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ON

LANGUAGE DEVELOPMENT AND COMMUNICATION PROBLEMS OF THE HANDICAPPED

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AVAILABLE

## The structure and function of language

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In approaching the subject of this conference, it would be nice if everyone could be agreed, at least in broad outline, about the scope of the enquiry, and how its main facets should be related. There are so many different conceptions of communication and language in the theoretical literature that, without some measure of prior agreement, a conference on an essentially applied theme could lose its sense of direction, and a discussion of problems and solutions, as an exercise of potential practical value, could end up as a sterile debate about theoretical models or methodological difficulties. We shall have to face up to this possibility, anyway. It is not as if we are dealing in this conference with a well-established field of study, where there is a consensus concerning the nature of the problems and the most relevant approaches to their solution. One of the outcomes of the conference will doubtless be a greater sense of the nature of the communication problems facing the handicapped, and a greater awareness of the most fruitful and realistic avenues of research. To this end, an initial statement about the scope of the subject may thus be helpful, as it can provide a frame of reference within which the views of participants can be related. I am not suggesting that everyone would wish to work with such a framework - simply that it might be a convenient basis for discussion. It should then be possible, after the conference, to anticipate points of difference between participants by making reference to them in a revised version of this paper.

### Language and communication

The first step is to provide a means of relating the two central concepts which enter into the title of the conference. Language and communication are not synonymous. There are many functions of language other than that of interpersonal communication - witness the vocalisations used to release emotion when, even though alone, one bangs one's thumb with a hammer, or the rhymes and rhythms of the child playing alone with a ball in the street. Likewise, there are many ways of communicating other than by language, and it is in clarifying this notion that we encounter the first descriptive framework which has achieved some currency in the study of human communication - the semiotic classification of behaviour.

Semiotics has received many definitions, but the one which I think is most relevant for our purposes is "patterned communications in all modalities" (Sebeok, Hayes & Bateson 1964: 5). The approach stresses "the interactional and communicative context of the human use of signs, and the way in which these are organised in transactional systems involving sight, hearing, touch, smell, taste" (*ibid.*). From the point of view of physical handicap, such a broad perspective is to be welcomed, as it prompts us to remember in our enquiry the potential communicative role of all sensory modalities, including those (such as touch) whose relevance has been underestimated, and those (such as

smell and taste) whose relevance is generally ignored - though one can hardly doubt the importance to the child of the "passive" signals he receives through these modalities. However, only the first three of the five modalities have received a great deal of study, and become institutionalised in the academic literature, as can be seen from Fig. 1, which recognises the domains of linguistics, kinesics and proxemics.

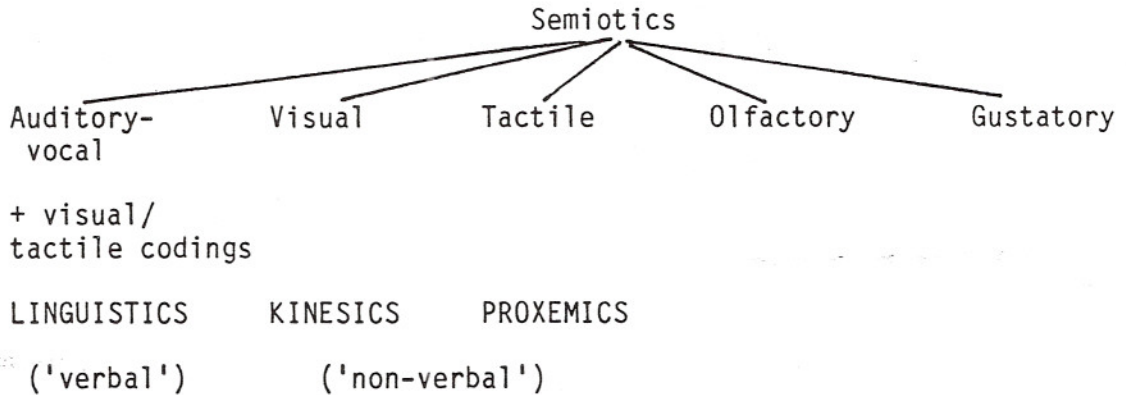


Fig.1. The semiotic frame.

The use of the auditory-vocal channel as a means of human communication (i.e. "speech", or, more precisely, "spoken language") is pre-eminently the concern of linguistics. But other visual or tactile "codings" based on speech would also be subsumed under the heading of linguistic study - first-order codes, such as writing ("written language"), or second-order codes, such as finger-spelling. More complex signing systems, too, have to be allowed for: those which have a direct relationship with the patterns of spoken or written language (such as the Paget-Gorman Signing System) and those which do not (such as British Sign Language).

