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Second Language Attrition

M S Schmid, Vrije Universiteit, Amsterdam, The Netherlands

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Introduction

Language attrition is a process which many – linguists and nonlinguists alike – appear to find interesting. Many people feel that, at some point in their lives, they have lost or forgotten some of the competence that they once had in a language, be it a foreign language learned at school or through a sojourn in the country where it was spoken, or a first language which has fallen into disuse for some reason. It is

certainly no coincidence that a seminal work on second language (L2) attrition opens with the statement "Language loss affects all of us" (Hansen, 1999). It would be hard to imagine a paper on language acquisition, markedness, or minimalism starting with such a sentence, although it might be equally true.

One reason for this, I would propose, lies in the simple fact that the process of 'un-learning' differs from the process of learning or acquisition (or, for that matter, any other process or aspect of the use of a language) in several ways, but possibly most profoundly on a psychological level: it is an individual (and often lonely) one. While learning a language will almost invariably take place through interaction, through the sharing of a linguistic system that others

already possess, through entering some linguistic community – whether the artificial one of the foreign language classroom, or the real-life one in the country where it is spoken – and through communication, attrition is felt most keenly (although by no means does it have to be most drastic) where these factors are absent, where there is isolation from the language. It is my belief, born out of many interactions with people who feel that their competence in a language has 'atrited,' that this loneliness and isolation may, paradoxically, often lead the speaker to feel an authenticity and involvement about this process that is lacking in the more natural, common sense and communicative process of language acquisition.

While this aspect certainly adds to the compelling human interest of the topic, and is vital for the researcher to bear in mind when investigating attrition (a language that the speaker feels has attrited can be a very vulnerable spot in the first place, but if it is also an intimate territory that is easily violated, care and sensitivity are vital if one would avoid doing emotional damage), it may also be responsible for having biased research towards somewhat easy approaches and simplistic explanations over the past decades. It cannot be a coincidence that metaphors such as 'derelict houses,' 'riding a bicycle,' 'trying to find a lost possession,' to name but a few, abound in language attrition research. We know language to be an extraordinarily complex, multilayered neuropsychosociological system that very probably bears no resemblance whatsoever to a house, a bicycle, or a set of keys that we may have lost. However, there seems to be a profound need to think what we know – or think we know – to be true, authentic, and part of our own emotional experience, which we can also grasp and understand intellectually. It is often when this need is thwarted that we reach for metaphors that can explain what we cannot interpret within its own frame of reference.

The term 'language attrition' itself was clearly born out of such a metaphor: the OED defines attrition as "the action or process of gradually reducing the strength or effectiveness of someone or something through sustained attack or pressure." This indicates that the term was coined on the assumption that a linguistic system in disuse will be vying for memory space with the other linguistic system(s) occupying the same brain, that not being kept fresh and strong through constant use will somehow weaken it, and that it will therefore suffer in some way. Whatever deviant forms were observed in the attrition process were therefore implicitly assumed to be the result of another language encroaching on the linguistic system and changing its representation. It should be stressed that at the time that the term 'attrition' was

first used, in the early 1980s, there was absolutely no evidence whatsoever for such a process (arguably, there still is none), and one should remember that the explanation engendered in the label was purely intuitive. The fact that the term has caught on, even though some still object to it very decisively (e.g., V. Cook, personal communication – such objections, however, are usually based more on the negative semantic potential the term carries than on the inaccuracy of the metaphor), further seems to indicate that this metaphorical explanation was intuitively convincing to many.

This underlying perspective changed as psycholinguistics and neurolinguistics began to take an increased interest in language attrition. It quickly became evident that many of the phenomena witnessed in attrition could not simply be explained on the basis of interference from another language. The forces governing attrition began to be ascribed more to a language internal process, due to lack of exposure or input in that language, not through the amount of exposure to or input from another. Even more recently, the role of output has also been stressed in this connection (de Bot, 2001: 70). And ever since it has become evident that there is more to the process of language attrition than a situation of hostile takeover by another language, researchers have been looking for theoretical models that might have the power to make sense of the puzzling phenomena witnessed in the process of attrition.

Theoretical Models

As mentioned above, one of the most important forces in both L1 and L2 attrition has always been assumed to lie in cross-linguistic influence (CLI). For L1 attrition, the investigation of this phenomenon is relatively straightforward, since one can assume that CLI was relatively minor or completely absent before the onset of attrition, that is, before the move to another environment takes place. For L2 attrition, on the other hand, it can be difficult to investigate the increase of CLI, since L1 probably always has some degree of influence on L2. It is therefore necessary either to isolate phenomena that are known to have been mastered at some time, or, ideally, to choose a longitudinal research design, where the development of certain selected features can be monitored over a longer time span (on the influence of time on attrition, see below).

One of the more intuitively persuasive models to be invoked in language attrition research was also one of the earliest ones: the regression hypothesis, first formulated by Ribot, extended to aphasia by Freud, and formulated more specifically in this context by Jakobson in

the 1940s, in particular with respect to phonology. This theory, also known as the LIFO (*last in, first out*) model, predicts that the process of loss of a language will be the reversal, or mirror image, of the process of acquisition. In other words, it assumes that we forget things in the inverse order in which we learned them, that the things we acquired earliest will be most persistent, while more recent knowledge will be more vulnerable.

As has often been pointed out, where pathological language loss is concerned the regression hypothesis does not provide a valid theoretical framework. However, the findings from L2 attrition research suggest that order of acquisition may be a valid predictor for the attrition process – order of acquisition, in this case, not referring to normal and unguided child language acquisition, but to the order in which the individual who is forgetting an L2 learned the features under investigation in the classroom (Berko-Gleason, 1982; Cohen, 1975; Hayashi, 1999; Jordens *et al.*, 1986, 1989) or in unguided exposure to an L2 environment (Cohen, 1989; Hansen, 1999; Kuhberg, 1992; Olshtain, 1989). As Hansen points out, in L2 attrition the question is no longer if the regression hypothesis applies, but “when and under what conditions its predictions hold true” (1999: 150, her emphasis).

