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Terms, Time and Teeth
(The Elsie Fogerty Lecture, 1981)*

DAVID CRYSTAL
Department of Linguistic Science, University of Reading.

In 1917, Elsie Fogerty opened a speech clinic at the Westminster Hospital. Cole (1967), in her biography of "Fogie", quotes a comment by Dr and Mrs Boome, made of her at the time:

> "Disorders of speech had opened up a new field of research, and the early pioneers, of which Elsie Fogerty was one, had perforce to invent their own terminology; unfortunately these pioneers did not always consult each other, so that the classification and terminology might be described as 'confusion worse confounded'. Elsie Fogerty, however, did much in the clarification of this confusion."(p. 68)

Moving on 60 years or so, in one of the most recent books to appear on the subject of speech therapy (Byers Brown 1981) there is a discussion of the scope of speech therapy, following which we read:

> ". . . there is now a fair degree of consensus among speech therapists as to the conditions requiring treatment. Unfortunately this consensus does not extend to the terms that should be used to depict the conditions. The need for a clear and comprehensive terminology is everywhere expressed but not yet satisfied." (p. 79)

Anxiety over terminology has indeed been part of the history of ideas in all branches of linguistic handicap. It can be seen in the repeated attempts to provide glossaries of terms – some, fairly short lists; others, attempts at full-scale dictionaries. (A relatively early example is Robbins (1951); a recent example of the same genre is Nicolosi, Harryman and Kresheck (1978).) It can be seen, less formally, in the correspondence columns of professional journals and newsletters, where terminological inquiet over everything from clinical entities to the name of the profession – especially the latter – has become a routine space-filler. It can be seen in severe form in training courses to do with linguistic handicap, where students may be presented with a range of conflicting and overlapping terms, not all of which are easily relatable to their ongoing clinical experience (a particular motivation for Byers Brown's discussion). And it can be seen, most disturbingly, in the disunity apparent in case-notes and -conferences between professionals of different disciplines, or of different persuasions within a discipline, when a conflict over terms can symbolize deep-rooted differences of opinion concerning matters of diagnosis or

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treatment. All modalities of communication have been affected: the problem is just as noticeable in hearing as in speech, in relation to both reading and writing (as the long-standing debate over the application of the term *dyslexia* illustrates), and increasingly in relation to the burgeoning industry of alternative communication systems (where, for example, the labelling of such systems as *codes*, *languages*, or whatever, continues to generate much emotion; cf. Crystal and Craig, 1978). The problem of terminology is by no means restricted to the British setting, but has attracted the recent interest of groups in America, Australia and South Africa. Nor is it a problem restricted to English, as a glance at almost any continental conference proceedings within the field of logopaedics or phoniatrics will indicate (e.g. Perello, 1977).

So, we have a problem, which, after several decades of study, does not seem to be resolving. Indeed, the popular impression is that it is getting worse. What, then, can be done?

Let us first put the problem in perspective. The field of linguistic handicap is by no means the first to encounter the terminological devil. The problem of terminology affects all domains of thinking, and all languages. And the point has now been officially recognized, by the setting-up of several international bodies whose prime concern is to keep in touch with terminological developments in different fields and countries, and provide networks for coordination. For example, there is the International Information Centre for Terminology (Infoterm), set up by UNESCO and Austria. The EEC employs several full-time terminologists in its Translation and Terminology Section. Most international subject-oriented bodies (such as the World Health Organization, or the World Metereological Organization) collaborate with the International Organization for Standardization (ISO). And while these organizations are mainly concerned with terminological issues to do with the pure and applied physical sciences, medicine and mental health have also attracted a great deal of attention, and it is here that some concern over the terminology of linguistic handicap has been shown (see Sager and Johnson, 1978; Krommer-Benz, 1977; Tymehuk, 1973; WHO, 1974).

What sort of findings have emerged from the research carried on by these bodies? An important early discovery was that the term "terminology" is itself in need of definition! It has three main senses. Its most obvious sense is "the system of terms belonging to a specialised subject". In this sense, a terminologist would study what terms there are, how they relate to each other, how they are formed, how they are defined, and so on. Note that this definition makes no reference to "concepts", "knowledge structure", or the like. For example, in chemistry there is a pair of terms, *molality* and *molarity*. The latter term has nothing to do with your ability to bite; one dictionary defines it as:

> "the number of moles of solute per litre of solution."