Under the heading of kinesics is included the study of facial expression and bodily gesture - purely visual systems of communication, lacking any derivational connection with spoken or written language, and lacking the scope and productivity that one associates with deaf signing systems. Proxemics studies the tactile medium of communication (as in hand-shaking, etc.), but the term reflects more a research interest in such matters as the way variations in physical distance between human beings can be used as a communicative signal. Again, a distinction must be drawn between the everyday use of proxemic behaviour, which is quite limited in scope, and the contrived use of such behaviour in specially designed signalling systems (such as the Tadoma system used with the deaf-blind).



The distinction between linguistic behaviour, on the one hand, and kinesic/proxemic behaviour, on the other, is similar to that often encountered in psychology between "verbal communication" and "non-verbal communication". But the verbal/non-verbal terminology obscures a matter which could be of some importance for the present conference, so I shall not use it here - namely, that under the heading of language we need to recognise the important features of intonation, rhythm, tone of voice, and the like, which are patently vocal, but not verbal. No binary division does them justice, for at one extreme such features interact closely with the structures of spoken language (in such contexts as stating/questioning, or focussing attention on particular words in a sentence), and at the other extreme they are used for the communication of emotion, in a similar way to kinesic or proxemic behaviour. Drawing a boundary around the notion of "language" is always a somewhat arbitrary procedure, as a consequence. It is never wise to be dogmatic over what is or is not "language".

Having said this, let me now proceed to be dogmatic by suggesting that there is little to be gained by extending the use of the term "language" to cover all the domains of semiotic enquiry, as is often done through the use of such expressions as "body language". In these expressions, the term has come to be synonymous with "communication", and a valuable distinction is in danger of being lost. However, clear differences exist between the kind of behaviour demonstrated by the use of spoken/written language and that encountered in the kinesic/proxemic domain. The remarkable productivity (or creativity) of the grammar and lexicon of language is one criterion of difference; another is the dual structure of language (a level of meaningless units - such as sounds or letters - combining to form a level of meaningful units, such as words and sentences). Yet other criteria have been explored (Hockett 1958, Hockett & Altmann 1968), in support of the conclusion that there are major qualitative differences between spoken/written language, on the one hand, and the various kinds of "non-verbal" communication, on the other. Concept-based deaf signing systems sit somewhat uneasily between the two, but present-day social attitudes forcefully support their characterisation as "language", and focussing on the dissimilarities between spoken/written language in particular and signing systems in general is nowadays felt to be counter-productive.

#### The structure of language

All linguistic theories draw a distinction between the structural properties of language and the range of functions to which language can be put, and this distinction turns out to be highly relevant when it comes to the investigation of language handicap. On the one hand, there are people whose handicap takes the form of a limitation in their ability to use the structures of spoken/written language; on the other hand, there are those whose control of structure is relatively advanced, but they lack the ability to put these structures to good



use in real communicative situations. Within these two broadly defined areas of language structure and language use, several important dimensions have come to be routinely identified.

Under the first heading, most accounts recognise three main branches, or levels: semantics, grammar, and the properties of the transmission system chosen (i.e. whether spoken, written, or signed). Semantics, first of all, is the study of the way meaning is structured in language. At the most general level, it involves the study of the way we organise the meaning of what we want to say or write into stretches of language (what are often called discourses or texts) - as when we expound a story in a logical way, or maintain a coherent structure in a piece of dialogue. Discourse breakdowns are common in handicapped language, as when questions fail to be answered appropriately, or irrelevant or disjointed remarks are introduced into a conversation. At a more detailed level, semantics involves the study of vocabulary - not just by making lists of words (more precisely, "lexical items"), but a study of the way in which these items relate to each other and define each other. When we say that car, automobile and old crock have similar meanings (are synonyms), or that old is the opposite of young (are antonyms), or that cow, horse and sheep are all animals (more precisely, are hyponyms of animal), then we are making statements about the relationships between lexical items. It is the learning of these relationships which constitutes the main task in the acquisition of vocabulary. One cannot assess lexical ability simply by counting the number of words someone uses, for two people may have similar sizes of vocabulary, but be very different in their awareness of how the lexical items relate to each other. Similarly, teaching procedures need to take into account the structural characteristics of the lexical system (see further, Crystal 1981, 1982).