A further interesting question to ask in this context is, of course, why. What is it in the acquisitional sequence that would have such a strong influence on language forgetting? Is it due to some intrinsic feature of linguistic knowledge and its organization in the brain (as was the original assumption)? Is it due to reinforcement, or lack thereof – features that have been acquired recently will not have been rehearsed as frequently as the early features (quality of learning vs. chronology of learning, cf. Opler, 1993: 189; Weltens, 1988: 7; Yoshitomi, 1994: 12)? Or does it have to do with the linguistic complexity of particular items and features; especially in classroom acquisition of an L2, one would assume that the simpler grammatical phenomena are taught earlier, while the more complex ones, which will be reserved for later and will be harder to master, will also be more difficult to maintain (Andersen, 1982: 113)? This factor has not yet been resolved.

Another linguistic theory that is often invoked in L2 attrition is markedness, most usually in the UG sense of the term (see *Linguistic Universals, Chomskyan*; Hansen, 1999; McCormack, 2001, 2004). This theoretical framework assumes that language-internal processes, such as those addressed in Chomsky's theory of government and binding (GB), can predict the sequence of language attrition. As Sharwood Smith and Van Buren (1991: 17) point out, it seems important to know whether an individual has lost or is even

able to lose those kinds of underlying mental representations of an attriting language that may be identified as Chomskyan-style Universal Grammar (UG)-based competence. This is based on the assumption that second language learners only have access to a UG that is already parameterized. With respect to L2 attrition, the prediction would thus be that a marked value that the second language learner has acquired will, in the process of language loss, revert to its unmarked L1 setting. Such a process has indeed been identified by McCormack (2001, 2004), with the intriguing twist that the linguistic feature under investigation (the binding properties of the English reflexive) began to be influenced by another linguistic category (finiteness), which does not influence the feature in either of the attriter's languages, but does play a role in other natural languages.

These are the most important linguistic models for L2 research; other theoretical approaches have been applied to the development of certain linguistic features in L1 attrition; for an overview see Köpke and Schmid (2004).

Extralinguistic Factors

The process of language attrition is influenced not only by linguistic factors, but also by extralinguistic ones such as age at onset of attrition, achievement level at onset of attrition, time since onset of attrition, amount of exposure to the attriting language, attitudes and motivation, etc. For L1 attrition, a further important factor is education level. Where the study of L2 attrition is concerned, this factor usually has relatively minor influence, since often the same level of achievement in L2 presupposes a similar education level. Education will therefore not be included here: a discussion can be found in Köpke and Schmid (2004).

An important extralinguistic variable for the study of L2 attrition is attitude and motivation. Since this has been shown to be one of the most important determining factors for success in L2 acquisition (see *Motivation and Attitude in Second Language Learning*), it would be only natural to assume that it might also condition retention. However, attitude has proved to be a slippery diagnostic in attrition studies, probably partly because such studies typically cover a longer range of time than studies of acquisition, and attitudes are subject to frequent and often radical changes (Schmid, 2004a). So far, the only studies that were able to correlate attitudinal and attritional factors were those that measured attrition exclusively by self-evaluations (L1 attrition: Waas, 1996; L2 attrition: Gardner *et al.*, 1985, 1987). However, self-evaluations often are not a valid predictor of the

actual attritional process, especially in L2 attrition speakers, who tend to report massive losses that are not borne out by actual linguistic tests (Weltens, 1988).

Where age at the onset of attrition is concerned, findings so far suggest that there is an important turning point that probably can be situated somewhere between 8 and 10 years. Virtually all studies of both L1 and L2 attrition that investigate children around or below that age report a significant decrease in proficiency, while studies using older subjects often establish a surprising degree of stability in linguistic knowledge. Especially interesting in this context are the findings of Berman and Olshtain (1983) and Fujita (2002). Both of these studies suggest a freezing point or cutoff point around age 9, which proved the strongest determining factor for their investigation. Similar findings have been reported for L1 attrition (for an overview, see Köpke and Schmid, 2004). It is very interesting to note that this cutoff point in most cases coincides with the age at which children master literacy. The question of whether the stabilization of the linguistic system is conditioned purely by brain maturation processes that occur at that age or whether it may be caused or at least facilitated by literacy has recently been posed (Hansen, 2001; Köpke, 2004; Köpke and Schmid, 2004), but remains unresolved. (see *Phonological Awareness and Literacy*.)

Level of achievement, on the other hand, is a factor which plays a much greater role in the study of L2 attrition than it does for adult L1 attrition, where usually the process of normal acquisition of the feature(s) under investigation is assumed to have been completed prior to the onset of attrition. For L2 attrition, however, a critical threshold or critical mass (Nagasawa, 1996, 1999), after which L2 proficiency appears to stabilize, has often been suggested. Numerous further studies, while not going as far as proposing such a threshold, have found the level of initial proficiency (that is, proficiency at the time where instruction in or exposure to the L2 ceases) to be the best predictor of language loss or retention (e.g., Reetz-Kurashige, 1999). Interestingly, Hansen (1999) established the impact of length of exposure to L2, as opposed to initial level of proficiency. This factor has not been tested elsewhere, but it can be expected that length of exposure and proficiency will usually depend on each other. It has thus often been suggested that a higher proficiency in L2 is a good safeguard against attrition. In this context, an intriguing observation was made by Bahrck (1984) and Weltens (1988): their findings suggest that L2 learners will relatively quickly lose a fixed amount of knowledge, independent of their initial

level of proficiency. However, while this means that both high and low proficiency speakers of L2 lose the same amount in absolute terms, relatively speaking each speaker has a lower proportion of knowledge at the onset of attrition.