The other term is defined as:

> "the number of moles of solute per litre of solvent."

Now, I cite these definitions because, having done so, I imagine that most readers of this Journal are none the wiser. Yet the definitions will have made a certain amount of sense, being evidently concerned with quantities. Further reference to the dictionary would show that *mole* is here not an insectivorous mammal, nor a secret agent, but a short form referring to the molecular weight of a substance, expressed in grams; *molal* is an adjective derived from this; *solute* is a substance which has been dissolved in a given solution; and so on. After all this, I think it

would be possible to make sense of the definitions – but most readers would be none the wiser. I now know exactly what molarity and molality mean, and could handle them with ease on *Call my Bluff*, but if I was taken into a chemistry laboratory, I would not be able to recognize these processes when they occur, or tell the difference between them, or know how to calculate a mole, or distinguish a solution from a solvent. In short, I have no sense of the knowledge structure which this language represents. But, as a terminologist, I could still study the differences between these definitions, show how *molal* has become *molality*, whereas *mole* has become *molarity*, and so on. I could look the words up in various dictionaries, to see whether they all define them in the same way – or I could ask various chemists or look in various textbooks (which is of course what the dictionary-writers did in the first place). Most important of all, I could check to see whether identical processes of word-formation had taken place between different languages. It would be stupid if *molarity* did not correspond to *molarité* in French; it would be nice if the neat parallelism between *molarity* and *molality* could be found in other languages. There are obviously many such issues which can interest me as a terminologist of chemistry – even though I would make a rotten chemist!

The second sense of *terminology* is quite different in this respect. Here, we are referring to the concepts as well as the terms of a special field. A terminologist, in this sense, asks some rather different questions. He is more concerned with evaluative matters: is such-and-such a term needed? is it an adequate reference to the phenomenon it was devised to describe? is it relevant, in this day and age? is it an important term, representing a concept central to the identity of the subject? and so on. To go back to my example of *molarity* and *molality*: is this an up-to-date distinction? is it universally used amongst chemists? does it represent a particular school of thought or point of view? would one be likely to find the distinction in a first-year school text on the subject – or is it a degree-level notion? Such questions – of whether a subject has too many, too few, or the right kind of terms – are obviously of great importance, but, because they cannot be answered without a genuine understanding of a subject, are very different in kind from my first sense of *terminology*.

The third sense of *terminology* raises a set of more general theoretical or methodological issues. Here, we are concerned with the extent to which universal strategies for handling specialized vocabulary can be established – regardless of language or subject-matter. Is there anything in common between the way in which chemistry, physics, medicine, and so on develop their terminologies? Are their processes common to all languages – for instance, in their use of prefixes, Greek roots, or whatever? Are there universally applicable methods for presenting the information – for example, how to lay out a classified vocabulary, how to make cross-references, how best to use computer storage facilities (a *sine qua non* of terminological research these days). How might one formally evaluate the properties of different terminological systems? Do different systems have different goals? Are there different popular or specialist attitudes to terminology which need to be taken into account?

I think there are certain important guidelines we can draw from this general orientation. Firstly, we are not alone: our terminological responsibility is not a parochial one, but to the larger English-speaking community in the first instance, and then beyond that, to the world as a whole. All of us have terms which are dear to us, either because we grew up with them, or invented them, or remember the personality of those who used them. But terms, and the concepts they represent, transcend their creators – or at least, they should. They must be judged according

to criteria which, as far as possible, should be universally applicable; in other words, as far as linguistic handicap is concerned, applicable to all languages, and objectively demonstrable as relating to specific sets of medical or behavioural factors. It is not difficult to find terms in our field which break both of these criteria.

Secondly, the search for universal terminological status must be recognized as a long-term goal. It is not something which a field can sort out within a few years, or even a generation. The early terminology of many subjects was just as personal, situationally-restricted, anecdotal and tentative as that often encountered in the literature on linguistic handicap. In some cases, it has taken several hundred years to achieve a terminology which is universally intelligible and acceptable. In our field, progress had to wait for the development of appropriately sophisticated techniques of investigation, both medical and behavioural. Some people date the beginning of the scientific era of study of this field as 1861, when Paul-Pierre Broca presented his first findings. Personally, I prefer 1877, when Thomas Eddison invented the phonograph – or possibly 1935, when the modern magnetic tape recorder was devised. But whatever one thinks, we are still dealing with a period best counted in tens of years rather than hundreds. Compare the situation in medicine. Just over 200 years ago, let it be recalled, Newton thought that nerves were filled with aether, and Dr Johnson's definition of *spleen* was "one of the viscera . . . the seat of anger, melancholy, and mirth". With the advent of electronic instrumentation, long-term goals no longer seem as long-term as they used to – but even so, I should be surprised to see a reasonable consolidation of our linguistic terminology until the turn of the century.