The distinction between semantics and grammar can be drawn in the following way. If we have a meaning "in mind", such as a request to have a locked door opened, there are innumerable ways in which we might express this meaning, using the same vocabulary, and also many ways in which the language does not permit us to express this meaning. Among the permitted ways are such sentences as I need a key to open the door, This door needs a key, If we had a key, we could open the door, and so on. Among the disallowed sentences are need I a key this door to open, open could the the door a locked, and so on. Grammar is the study of sentence structures and sequences, from the viewpoint of which strings of words are acceptable in a language, and how they relate to each other. It is often divided into two sub-fields. Morphology is the study of the structure of words - of the way words can be made larger by adding different prefixes and suffixes, and by joining units together in various ways, e.g. boy/boys, go/going/gone, nation/nationalise/nationalisation. Syntax is the study of the way words are strung together to make up the phrases and sentences of a language - the study of the various patterns of word order and word substitution, and of the kinds of relationships which exist between



these patterns. Consider the differences between The dog chased the man and The man chased the dog, Did the man chase the dog?, and so on. There are obviously rules governing the way in which these sentences relate to each other, and it is the task of syntax to explain what these rules are. Not surprisingly, in view of the complexity involved, grammatical disability is a major feature of most kinds of language handicap. And, as with semantic analysis, simple measures of grammar in terms of sentence length, or the like, will not suffice to capture this complexity: two people may have similar sentence lengths, but be vastly different in the kind of grammatical structures they are able to handle (Crystal, Fletcher & Garman 1976).

Let us now assume that we have a meaning "in mind", and have decided which sentence pattern to use to express it; there remains the third branch of language structure to be taken into account. We have to choose which way to transmit the message - whether in speech, or in writing, or using some other coded medium, such as finger-spelling, signing or semaphore. Restricting the case to spoken language, for present purposes, we have to distinguish right away between those properties of the transmission system which are independent of a particular language, and those which are dependent. The kinds of things which can handicap a person under the first of these headings are very different from those which can handicap him under the second. Unfortunately, the everyday term "pronunciation" does not make this distinction clear, and so new terminology has to be introduced to handle it. It is now conventional to distinguish, firstly, the range of sounds which the human vocal tract can produce and the human ear perceive - a very great range indeed; and, secondly, the much more restricted range of sounds which actually turn up in a language. The study of the first of these, the general study of human sound-making and sound-reception, is known as phonetics. The study of the second, the sound system of a particular language or language-group, is known as phonology.

The relevance of the distinction to handicap is as follows. In the absence of any pathology, all human beings are born with the same capacities for sound in their ears, vocal tracts and brains. Similarly, pathologies of hearing, articulation or nervous system affect speakers all over the world in the same way, regardless of the language community in which they live. A given type of deafness will devastate a member of the English speech community in the same way as it will a Frenchman. The nasal resonance of a cleft palate child will be apparent, whether the child learns German or Chinese. All this would be part of the phonetic definition of the handicap. But when speakers have an intact auditory, articulatory and nervous system, it does not therefore follow that they will be able to learn the sound system of their language efficiently - and when there is a disability here (a "specific" learning disability for some of the sounds of this system), each language has to be studied in its own terms. A child with an immature or deviant pronunciation of English will come across very differently from one with an immature or deviant pronunciation of French or Chinese. The assessment procedures will have to be



different, and remedial work would proceed along quite different lines.

To say that a child has a "poor pronunciation", then, does not help very much, until it is made clear whether we view his problem as being primarily a biological one (as conventionally defined in terms of anatomical, physiological or neurological abnormality), or as a psycholinguistic one (as conventionally defined in terms of the learning of psychological processes or linguistic rules). And, of course, many children suffer simultaneously from both kinds of handicap. The cleft palate child, for instance, will have a poor pronunciation which is explainable, to some extent, by his anatomical deficiency and the associated neurophysiological abnormalities. But other aspects of his pronunciation problem may not be so easily explainable, and suggest that there may be elements of a learning difficulty as part of the history of that handicap too. Part of the problem of making a good diagnosis and planning appropriate remedial help in this area, of course, is due to the complex way in which phonetic and phonological aspects of a disorder interact and overlap. It is especially easy to assume, in cases of severe physical handicap, that the problems are solely phonetic in character; but the existence of phonological learning problems in these children is widespread, and may be universal.