A further finding from these latter two studies refers to the time period in which this loss takes place. As has also been suggested for L1 attrition, it seems that the greatest part of L2 attrition takes place within the first few years immediately following the end of instruction in or exposure to L2. The earliest major study of L2 attrition, Bahrck (1984), suggests that the lion's share of L2 attrition can be found within 3–6 years. After this, his findings suggest surprising longevity of linguistic knowledge. The part of this knowledge that will remain robust for approximately 25 years he labels *perma-store* content, while another large part appears to be completely impervious to language attrition.

Linguistic Levels

Many attempts have been made to describe exactly which linguistic features are more vulnerable to loss, i.e., belong to the linguistic knowledge that will disappear in the early stages of language attrition, and which of them will belong to the more robust part of the linguistic repertoire. In both L1 and L2 attrition, it is generally agreed that the lexicon – or part of the lexicon – will suffer most easily and quickly. Whether such a reduction is a case of actual loss, or simply a matter of diminished accessibility, has often been debated, but the fact that many studies have found receptive skills to be unimpaired (e.g., Grendel, 1993; Weltens, 1988) suggests the latter.

How productive lexical skills, on the other hand, are affected by attrition seems to be influenced by frequency and similarity. It has often been pointed out that low-frequency lexical items tend to become inaccessible before high-frequency ones, and that cognate items are retained better. These findings are exactly what common sense would lead us to expect. While investigating the attrition of lexical skills may help us understand memory processes or the organization of the mental lexicon (see *Neurolinguistics from the Middle Ages to the Pre-modern Era*), there seems to be little we can learn from such studies in terms of the structure of linguistic knowledge. For this reason, more recently, language attrition has focused more on grammatical aspects.

The erosion of grammatical and phonological skills, too, has often been assumed to be influenced by similarity between the two languages. In these areas, frequency does not play an important role (most grammatical and phonological features occurring

very frequently in most types of discourse), and research has usually focused on complexity instead.

While there is a small body of work dealing with the impact of attrition on L2 phonetics (e.g., Dugas, 2000 on voice onset time and Nagasawa, 1996 on pauses), the attrition of L2 phonology remains very much under-researched. The only detailed investigation to have been conducted thus far focused only on receptive skills, where the impact of similarity between L1 and L2 was conclusively demonstrated (Weltens, 1988). Studies investigating, for example, the development of the production of phonemes not present in L1 are clearly called for. The large body of work on L2 acquisition of phonological features would be very useful in this context (*see Second Language Acquisition: Phonology, Morphology, Syntax; Second Language Acquisition: Phonology*).

Such studies could help elucidate the impact of similarity or dissimilarity between L1 and L2, which remains a contested matter. While in the earlier stages of language attrition research, the prevailing assumption was that items that are also present in an attriter's stronger language would be easier to preserve in the attriting language, this has more recently been called into doubt, especially where the grammatical system is concerned. It is tempting to assume that the presence of a feature in L1 will lead to its frequent rehearsal and thus prevent attrition of the same feature in L2. However, as two grammatical or phonological features, or even two cognate lexical items, are rarely if ever totally identical in two languages, this is a double-edged sword: it is also possible that the slightly different use, pronunciation, or meaning of the grammatical, phonological, or lexical feature under investigation will imprint itself on the comparable feature in L2, and thus lead to its misuse (this would be congruent with the early, intuitive meaning of the term 'attrition' mentioned above). At the same time, features of L2 that are not similar to anything that L1 has, such as English /θ/ or /ð/ for L1 speakers of Dutch or French, might be immune to such attritional forces (*see Second Language Acquisition: Phonology*).

To illustrate this last point, consider the case of past tense morphology. Both English and German have a synthetic past tense (formed by suffixation of the verbal stem) and a periphrastic one (formed with an auxiliary verb and the past participle of the main verb). However, while in English these two are clearly distinguished aspectually, in German no such distinction exists, and the distribution is mainly stylistically conditioned (*see Aspect and Aktionsart; Tense, Mood, Aspect: Overview*; see also Schmid, 2002: chap. 5.1). Consider the following example:

- (1a) I did not go home.
(1b) I have not gone home.

In English, (1a) could only be part of a narrative, which at the point of telling is concluded: wherever the narrator had been going, he or she would be expected to have reached the destination at the moment of narration. Example (1b) suggests that he or she is still on her way, and will, at some point in the future, go home.

In German, however, one would expect the sentence grammatically corresponding to (1a) to occur in a written, formal or literary narrative, while (2b) would sound more natural in a spoken, colloquial one. There is no aspectual distinction between (2a) and (2b).

- (2a) Ich ging nicht nach Hause.
(2b) Ich bin nicht nach Hause gegangen.

An investigation of this grammatical feature in language attrition would first have to come to a workable definition of similarity. Grammatically speaking, both languages possess the same feature; however, the meaning potential is different. So we might, for example, expect both L1 or L2 speakers whose German is attriting and whose English is dominant to reject (2a) in a context where the aspectual prerequisites that condition the use of the corresponding English structure are not met.

The methodological catch here is that it is a logical impossibility to establish the impact of (dis)similarity of a particular feature on the basis of only two languages. In order to investigate such a feature, it is necessary to include a cross-linguistic comparison with at least one other language. A possible candidate would be French, which has a three-way contrast that marks both aspectual and stylistic differences morphologically: the synthetic past tense in (3a) indicates a continuous aspect, the periphrastic one in (3b) suggests completion, while the synthetic tense in (3c) replaces the periphrastic tense in literary or formal contexts.