Thirdly, a clear distinction needs to be borne in mind between the descriptive phase of terminological enquiry and any prescriptive phase which might follow. What has to be guarded against is premature and uncontrolled prescriptivism. "Prescriptivism", in this context, refers to the concern for terminological standardization – that practitioners should adopt a single set of terms for use throughout their discipline. This is the point made most insistently by speech therapists, in their critique of the current situation. But two factors need to be remembered. First, concerning control: any demand for total standardization is unreal and stultifying: if everything is standardized, how can there be any room for creative interpretation? if everything is standardized, how can the field assimilate discoveries – changes in the knowledge structure which the terminology represents? One must avoid the jig-saw puzzle view of terminological development – that there is a theoretical "sum of knowledge" which will be pieced together, as research findings accumulate, with each new piece having no effect on the identity of the other pieces already in place in the puzzle. The reality is the opposite – more of a rush-hour tube-train view of terminological development – where a new piece of knowledge elbows its way into the existing terminological situation, forcing some terms out, some to give way, permitting a few solid terms to stand, and generally feeling somewhat uncomfortable for a while, until the other terms settle down and accept the situation. A terminological system, in other words, has to be sufficiently flexible to permit the necessary give-and-take as new ideas come and old findings become outdated.

The other factor concerns the prematurity of any move towards standardization. Before one can think of standardizing, one must first be sure what the facts are: how many terms exist, referring to a particular state of affairs; whether their definitions are in fact identical; whether they operate at the same stylistic level; and so on. This information does not conveniently exist in a single place: it has to be researched, in a *descriptive* phase of terminological enquiry. Who uses what terms

when, where, why . . .? Until one can establish the range of terminological vacillation precisely and comprehensively, one's standardization policy remains arbitrary. Unfortunately, in the field of linguistic handicap, too little of this basic descriptive terminological spadework has been done. The history of use of most of the main terms has not been traced in the degree of detail required. The outline history of *dyslalia* given in Byers Brown (1981:86–7) is nice, but it lacks the comprehensive citational support which terminological scholarship requires (from, in this case, both American and British usage). The extent of the problem becomes apparent only when one tries to provide this citational support in a full and representative manner.

I have recently had the opportunity to develop this point of view, in relation to a terminology project initiated on behalf of the Academic Board of the College of Speech Therapists. The aim of the project was to provide some alternative for the College's terminology leaflet, which had been attracting increasing criticism. Given the limitations of time and financial resources, all that could be achieved was a small-scale study designed to establish the nature of the difficulty. The first aim was to be a descriptive study of a selection of terms, to establish the range of terminological variation that existed. The second aim was to be a series of recommendations, which would provide the basis for a local (British) standardization, in respect of these terms. The third aim was to provide a model of presentation, which would enable the terminological data to be put to general use. The project began in 1978, and is currently being written up. During this period, I have had the invaluable assistance of Rita Twiston-Davies, who acted as part-time research assistant.

The first thing to do was to establish a data-base for the project, and this took the form of all the standard textbooks on speech pathology in current use, the main dictionaries, and any journal articles which were known to discuss terminological matters relevant to the terms being studied. In all, about 50 such texts were routinely consulted, representing British, American and European sources, written mainly by speech pathologists, but including a few others (neurologists, linguists, etc.) with a special interest in this field. Topics studied included articulation, apraxia, aphasia, dysarthria, language delay, deviance, and many others – each, of course, subsuming several other terms, as will shortly be illustrated. There was no principle governing the selection of terms. We studied articulation disorders first, because we (wrongly, in the event!) felt that this would be a fairly straightforward area. Other terminological areas were added when they came up naturally in our reading; and we stopped the collection of data when we felt that enough material had been accumulated to enable us to identify the nature of the problem and to make recommendations.