### The use of language

The range of linguistic variables discussed so far are to do with the relatively "tangible" dimension of language structure - the strings of sounds, words and structures that come "out of the mouth and into the ear". The study of written language or of signing would have led to a similar structural account, though terminology would have differed to some extent (for instance, the notion of phonology being replaced by that of graphology, in the study of writing). Under the heading of language in use, a quite different range of variables is involved, as here we are dealing with the analysis of the situations in which language is found, and of the people who are involved in the act of communication. To impose some order on the enormous scope of this dimension, it is common to identify three broad parameters of variability, relating to temporal, social and psychological factors. First, temporal variation in language use refers to the way in which language changes over time, both in the long term (as when Anglo-Saxon develops into modern English) and in the short term (as in contemporary debates about English usage). Secondly, social variation in language use refers to the way in which language varies in terms of the regional or social background of the users - a domain which includes such notions as dialect, occupation, social status and social role, and which is generally studied under the heading of sociolinguistics. The sociolinguistic consequences of biological difference (such as sex, age, or handicap - "Does he take sugar?") can also be included in this category. Thirdly, psychological variation in language use refers to the way in which language varies in terms of the capacities of the individual user - a domain which includes such



notions as memory, attention, intelligence and personality, and which is generally studied under the heading of psycholinguistics. The study of individual differences, and of task effects on language, is also a major concern of the psycholinguist, and one which is of particular relevance for this conference. So too is the field of language learning, which is usually placed under this heading because of its dependence on cognitive abilities; the more restricted field of child language acquisition therefore often being referred to as developmental psycholinguistics (see further below).

The distinction between language structure and language use is a simple and attractive one, but it is misleading in one important respect. There are several features of language which cannot be identified without the equal participation of both dimensions. Terminology varies, but these days reference is generally made to them under the heading of pragmatics, and recently the pragmatic aspects of language development and language handicap have attracted particular attention (e.g. Ochs & Schieffelin 1979, Gallagher & Prutting 1983). Pragmatics has received many definitions, but essentially it refers to the study of the factors which govern a user's choice of utterance, arising out of the social setting of which he is a part. It includes such matters as the assumptions which people make when they communicate, the intentions underlying what they say, the way context influences the amount they say or the way they say it, the turn-taking which makes a conversation run smoothly, the appropriateness of the subject-matter to a situation, and much more. Problems of a pragmatic kind are widespread in the study of language handicap, due to the limited awareness children have of the nature of linguistic interaction, and the uncertainty many adults feel about how they should act when they encounter a handicapped child. Nor are professionals free of pragmatic uncertainty, and much of the current debate over what level of language to use to a child, whether one should speak or sign or do both, whether one should adopt a structured or a free conversational therapeutic style, and so on, illustrates the relevance of this topic to their work. Language handicap is first and foremost an interactive phenomenon: obviously (but, despite the obviousness, the point often fails to be appreciated), until someone talks to a child, one has no way of knowing whether he is linguistically handicapped or not. The description, assessment, and remediation of a handicap depend totally on taking into account the implications of this axiom.

Recent textbooks on pragmatics (e.g. Leech 1983, Levinson 1983) illustrate the great breadth of the subject, and in their different approaches and emphases show how it is not yet possible to present a single classification of pragmatic variables which would satisfy everyone. At one extreme, pragmatics is closely related to semantics, and to other structural levels of language - so much so that some scholars would be prepared to call it a "level" of language structure. At the other extreme, pragmatics is closely related to sociolinguistics and psycholinguistics, focussing upon matters of



usage and extralinguistic context which have no direct relationship to language structure. In relation to the first extreme, there are clear cases where it is possible to make a pragmatic "error" by wrongly using aspects of language structure - using tu instead of vous in certain circumstances in French, for example. On the other hand, it is also a pragmatic "error" to tell a joke at a funeral, but here there is nothing in the structure of the English language which will explain what I have done wrong - and doubtless the same effect would be encountered in most other speech communities. Because of this range of subject-matter, it is in my view premature to talk of "pragmatic disorders", as it is not possible to provide an unequivocal theoretical definition of what is involved. But the importance of pragmatic factors in the investigation of language handicap is undeniable.

These observations about language structure and use are summarised in Fig.2 (with reference to the spoken medium only).