- (3a) Je ne retournais pas à la maison.
(3b) Je ne suis pas retournée à la maison.
(3c) Je ne retourne pas à la maison.

It is this kind of contrast that would be interesting to investigate comparatively, in order to gain more information on the impact of similarity and contrast in language attrition, particularly where L2 is concerned.

Research Designs

It has recently been pointed out how important it is to recognize that the way in which data are elicited and the way in which certain linguistic features are

selected in particular studies of language attrition will determine and limit the conclusions to be drawn (Köpke and Schmid, 2004). In this respect, it is vital to recognize fundamental differences between L1 and L2 attrition. All aspects of language attrition research discussed so far have an impact on both L1 and L2 attrition, the differences are usually merely quantitative. It is where research designs are concerned that the division between the two fields becomes qualitative and not comparable.

This is understandable, since the skills acquired in both acquisition processes are probably very different, and so it takes different tasks and tests to measure their erosion as well as their acquisition (*see Assessment of Second Language Proficiency; Assessment of First Language Proficiency*).

However, L2 attrition can further be separated into two clear subfields, namely that of an L2 that was acquired through formal, classroom teaching (often, this means that it has hardly, if ever, been used in a naturalistic setting) and an L2 acquired informally through a sojourn in the country where the language was spoken. While earlier studies, such as Bahrck (1984), Weltens (1988), and Grendel (1993) focused on the former type, recently focus has shifted to the latter, particularly in the large body of studies focusing on Japanese returnees or former missionaries in Southeast Asia (e.g., the studies collected in Hansen, 1999).

An interesting case in point is the study by Murtagh (2003), who investigated the L2 attrition of Irish Gaelic. While this language had been a compulsory subject for all her informants at school, it is not quite clear how subjects' exposure to this language in childhood, e.g., from a grandparent, might influence the process of attrition. A similarly mixed situation is also investigated by Montrul in the case of heritage speakers of Spanish, and it seems clear that this distinction has the potential of confounding the issue unless it is given more prominence in L2 attrition research.

While L1 attrition studies often attempt, through informal conversations or semi-structured interviews, to elicit data that is as naturalistic as possible and thus matches the skills an L1 speaker can be assumed to possess, L2 attrition research has mainly relied on the methods developed for the assessment of L2 proficiency. In the case of a formally acquired L2, the logic behind this approach is compelling, since it allows the best comparison with the point of reference at the onset of attrition (ideally in a pre-test post-test design, if information about the informant's performance at this point is available, or through use of data obtained in a similar way from a control group). Often, such tests have even been standardized

across large populations and can thus be considered to be particularly valid, and also have the further advantage that they are in a format that everyone exposed to L2 teaching is familiar and comfortable with.

However, when dealing with speakers who have acquired their L2 informally, these methods have their limitations. The first and most obvious one of these is that many such tests rely heavily on written material (with the great advantage that they can be administered to large groups of informants at a time). Speakers who have never had formal instruction in a language often have very limited literacy, especially in languages that use a different writing system than their own; and even in cases where they are literate, the gap between spoken and written skills is usually much greater than in the other type of L2 acquisition (where speakers often even prefer the written to the spoken code).

The second problem is that, while such standardized methods test skills that can be clearly assumed to have been learned after a certain time of systematic instruction, assessing the point of reference, i.e., the proficiency of an informant in a particular skill at the onset of attrition, is much more difficult for speakers who have never had any formal language teaching, since there is great individual variance in such cases. For such groups, thus, a longitudinal research design would be ideal. Nevertheless, considering Bahrck's (1984) findings about permastore content that remains stable for 25 years or more, one has to wonder just how practical such a design would be.

An investigation of testing techniques used in L2 attrition studies clearly reveals the shift in focus from the attrition of a formally to an informally learned L2: while virtually all studies that were conducted in the 1980s used measures such as cloze tests and other formal exams, many studies in the 1990s worked with free conversations or data elicited through picture-story retellings. (An annotated bibliography of studies of both L1 and L2 acquisition, detailing languages investigated, theoretical frameworks, and test methods can be found in Schmid, 2004b.)

Obviously, the manner of data elicitation can only ever be evaluated alongside a fair consideration of the goals pursued, since they permit very different conclusions. Naturalistic methods are ideal for global approaches, aimed at measuring all aspects of performance, or for preliminary research in order to identify sensitive areas. More formal tasks, on the other hand, allow for better control of linguistic and psycholinguistic factors and should thus be applied in the investigation of specific domains.

Most of all, it should be acknowledged that the attrition of a formally and informally acquired L2 probably makes up two separate and different

areas of study. This difference could be far more important and useful than the four-way classification of language attrition by attriting language and environment, which was first proposed by de Bot and Weltens (1985) but is usually ascribed to van Els (1986). This taxonomy is still invoked at the beginning of virtually every article on language attrition, although its practical impact has been negligible.

Conclusion

The study of language attrition, and in particular of L2 attrition, has come a long way, from the mostly descriptive approaches that dominated in the 1980s to the quantitative and theoretically informed studies of the past decade or so. More work is clearly needed in this expanding domain, since language attrition is a topic that is not only intuitively interesting. Like the study of a language being acquired, investigating a language that is in a process of decline can help us gain insights that a normal linguistic situation would not allow. But then again, what is normal? As the quote toward the beginning of this article states, "[l]anguage loss affects us all." If properly investigated, however, it can benefit us all as well.

See also: Aspect and Aktionsart; Assessment of First Language Proficiency; Assessment of Second Language Proficiency; Linguistic Universals, Chomskyan; Motivation and Attitude in Second Language Learning; Neurolinguistics from the Middle Ages to the Pre-modern Era; Phonological Awareness and Literacy; Phonological Awareness and Literacy; Second Language Acquisition: Phonology, Morphology, Syntax; Second Language Acquisition: Phonology; Tense, Mood, Aspect: Overview.