The detailed procedure took the following form. A textbook would be scrutinized for its information about a certain term, and any definition provided would be copied or photocopied on to a card. This sometimes had to be done more than once for a given author: slight differences in definitional form often occur between one end of a book and another, and these differences had to be noted (not to have done so would have been to commit the sin of prescriptive standardization referred to above). For example, Martin has the following to say in an important article on the term *apraxia of speech* (1974:54):

> "Apraxia of speech is a faulty programming of movements and sequences of movements for speech. . . . By definition, it is a disturbance of encoding that is free of impairment of perceptual decoding. . . ."

Later on in the same article, he says:

> "Apraxia of speech denotes an encoding impairment that is essentially free from impairment of perceptual decoding . . ." (p. 58)

Note the addition of the word *essentially*, and the change from encoding *disturbance* to *impairment*. Are these modifications trivial or full of consequence for our view of the disorder? One can imagine the kind of debate which might ensue. But for our purposes, as descriptive lexicographers, we do not have to take sides: *both* definitions must be given cards, in this first stage of the investigation.

Once all the terminological information had been extracted from our corpus, a synthesis of the information was made, to see where the consensus of opinion for a particular usage lay. Each definition would be analysed for its distinctive semantic characteristics, and these would be transferred to a summary chart. For example, the *apraxia of speech* definition above would have provided the following items:

> faulty programming
> movements/sequences of movements
> encoding
> disturbance (defn. 1)/impairment (defn. 2)
> perceptual decoding
> free of impairment (defn. 1)/essentially free (defn. 2)

I shall give a complete illustration of this procedure below, but first I must refer to the main methodological difficulties in trying to make a procedure of this kind work. It sounds as if it is a quite automatic and thoroughly boring procedure. In fact it is neither automatic nor boring. Isolating terms and extracting definitions engages the critical intellect right from the outset.

First, the question of terms. So far, I have assumed something that cannot be assumed at all – that we know when a word is a term. In fact, it is often unclear whether an author intends his use of a word to be taken in a special sense. Sometimes there is "systematic ambiguity", with a word being used apparently technically on one page, and then in its everyday sense on the next. Sometimes, variation is introduced, apparently for stylistic reasons (cf *articulation disorder*, *articulatory disorder*, *disordered articulation*, *disorder of articulation*, etc.), but it is premature to assume that such changes are always stylistic. One of the biggest problems facing the lexicographer of linguistic handicap is what to do with the set of terms that characterize the nature of the impairment – such terms as *disorder*, *defect*, *disturbed*, *deficiency*, *disability*, *handicap*, *inability*, *incorrect*, *error*, *difficulty with*, and so on. There are over 50 such designations. Are they terms at all? Several carry definite implications, some to do with degree of severity, some to do with type of professional background (the sociological nuance for *deprivation*, for instance), and some authors make quite specific distinctions between some of them, e.g. Berry and Eisenson's distinction between a speech *error* and a speech *defect* (1956:36). I suspect that this proliferation of "inadequacy" terms will be very much in the firing line when the revolution comes.

The problem of what counts as a term, however, pales alongside the problem of what counts as a definition. If you think that definitions should be of the classical Aristotelian form, "An X is a Y which has/does Z, W, . . ." then you are not likely to be satisfied with the literature on linguistic handicap. When a term is introduced, what one is usually given is not so much a definition, more a *characterization* of a phenomenon; sometimes one is given no definition at all, the author proceeding to a classification directly; sometimes there is neither definition nor classification, but simply an illustration, which may be systematic or anecdotal. In all cases bar the

first (clear definition), the author's exposition may continue through several sentences – or even pages. Here is an example of what I mean. First, something which is clearly a definition (note, I do not say that I find the definition clear – that is a matter about which a decision will have to be made, but at a later stage of the inquiry). Hall Powers (1936) gives a full definition of *functional articulation disorder*:

> "a functional articulation disorder can be defined as an inability to produce correctly all of the standard speech sounds of the language, an inability for which there is no appreciable structural, physiological, or neurological basis in the speech mechanism or its supporting structures, but which can be accounted for by normal variations in the organism or by environmental or psychological factors."

