al conclude that listeners rely on multiple strategic resources to fulfill task requirements. These are maintaining attention to the text, encoding the information to develop a meaningful representation stored in short-term memory and relating the new information to existing knowledge to enhance meaning and retain it for later recall.

The study clearly brings out the differences between ineffective and effective listeners and is consistent with the picture of general comprehension processes. That OLT should be a minor aspect of the work is probably related in part to the more advanced stage of learning of the Ss under study and in part to not having had a grammar-translation basis in their language learning; that it should be recognized as problematical and avoided by the effective listeners bolsters our contention that OLT is a poor choice of strategy.
ANXIETY AND SLA

Investigations into the effect of anxiety on comprehension have shown that anxiety (which we have called 'tenseness' in our study) most frequently has a deleterious effect on performance. Occasionally, however, comprehension is improved by this factor.

DBK (82: 52 et seq) quote Carroll (1963) as having obtained a low negative correlation between anxiety and achievement in intensive FL courses. Chastain (1975) found that low anxiety was associated with greater success in French audio-lingual learners. DBK conclude that a moderate degree of anxiety may be helpful for conscious learning.

Other investigations, i.e. not into FLL, showed that high levels of anxiety facilitate the performance of the highest levels of ability, but had detrimental effects on the others (Spielberger & Weitz, 1964). It has also been found that anxiety can either energize or debilitate middle ability Ss.

We can only tentatively conclude that the one teacher (T 7), whose tense Ss did better than other Ss, had found a way of harnessing his Ss' tenseness to good effect. In general, however, anxiety in listening sessions has a detrimental effect on comprehension.
STATISTICAL ANALYSIS SIMPLIFIED

If we measure any variable in any given large population, the resultant data may be expressed as frequencies: so many persons are 1m 50 - 54 tall, so many 1m 54.1 - 59. etc. The frequencies displayed on a diagram adopt a bell-shaped curve, the normal curve.

Now imagine that that curve is the cross-section of a heap of salt. If you wanted to estimate the volume of the heap, you would probably want some sort of vertical measure, say the height of the heap at its highest point, and some sort of horizontal measure; the highest point in a normal distribution is usually the most frequently occurring measure on the variable, and in large populations occurs very near the middle of the variable range. It is called the mean or average.

A lateral measure can be calculated by adding all the deviations from the mean of all the other members of the population, and finding their average. This is called the standard deviation. Armed with these measurements we should be able to make sound statements about the heap of salt.
Comparing two (or more) populations is the basis of statistics. If you pour some salt on the table and ask if the same cosmic hand held the salt-cellar which poured the salt in Santa Pola, the answer is clear. Usually, however, populations overlap considerably in their distributions (think of men's and women's heights) and only mathematical calculation can determine whether there is a difference which characterizes, in this case, sex. Two overlapping distributions may or may not have been 'poured by the same cosmic hand' and the probability of the same hand having done the pouring is of course calculable. Statisticians will consider that two hands did the pouring only when the probability of one hand doing it is as low as one in twenty, or 5%. That is to say, they are happy to regard two distributions as being samples from different populations only when the mathematical chances are quite high. This is known as the significance level. and results 'at the 5% level' or 'at the 1% level' indicate their chances of being wrong, that distributions are indeed different. (Or in the case of 95% similarity, that they come from the same population).

The 'Assigned Values' are a recoding of scores in standard deviation (s. d.) terms. In a normal distribution, 68% of the population falls within one s. d. above or below the mean. In Assigned Value terms, these have the value of 0. Where a score is more than 1 s. d. from the mean, it is
assigned the value of 1, more than 2 s.d., 2, and is given a + or - sign to indicate whether it is higher or lower than the mean.

\( \chi^2 \) is a robust statistic with multiple applications. It can operate on data which need not be normal, since in its calculation it can create its own distribution. It works by comparing one or two empirical distributions with a theoretical one, the difference obtained producing a value which can be verified in tables. The probability of this difference occurring by chance is stated as a significance level, in the same way as the two groups were compared. Thus if the tables yield a 5% significance, the statistician will state that the probability of the distributions being samples from the same populations is low (<5%). and the samples probably came from different populations.
THE QUESTIONNAIRE

The questionnaire was printed in Spanish. Here is a translation:

Year ___________ Identification ___________

Listening to recorded English

1. When you hear a recording the first, second or third time, you understand (Put ONE X in each column)

<table>
<thead>
<tr>
<th>All</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearly all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most of the ideas but not all of the words</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than half of the ideas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some ideas and occasional words</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only occasional words</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. When you listen to recorded English at the following levels, do you try to translate mentally? (Put ONE X in each column)

<table>
<thead>
<tr>
<th>Easy</th>
<th>Neither easy nor difficult</th>
<th>Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most</td>
<td></td>
<td></td>
</tr>
<tr>
<td>About half</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than half</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nothing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. What makes comprehension difficult? (Put in order 1, 2, 3... those that affect you; leave out those that do not affect you)

- unknown phrases ( )
- unknown words ( )
- speed of speech ( )
- accent ( )
- others: __________________________________________________________________________
4. If you hear a new word, what do you do?

- I ignore it
- If it is essential for the meaning I try to translate it
- I try to translate it, essential or not

5. If you try to translate a new word, what effect does it normally have on your comprehension? (Underline ONE option)

- I lose the thread
- I miss several sentences
- I miss one sentence
- I miss a few words
- Nothing

6. If you do not translate (or only a little), how do you manage to understand? (Put a maximum of 3 in order: 1, 2, 3)

- By experience
- Because most of the words are familiar to you
- Because most of structures are familiar to you
- Because you already knew the subject-matter
- You get the general idea

7. When I listen to tapes in class, I

- relax
- concentrate
- become tense
- become angry

8. If you become tense or angry, why? (Mark the one which best describes the reason)

- I'm afraid I'm not going to understand
- Lack of practice
- Insufficient introduction to the subject by the teacher
THE COMPREHENSION TEST

1. What’s the girl’s name? ...........................................................
2. What’s Fred’s full name? ......................................................
3. Who or what does he photograph? ........................................
4. Where does he live? 1..........................................................
   2.............................................................................
5. Where does he travel? ...........................................................
6. Where has he just been? ........................................................
7. What was he doing there? ......................................................
8. Where is he going to Tokyo? ...................................................
9. Why did he go to Venice? ......................................................
10. Why is he going to Tokyo? .....................................................
11. Why does the girl think his life is interesting? 
   1.............................................................................
   2.............................................................................
12. What does he say about famous people? .................................
13. When did he speak to Paul McCarthy? .....................................
14. What kind of people does Fred think have more character? 
   1.............................................................................
   2.............................................................................
15. How does he describe the girl? 1............................................
   2.............................................................................
16. Where does she work? ...........................................................
17. How is he going to make her famous? ......................................
18. How is California better than Paris? ......................................
19. They will fly to California in a Boeing .........................(write the number).
20. Whose is it? .......................................................................
21. Where does his father get his money from? 1 
   2.............................................................................
   3.............................................................................
   4.............................................................................
22. What is his mother’s job? .......................................................
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