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Second Language Listening

G Brown, University of Cambridge, Cambridge, UK

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Introduction

It was not until well into the second half of the 20th century that second language listening was widely recognized as a skill that could and should be systematically developed and assessed by those teaching a second language. Whereas earlier scholars such as Henry Sweet and Harold Palmer had stressed the importance of teaching the spoken language, in their view such teaching was to be based on "the science of phonetics," which effectively meant that the aspect of the spoken language actually taught was its pronunciation. It seems that these scholars supposed that, if you could pronounce the target language reasonably well, it must follow that you would be able to understand it when you heard it spoken. So, in early work on listening comprehension based on the structuralist tradition, it was assumed that the main problems in second language listening would be a mirror image of problems with pronunciation. Students were

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systematically taught to identify differences between those sets of vowels or consonants in the target language that a contrastive analysis of the phonological systems of the L1 and L2 predicted would be difficult for the L1 speakers to distinguish in L2 speech. Students listened to triplets of words, such as *bit bit beat* or *try dry try*, and were required to identify which of the three words was different from the other two. They listened to sets of words with similar consonantal and vocalic structure but different stress patterns and identified those with different stress patterns. And they listened to phrases like *the pink one* uttered with either falling or rising intonation and identified the one with rising intonation as a question.

With the advent of mass tourism in the 1960s, the gulf became glaringly apparent between being able to identify a sequence of words spoken slowly and carefully in the foreign language and being able to identify words in the acoustic blur of normal conversational speech. As Wilga Rivers (1968: 135) remarked, emphasis in language teaching had hitherto been placed on students' production of the language, disregarding the fact that communication takes place between (at

least) two people. She suggested that the primary difficulty for a traveler in a foreign country was not the problem of making himself understood but of being unable to "understand what is being said to him and around him".

On the rare occasions when students were invited to listen to a tape to understand the content of what was said, they typically listened to a text that consisted of a narrative or discursive text read aloud slowly and distinctly by a native speaker. After listening to the tape, they were asked questions on the content. The questions, often as many as 10 or more, concerned information spaced at roughly equal intervals through the text, following the format widely used in 'teaching' the comprehension of the written language. Consider what these second language learners were being required to do: "treat all spoken language as primarily intended for transference of facts ... listen with a sustained level of attention, over several minutes to spoken language ... interpret all of it ... commit that interpretation to memory ... answer random, unmotivated questions on any of it" (Brown and Yule, 1983: 60). Sophisticated adult native speakers often had difficulty in recalling some of the trivial detail that such 'comprehension questions' addressed. For most second language learners, the experience was negative and demotivating.

The challenge since the 1960s has been to help students identify words in the stream of speech and to equip them with strategies to enable them to interpret the content of utterances in the relevant context of utterance and to work out what speakers mean by what they say.

Bottom-up Interpretation

It seems clear that structuralists were correct in claiming that being able to identify words in the stream of speech is fundamental to understanding what a speaker is saying. In some genres of speech, notably in relaxed conversation, where the focus is on the establishment or maintenance of social relationships, it may not be necessary to identify all the words that are spoken but, to participate meaningfully in the conversation, it is essential to identify at least those expressions that indicate the topic of the utterance and what is said about that topic. In primarily transactional genres, on the other hand, where the transfer of information will have some effect in the world, it may be essential to identify even the detail of those unstressed grammatical words that you can often afford to leave only vaguely guessed at in social conversation. When you are listening in your first language, you tend to be quite relaxed about how much you can afford not to fully interpret. In a second

language, particularly in the testing situation of a classroom, it is hard not to panic if you realize that a series of unidentified words is rushing past your ears.

It is sometimes suggested that, in order to identify words in the stream of speech, it is necessary to be able to identify all the consonantal and vocalic oppositions that occur in the accent of the target language that students are being exposed to. This is a counsel of perfection. We should remember that in any accent of English, some of the oppositions found in other accents will not occur. Thus, standard American English does not distinguish between the words *balm* and *bomb*; young speakers of southern British English ('RP') do not distinguish between the words *paw*, *pore*, and *poor*; Scottish English does not distinguish between the words *cot* and *caught*, *cam* and *calm*, or *pull* and *pool*; Yorkshire English does not distinguish between the words *put* and *putt*; and London Cockney English does not distinguish between the words *sin* and *sing*, *thin* and *fin*, or *that* and *vat*. Yet, on the whole, speakers of different accents of English understand one another's speech well enough, even though in their own accent they do not make exactly the same set of phonological distinctions that their interlocutor makes. Second language learners are likely to encounter speakers from a range of different English accents and need to learn to identify the basic distinctions that are maintained in stressed syllables in all English accents, rather than spending much time on rare sets of oppositions that do not occur in most accents and which, even there, may carry only a low functional load. Whereas courses in pronunciation will normally be based on only a single native accent, courses in second language listening need to be much less constrained and to be relevant to a variety of major English accents.