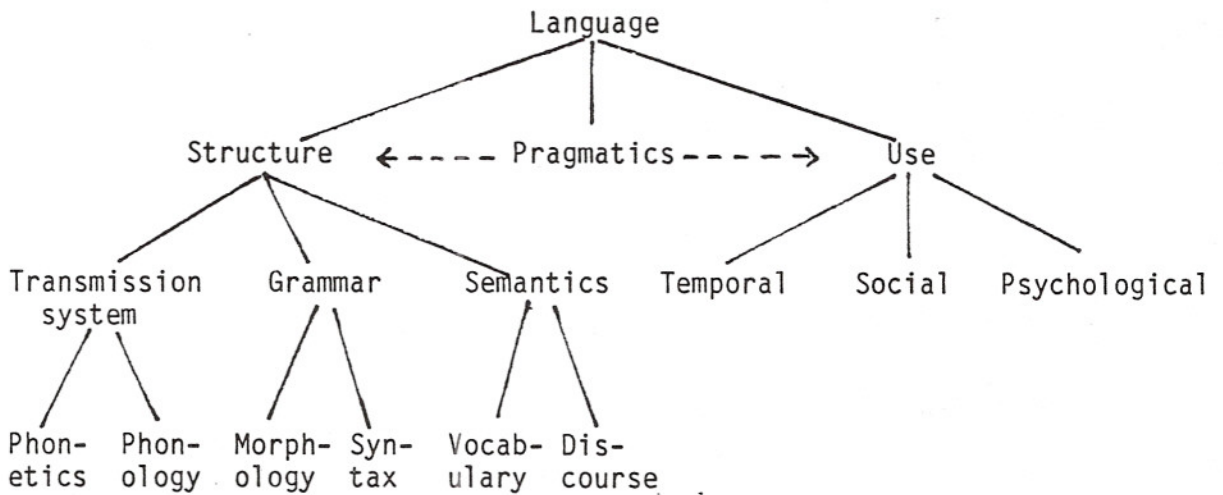


Fig.2. The main areas of spoken language structure and use.

## Psycholinguistics

In relation to the subject of this conference, it may perhaps be helpful to conclude with some further observations on the field of psycholinguistics, and in particular to anticipate the distinction between theoretical and applied psycholinguistics, which is increasingly encountered these days. If psycholinguistics had been left to itself, as a theoretical field, it would doubtless have developed a clear identity, as a bridge between theoretical linguistics and cognitive psychology. This is suggested by several definitions of the subject, such as Slobin's (1971: 5), "the mental processes underlying the acquisition and the use of language", or Clark & Clark's (1977: vii), "fundamentally the study of three mental processes - the study of listening, speaking, and of the acquisition of these two skills by children". But very early on, people began to expect psycholinguistics to be useful, to help solve problems in language acquisition and use. The problems were most notable in the areas of language learning - primarily in relation to speech pathology, the teaching of reading, and second language learning. And it is a fact of life that when language professionals, such as teachers and speech therapists, come to be interested in an academic subject, especially an immature one, it is unlikely that the theoretical practitioners of that subject can remain unaffected by their concerns. They have ways of making them talk. Certainly, in the case of psycholinguistics, there has in recent years been a trend to investigate a range of problems which arise neither from linguistics, nor from psychology, but from fields as diverse as medicine and literary criticism. The result has been considerable diversification of subject-matter within the field, and a range of overlapping interpretations about what psycholinguistics is, deriving from the different perspectives of different applied areas. For many teachers, who first encountered psycholinguistics through the work of various researchers into reading, the subject is a theory of reading. Some teachers even talk of "the psycholinguistic approach" to the teaching of reading. For many speech therapists, who first encountered the subject in relation to child development, the term is synonymous with language acquisition studies. It is therefore a matter of some importance to distinguish clearly between theoretical psycholinguistics, as defined above, and applied psycholinguistics, where the aim is (as the editorial policy of Applied Psycholinguistics states) to report work "in which applied problems are approached from the standpoint of basic research and theory..."(my ital.).

As there are many areas in which applied psycholinguistics could be of assistance (translating, interpreting, dictionary-writing, reading...), it is not surprising to find new specialisms emerging within the general field, and the most relevant for the present conference would seem to be clinical psycholinguistics. This may be defined as the study of breakdown in man's linguistic behaviour, and of the principles governing this breakdown, as he interacts, socially and biologically, with his environment - and



especially, with his clinician, clinical materials and clinical settings" (Crystal 1983). Similarly, with reference to the analogous situation in schools, one might define a remedial psycholinguistics, where the same definition would apply, except that the last part would read "teacher, teaching materials and educational settings". But there is no recognised training or literature which relates to the focus of these definitions. Practitioners of different disciplines investigate aspects of the field - speech pathologists, linguists, psychologists, and remedial language teachers, in particular - but each group has different ends in view, and uses different techniques to achieve those ends. What a linguist "sees" in a clinical or remedial interaction will be very different from what each of the others sees - and indeed, the whole philosophy of a "team" approach to disability is founded on this fact.