A good example of a characterization is Morley's (1972 (3rd edn.):274) account of *developmental articulatory apraxia* (I shall add in parenthesis the places in this account which present the lexicographer with serious methodological problems):[1]

> "Developmental articulatory apraxia, or dyspraxia in its less severe form [which sense of *or* is intended here? exclusive or inclusive?], has been described [by whom? Morley? others? Morley agreeing with others? or will she disagree with others?] {as an inability to perform voluntary movements of the muscles involved in articulation although automatic movements of the same muscles are preserved.} [Note also the use of the verb *describe* here – ? equivalent to *defined*.] It may also be described [*may* = permission? general possibility? generalisation?] as a defect of articulation which occurs when the movements of the muscles used for speech, that is of tongue, lips, palate or {cheeks}, [only these muscles? jaw, pharynx, etc. purposely excluded?] appear normal for involuntary and spontaneous [synonyms?] movements, such as smiling or licking the lips, [plainly illustrative, hence excludable] or even for [unclear what definitional status to assign to what follows] the voluntary imitation of movements carried out on request, but {the control and direction [both notions essential?] of articulatory movements} is inadequate for the complex and rapid [both notions essential?] movements for articulation and the reproduction [? sense = spontaneous? imitation? both?] of the sequences of sounds used in speech."

We are given a full picture of the kind of thing involved, in this account, but it is by no means clear to the lexicographer which aspects of the account Morley would see as obligatory, and which as optional features of any definition of the phenomenon. This is a very common problem in using textbooks as data for lexicographical analysis, but the poor student of the subject can often be confused by precisely these indeterminacies, and penalized for them. To illustrate this point, the reader might care to act as an examiner, and mark the following passage taken from a student essay, concerning the term *dysarthria*:

> "This term implies slow, clumsy articulation arising from dysfunction of the muscles used in speech. Such dysfunction is evident on physical examination. It does not necessarily involve any interference with the comprehension and formulation of words, although in some children with developmental aphasia there may be associated dysarthria."

Previous examiners, to whom I have presented this extract, have taken issue with "implies" ("Is it or isn't it?", wrote one in the margin), and many object to the "does not necessarily". No-one gives it very high marks. In fact (as may already have been perceived) the student who wrote this had copied it out, word for word, from Morley (ibid:160)!

Let us now look in more detail at a full lexical account of a term. (There is no

[1]{ } indicates text added since the 2nd edition (p. 237).

space to present the whole description here, but only the main headings; nor will I give bibliographical detail.)[2]

articulation disorder – also known as *disorder of articulation*, *disordered articulation*, *articulatory disorder*, *abnormality of articulation*, *articulatory defect*, *defective articulation*, *defective use of articulation*, *defect of articulation*, *articulation error*, *articulatory error*, *articulation problem*, *articulatory-resonatory disorder*, *articulation syndrome*, *dyslalia*, *misarticulation*, *impaired articulation* . . .

The general characterization of the abnormality makes reference to a wide range of notions, including: *defective*, *disturbed*, *incorrect*, *deviant*, *imprecise*, *confused*, *difficult to correct*, *resistant to therapy*. Many definitions make reference to some notion of community standard, such as: *deviates too far from standard/norm*, *varies too widely from average values*, *nonstandard*, *unacceptable*, *reduced adult system*, *falls significantly below our proper expectations*.

Some definitions make reference to the role of the speaker (e.g. *degree of speaker awareness*, *inaccurate judgement of own sounds*), some to the role of the listener (e.g. *noticeability*, *unintelligible*, *attracts attention and disturbs communication*); some refer to both; some specifically exclude both.

Definitions generally refer to *speech production*, but optionally add reference to *placement*, *timing*, *direction*, *pressure*, *speed*, *integration*, *feedback*, and other such notions.

The quantity of articulations involved merits attention in some definitions. Some make a general observation (e.g. the articulations are *restricted*, *incomplete*, *reduced*, *absent*); some are more specific (e.g. *single sounds, particular groups of sounds, consonants rather than vowels, certain consonants*); some refer to frequency, and some to consistency (e.g. *fairly stable*, *not necessarily consistent*, *are inconsistent*, *inconsistent in imitation task*, *no generalization to all contexts*).

The nature of the linguistic units involved attracts considerable differences of opinion. First, they are said to be *phonetic* units (*speech sounds* is the usual term here). Secondly, they are said to be *phonemes* (e.g. *specific phonemes*, *phonemic system*, *phonemic difficulty*, *phonemic discrimination* – and one author includes *prosody*). Thirdly, they are said to be *distinctive features* (e.g. *perception of contrasting features*, *not necessarily all phonetic features in error*, *little feature generalization*). Fourthly, some definitions give only a general reference to *sound system*, *repertoire*, *patterns*, and the like.