There is obviously a significant difference between encountering words in the written and spoken forms of the language. In the written form, spaces between words unambiguously demarcate individual words. A major difficulty in interpreting the spoken form of a second language lies in determining where word boundaries occur. It is not always appreciated that crucial information needed in the task of segmenting the acoustic blur of the stream of speech lies not only in discriminating between phonological oppositions but also in identifying the phonologically conditioned variables that characterize particular consonants when they occur initially or finally in a word or stressed syllable. For historical reasons, much has been made in teaching English as a second language of the 'aspiration' (delayed voice onset time) that follows the articulation of a voiceless stop when it is initial in a stressed syllable. On the other hand,

the glottalization that precedes the articulation of the same set of phonemes in the coda of a syllable in most accents is typically ignored. Yet each feature is equally informative in identifying relevant parts of word structure (Brown, 1990: Chap. 2). Similarly much has been made in British ELT of the distinction between palatalized ('light') and velarized ('dark') /l/, without noting the generalization that the structure of the syllable in the RP accent is always more palatalized in the onset and more velarized in the coda of the syllable, a fact that affects the articulation of all consonants in these positions. The effect is most easily heard in sonorants and continuants where syllable-initial (onset) consonants will be heard as more palatalized, and hence higher in pitch, than syllable-final (coda) consonants. There are, of course, accents whose syllables are differently structured: the English of Glasgow has velarized consonants initially as well as finally, and Welsh English has palatalized consonants finally as well as initially.

Much more generalizable across accents than these palatal/velar subtleties is information about those phonotactic constraints that are helpful in identifying syllable and word boundaries, information that is sadly underexploited in the teaching of second language listening. For example, if an ESL listener hears a sequence /m/ in the stream of speech, it is relevant to know that, since this cannot form an onset cluster in a syllable of English, it cannot mark the beginning of a word. The /l/ must be syllable initial, which means that the /m/ must be final in the preceding syllable; the significance of this fact is that where there are syllable boundaries, there are potential word boundaries (Cutler and Norris, 1988). An essential requirement is to learn to identify and to pay attention to the stressed syllable of words, since this is the syllable that is most reliably clearly articulated. In the stream of speech, a great deal of the phonological information that is available when words are pronounced slowly and clearly in citation form is routinely lost, particularly in unstressed syllables. Unstressed syllables are frequently elided, particularly when they occur as one of an unstressed sequence (for instance, in words such as *library*, *governor*, *extraordinary*). Processes of elision and assimilation take place across syllable boundaries and radically alter the familiar features of the citation form. Such processes occur densely in normal, informal speech whose relevance for learners is much greater now than it was pre-1970 since this type of speech is used in a much wider range of situations than it used to be. It is not only found in informal conversational contexts but is regularly heard on radio and television (even in news broadcasts, once models of slow, carefully articulated speech) and is standardly

used in academic lectures and in public speaking more generally. (Harris (1994) and Shockey (2003) gave detailed accounts of these processes.)

I have suggested that a crucial component of second language listening is identifying words correctly. More to the point may be identifying the larger, prefabricated structures of which so much spoken language is constructed. Wray (2002) reviewed an array of studies that demonstrated the crucial significance of such structures, particularly in the early stages of learning a second language. It seems likely that many expressions are, initially at least, learned as unanalyzed chunks. Other expressions may be incorrectly analyzed (as in the case of the L2 learner of French who analyzed the spoken version of *chocolat* as *chaud cola*). In many cases, it may be that such expressions are stored and used quite effectively until eventually confrontation between spoken and written forms (or the utterance and the world) leads to a reanalysis. The acquisition of lexis, and of formulaic expressions in particular, is still the subject of extensive research.

Having identified (some of) the expressions in an utterance, the listener needs to order them into chunks that can be understood as syntactically structured and co-interpretable semantically. Just as the written language uses punctuation and layout to indicate the organization of discourse, there are various signals in speech, for instance, intonation, slowing down, and pausing, that indicate the boundaries of chunks of speech that need to be co-interpreted. In most accents of English, the beginning of a new sentential structure is typically indicated by being placed relatively high in the speaker's pitch range, and the rest of the structure is included within the overall contour that follows. The end of the structure is usually marked by being uttered at a lower level in the pitch range than the onset and is often followed by a pause. Internal sentential boundaries may be marked by shorter pauses and sometimes by variation in pitch height or direction (cf., Ladd, 1996).

Where spoken language differs dramatically from written language is in the scale of interruptions, modifications, and use of interpersonal markers in its production and in its reliance on the present context of utterance to constrain possible interpretations by the listener. Most speakers have had the experience of interrupting themselves, pausing, reconsidering, planning again, beginning to express themselves in one way, and then immediately modifying what they have just said. Unlike writers, they cannot undertake such operations secretly, without the interlocutor knowing. Second language learners unused to listening to spontaneous speech that has not been previously at least partially planned are in danger of having

their attention distracted from the message by material that is introduced as part of the planning process. Often the changes speakers make are marked by interpersonal and modal expressions such as *well, erm ... I mean, so ... you see ... , if you get my meaning ... , as far as I'm concerned ... , I think ... , I'm sure ...*, phrases that disturb the smooth flow of a sentential structure at both a syntactic and an intonational level. A feature of spontaneous conversational speech that second language learners need to become accustomed to is how such universal features of spoken language are managed in the second language.

As speech plays such an important role in interpersonal relationships, its production is often modified by paralinguistic features that express the attitude of the speaker toward the listener and/or toward what is being said. English speakers who are being particularly polite to the interlocutor often speak higher in their voice range, relatively softly, and with a 'breathy' voice, whereas those who are being aggressive typically speak lower in their pitch range, more loudly, and with a 'harsher' voice quality. Speakers who are being sympathetic or kind speak low in their voice range, slowly, and typically with a 'creaky' voice. Whereas it seems plausible that basic human emotions such as fear, anger, or timidity are expressed similarly in all languages, it seems probable that attitudes that are more culturally conditioned are more likely to be variable in their expression across languages. Second language learners, at quite an early stage in their exposure to tapes and videos of L2 speakers interacting, might profitably pay attention to paralinguistic features of speech in order to identify whether speakers are agreeing or disagreeing with each other, being polite or aggressive, or friendly or unfriendly, long before they can understand the linguistic details of what is being said (Brown (1990), summarized in Rost (2002)).