It would be a pity if the conference got bogged down in a debate about professional roles, hence a few comments on the distinction between clinical/remedial linguistics, clinical/remedial psycholinguistics, speech pathology/therapy and remedial language teaching may perhaps be in order. The clinical/remedial linguist (Crystal 1981) is at present largely taken up with descriptive concerns - the need to provide precise descriptions of the language of a patient or pupil (henceforth, P), and to develop more detailed techniques of assessment and remediation based on these descriptions. (The choice of the terms "clinical" or "remedial" is trivial, reflecting only the professional domains from which he derives his data - clinics or classrooms.) In due course, he would hope to broaden his aims, and move from the description of individual Ps to groups of Ps, generalising his descriptions, and arriving at a concept of linguistic diagnosis. Further, the clinical/remedial linguist worth his salt would not wish to stop with his own mother-tongue, but would want to compare the descriptions of P behaviour in other languages - and, in theory, in all languages - with the aim of identifying universals of language breakdown. It ought to be possible to say what happens when a linguistic system breaks down, or fails to develop - any linguistic system - and it is the aim of clinical/remedial linguistic theory to provide an explicit account of the linguistic factors involved.

Clinical/remedial psycholinguistics, as already suggested, has a far more general role to play, in that from the outset it takes into account the relationship between linguistic behaviour and such psychological factors as memory, attention and perception, in attempting to explain language breakdown. The clinical linguist can describe the patterns of linguistic disability which emerge, and can sometimes explain the nature of P's handicap purely with reference to his procedures. But, more often, the explanation of P's difficulty lies wholly or partly elsewhere - in a limited auditory short-term memory, or in emotional disturbance, for example. In such circumstances, the linguist's account will not satisfy, and a more general perspective must be achieved. It is this perspective which a



psycholinguist aims to provide.

The investigation of all these factors is of course routine in speech pathology/therapy, as part of assessment and remediation, but the aim there is to intervene and obtain progress. The psycholinguist's aim is not so vocational. He wishes to study these factors in order to understand the reasons for the linguistic handicap. His aim is to model the language behaviour of P, and to predict P's language behaviour, in the light of his other behavioural abilities. The clinical/remedial psycholinguist, qua psycholinguist, will stop his investigation, once he can model P's performance in this way. He will not attempt to do anything about it. That is the business of others, such as speech therapists and remedial language teachers, with their own range of special skills.

There is, then, a clear division in principle between clinical/remedial psycholinguistics and the remedial professions. In practice, the division is sometimes obscured by individual personalities and remedial settings. Many clinicians and teachers have nowadays been trained in psycholinguistic techniques, and use them routinely in their work. This is obviously beneficial, for the more therapy or teaching can be informed by principles deriving from psycholinguistics, the more systematic, economical and effective the intervention is likely to be. Likewise, many psycholinguists these days work routinely in clinics and classrooms, which they see as a testing-ground for their hypotheses about breakdown. But there is no identity between the two roles.

Nor, lastly, is there identity between the roles of speech pathologist/therapist and the more recent profession (in the UK, at least) of remedial language teacher - even though, once again, some individuals exercise both roles by virtue of a dual training. The role of the speech pathologist/therapist is to establish P's control over all the linguistic skills necessary to ensure a happy and successful life in the world at large - which means primarily the skills involved in everyday conversation, as it is this genre which constitutes the vast majority of anyone's linguistic experience. Whatever linguistic world P enters (in the cinema, in church, in school...) he will find himself needing to draw on a "core" of linguistic ability, and it is this core which the speech pathologist/therapist is concerned to provide. The remedial language teacher, by contrast, has to lead a child through the educational curriculum, and must bridge the gap between the child's language abilities and the demands placed upon those abilities by the different subject areas and tasks which constitute that curriculum. Number work, science projects, reading, religious education, and a variety of other topics have to be addressed (the range becomes larger as the child gets older, and he encounters the more institutionalised subjects of the senior school curriculum), each of which has its linguistic identity and poses problems of communication in all modalities - speaking, listening, reading and writing.



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