Interpretation and Inference

Clark and Clark (1977: 45) drew a helpful distinction between 'constructing an interpretation' and 'utilizing an interpretation,' drawing attention to the fact that, in everyday life, we use language to get things done. In doing a crossword puzzle, we might construct an interpretation without putting the interpretation to further use but most speech is functional, either to interact with someone socially or to transfer or extract information. This implies that there is more to the interpretation of an utterance than simply identifying words, syntactic structures, and thin semantic meanings; we must infer what the speaker who produced the utterance intended to achieve by

it. The term 'interpretation' reflects this process better than the term 'comprehension.' To have comprehended an utterance suggests a total, correct product now present in the listener's mind. For a listener who is trying to understand a decontextualized utterance in a language test, a translation equivalent of the thin semantic meaning may yield a judgment of 'correct' but, as Goffman (1981: 28) remarked, "the mental set required to make sense of these little orphans is that of someone with linguistic interests" rather than someone who is using language purposefully. It might be supposed that a total, correct product could be achieved in understanding short, banal utterances such as *what is the time?* But even such a familiar utterance may have been produced by the speaker primarily to bring about an awareness of the passage of time on the part of the listener, an intention that the listener may remain unaware of even after having produced an apparently appropriate translation. 'Interpretation' gives a better impression of the riskiness of the listener's effort to understand what the speaker means by producing the utterance and it gives no impression of finality – once constructed, an interpretation is not fixed and immutable but may subsequently be modified. It is because, in most genres, there can be no single 'correct' interpretation of what is said that some scholars question the possibility of measuring or assessing the degree of a student's 'spoken language comprehension' (issues discussed in Shohamy (1996); Spolsky (1994)).

To arrive at an interpretation, the listener needs to make inferences at many levels. To begin with, the listener may need to infer the identity of words not clearly heard but which would make sense of the utterance. Then, the effect of the immediate verbal context on the sense (meaning) of words must be taken into account. For instance, the word *red* prototypically denotes a strong, saturated red hue and the word *face* prototypically denotes the configuration of eyes, nose, mouth, and chin that would be represented in a child's drawing. However, once these words occur in the phrase *red face*, *red* must be interpreted as denoting a pinky, blotchy color, whereas *face* will draw attention particularly to the cheeks and perhaps the forehead but certainly not the eyes or mouth. The listener must infer which of a wide range of senses is appropriate in a given verbal context. For a second language listener, particularly one who has learned the foreign words in terms of one-word translation equivalents, extending the interpretation of a word well away from its central translational sense requires considerable confidence since it is obviously an operation fraught with risk (Færch and Kasper, 1986).

The issues of syntax, of combining words in one syntactic structure rather than another, and of the choice of syntactic structure having any effect on interpretation have been curiously neglected in cognitive models of comprehension. Most accounts of discourse meaning simply ignore the nature of the syntactic structures selected by the speaker and produce representations of discourse meaning consisting of a set of abstract semantic 'propositions' from which all specifically syntactic information has been expunged. A few writers have insisted on the significance of syntactic structure in determining how the semantic content of an utterance is understood (e.g., Brown, (1994); Levinson (2000)). Halliday (1978) pointed out the disruptive effect on the listener's presuppositional coherence of using inappropriate syntactic structures (consider which is the most appropriate radio commentary on a ceremony: *The sun's shining. The day's perfect.* versus *It's the sun that's shining and the day that's perfect*). Davison (1980) noted the effect on interpretation of using passive rather than active constructions in some circumstances, and Sanford and Moxey (1995) have drawn attention to the inadequacies of any account of interpretation based solely on propositional representation. It is far from clear why a language should develop different ways of expressing the same propositional content if using a different syntactic structure has absolutely no effect on meaning. Rather little experimental work has been conducted on the effect on interpretation of varying syntactic form but at least we should note that a competent listener would need to draw inferences when an unexpected syntactic structure is employed: compare the effect of *He certainly spoke to her* with *She was certainly spoken to by him*.

The Context of Utterance

It is a truism that spoken language typically relies heavily on context for its interpretation. There is a widespread view that speakers and listeners 'share' the context of utterance. Yet a moment's thought reminds us that speaker and listener can usually see each other's face and facial expression but not their own, and each of them has private interests, perceptions, judgments, and prejudices and brings to any interaction different hopes and expectations for its outcome. As Johnson-Laird (1983: 187), remarked, "the notion of the context overlooks the fact that an utterance generally has two contexts: one for the speaker and one for the listener. The differences between them are not merely contingent but... a crucial datum for communication". I shall consider three

aspects of context from the point of view of the listener: external context of situation, social context, and textual/discourse context. Each of these aspects of context interacts and overlaps with the others, more or less obviously in different genres (Brown, 1998).

The External Context

Utterances are produced in a particular place and at a particular time. Much of what is said will be assumed to be relevant to the place and time of utterance. If someone comes into a room, shivers, and says *It's cold*, the listener will understand that the comment applies to the current place and time – if not to the temperature within the room, then to the local external temperature. If I, in a temperate country, say in winter *It's warm today*, I mean that it is relatively warm for this locality at this time of year, not that it is as warm as it might be in August or in Singapore. If the speaker says *She's coming on Monday*, the listener will assume that the relevant 'Monday' will be the next one after the day of utterance. If the conversation is about 'the president,' 'the doctor,' or 'the school,' the listener should assume that it is the participants' current, local president, doctor, or school, if no contrary information is given. Conversations will, by default and in the absence of contradictory information, be assumed to be relevant to 'local' conditions, where 'local' can be interpreted as widely as *here* can be interpreted in *here in my hand, here in this room, here on this street, here in this town, here in this country*, and so on.

A concept of 'appropriate behavior,' which may differ in different cultures, will set limits on what it is appropriate to say and how it is appropriate to say it in particular places and at particular times. There are appropriate greetings for different times of day, for meeting, and for parting. There are some places, places of worship, for instance, where some topics or manners of speaking would be judged inappropriate. If I have a trivial message for you about the postponement of some distant future event, it would be inappropriate for me to come to speak to you about it in your hotel room at midnight, invading your personal space and possibly awakening you from sleep. If, in defiance of convention, I were to insist on speaking to you in such circumstances, you might well infer that I meant more than I was overtly expressing. The subtleties of contraventions, deliberate or intentional, of conventions governing types of utterance appropriate to particular external contexts are peculiarly difficult for second language learners to interpret with any confidence without extensive experience of the culture where the second language is used.

The Social Context

For the listener, the most significant figure in the social context is the speaker, and the significant relationship is that between speaker and listener. Whether the speaker is speaking to a group of listeners or shaping the utterance for just one listener, the speaker must make judgments about how far they will share what Clark called "communal lexicons" (1998: 60–87). Communal lexicons, Clark suggested, are built on such social features as shared nationality, education, occupation, hobbies, language, religion, age cohort, and gender. The more social features that the speaker and listener share, the more the speaker can rely on the listener being able to understand specialist vocabulary. Where speaker and listener share an occupation, suppose both are ship's engineers, even where the listener is a second language learner, they are likely to be able to negotiate the senses of technical terms with some confidence that each understands what the other is speaking of as long as the listener feels relaxed and is able to think clearly. However, when the speaker is the dominant participant in an interview that is communicatively stressful for the second language learner, for instance, when the learner is a junior doctor being interviewed for a job by a senior member of the profession, the ability of the listener to negotiate a shared understanding of a term may be curtailed, which may result in a breakdown of communication. For nervous students in examination conditions who are exposed to tapes of speakers with whom they share few, if any, of Clark's social features, only the most self-confident of students are likely to arrive at an adequate interpretation in the lottery of a speaker, or speakers, talking on a quite unpredictable topic that may be distant from any of the student's own interests. It will always be the case that a second language learner will have least difficulty in understanding language that the speaker is sympathetically shaping for that particular individual, taking account of the learner's current state of control of the second language and anticipated knowledge of the topic.

When listening to speakers from their own speech community, listeners will often make stereotypical judgments about the speaker on the basis of the speaker's self-presentation in terms of dress, hair, posture, and what the listener knows about the speaker's occupation. Such stereotypical judgments may influence the listener's interpretation of what the speaker says. If asked in the street what the time is by a smartly turned-out passer-by as opposed to one who gives the general impression of having just stumbled out of bed, different listeners may respond with different degrees of helpfulness in each case. If the

listener hears *This is yet another example of hard work by the left* said by a left-wing politician, the listener will infer that the expression is used positively and appreciatively, but if the very same remark is uttered by a right-wing politician, the listener will infer that it is used negatively and critically. Second language listeners may feel uneasy about importing stereotypical knowledge of the world from their own culture into interpreting what is said in another language.

They may also fail to notice when they have not properly understood what someone says, as young L1 listeners have been shown to do in their own language (Markman, 1981) or blame themselves for not having understood when native speakers express the content of their message inadequately. Robinson (1981), working with native speakers of English, showed young children who hear elliptical or ambiguous messages from adults may be 'listener blamers,' who attribute their difficulties in understanding such messages to their own inadequacy, rather than 'speaker blamers,' who are capable of recognizing that the speaker has produced a confused and confusing utterance. If second language learners hear a native speaker assert something that the listeners cannot make sense of, like 'listener blamer' children they may believe that they have not interpreted what the speaker said correctly, simply because they are reluctant to question the authority of a native speaker.

The Context of Discourse

The discourse context is created by whatever the conversational participants are currently paying attention to and by what has already been said on the topic. It is the structure of what has already been established in the discourse context that allows the listener to determine what anaphoric expressions refer to and what, within the discourse world, new expressions refer to (Gernsbacher, 1990; Smith, 2003). How much the listener must carry in memory from the previous discourse varies with the type of genre at issue. In genres such as instructions on how to complete a task, where each instruction is followed by a pause while the listener completes that step in the task, there is minimal burden on memory. Instruction tasks may be made easier by limiting the number of parts or participants and making them clearly distinct from one another. Narrative genres, where an understanding of what is happening now depends on your understanding of what has happened earlier, are likely to impose a greater burden on memory. Again, narratives can be simplified if events are narrated in the order of occurrence ('*ordo naturalis*'), if the

number of participants is limited, and each participant is physically clearly distinguished from the other participants (Brown, 1995). The more complex the task, the more difficult it is to arrive at a secure interpretation, culminating in the problems of following abstract arguments in academic lectures (Chaudron, 1995).

Listening as 'Input' to Second Language Learning

When we consider the complexity of the demands made on the learner listening to a second language, it seems truly remarkable that such input can form the basis for learning the second language. Nevertheless, it is clear that to a greater or lesser extent, in different contexts of acquisition, some learners do successfully learn to control a second language to an impressive extent, largely from absorbing aspects of spoken input while simultaneously putting that input to use in constructing an interpretation of what a particular speaker intends to convey on a particular occasion of use. How this is achieved is the subject of extensive speculation in the second language acquisition literature (for a useful critical overview of the literature and an initial stab at a theoretical approach that distinguishes between the procedures of processing language for meaning and the processes of language learning, see Carroll (1999)). The most promising research thus far on this topic is that concerned with the acquisition of lexis, given spoken input (see, e.g., Ellis and Beaton (1993); Vidal (2003)).

See also: Phonetics, Acoustic; Second Language Acquisition: Phonology, Morphology, Syntax; Speech Perception.

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