Several definitions involve a reference to the higher-order units affected by the disorder, such as *sound/syllable/word patterns*, *affecting/affected by grammar*, *dependent on syntactic form and prosody*, *part of total pattern of communicative response*.

The descriptive classification is usually made with reference to the notions of *omission*, *substitution* and *distortion* of sounds – though some definitions make reference to *addition* and *transposition*. However, even this is not as straightforward as seems at first sight. Some definitions state omission, without further qualification; some

[2]The full project details, including the textual sources, will be published separately in due course. The definitions below are taken from: Van Riper and Irwin (1959), Emerick and Hatten (1974), Morley and Fox (1969), and Milisen (1966).

refer specifically to consonant omissions; one refers especially to weakly stressed consonants. What counts as an *omission*, technically, is also not entirely clear, in this literature: *omission* does not always mean "leaving something out". To take just one example, the child who says *dog* as [do:] – has he left out the [g], or is the [g] somehow represented by the vowel length? Providing a definition of the notion of *omission* to encompass such problems is by no means easy.

Everything so far has related to the question of behavioural definition. However, about half of the definitions make reference to etiological factors. Some refer to difficulties in *organic production* – anatomical (e.g. reference to *body structure*, *physical disabilities*, *orofacial disabilities*, *structural anomalies*) and neurophysiological (e.g. reference to *motor coordination*, *neuromuscular integration*, *fine neural movements*, *motor deficiencies*). On the other hand, several refer to *organic reception* problems – either general (e.g. *general sensory deprivation*, *sensory deficits*, *sensitivity to auditory stimuli*) or specific (e.g. *reduced auditory acuity*, *auditory discrimination*). Then, quite a number refer primarily to *non-organic* or *functional* factors: developmental (such as *delay*, *slow development*, *retarded*, *atypical development*, *fail to master*, *persist in immature usage*), social (such as *environmental*, *cultural*, *parental maladjustment*, *personal adjustment*) or psychological (such as *mental retardation*, *faulty learning*, *emotional*, *behavioural*, *intelligence*).

We can see how all these factors come together if we take a selection of the (shorter) definitions used in the literature:

> "defective production of a specific phoneme" (van Riper and Irwin, 1958:1)
>
> "substitutions, distortions, omissions and transpositions of the sounds of speech" (College of Speech Therapists leaflet)
>
> "act of producing speech sounds which deviate too far from the standard set by society" (Milisen, 1966:308)
>
> "a nonstandard production of one or more speech sounds" (Emerick and Hatten, 1974:131)
>
> "the production of sounds used in speech deviates sufficiently from the standards expected as to interfere with communication" (Morley and Fox, 1969:151)
>
> and cf the Hall Powers definition quoted above.

I should perhaps stress, at this point, that the term *articulation disorder* is by no means atypical in its lexicographical complexity; there are others which are far worse. But it is a good example of the nature of the problems facing the enquirer into terminology. Indeed, it illustrates perfectly the primary problem – that before one has gone very far into the terminological swamp, the terminological issue pales beside a host of theoretical and empirical questions. The above definitions are often ambiguous, overlapping and sometimes contradictory; they are often inspecific, in the sense that it is not clear whether their *failure* to mention a factor is deliberate policy or fortuitous. Take the following problems, raised by our discussion:

(i) is articulation disorder an organic or non-organic condition? precisely what range of etiological factors are involved? is there any clear correlation with severity of condition?

(ii) is it a phonetic or a phonological disorder? The traditional view is that "sounds" are affected; the more recent view that "sound contrasts" are affected. The issue is confused by the frequent use of the term *phoneme* to mean "speech sound", as opposed to "abstract unit", which is the modern

sense. Some authors distinguish between terms for phonetic and phonological disorders (*articulation problem* and *articulation disorder*, in one case).

(iii) what is the nature of the units within which the distribution of the articulation disability may be defined? (e.g. syllable, word . . .)

(iv) is this a single disorder varying in severity, or are there sub-types? should severity be defined with reference to the extent that the child system differs from adults, or with reference to the number and type of sounds affected?

(v) Should other phonological notions be brought into the definition – such as phonological processes?

While there are several theoretical issues raised here, it seems plain to me that the primary problem is an empirical one. Questions of frequency, consistency and range of units affected in speech – questions of correlation with factors in the medical history. So little is actually known about the facts of the condition that generalization (and hence definition) must be premature. In the whole of our project, I have found very few examples of simple terminological confusion, in fact – that is, with more than one term referring to exactly the same entity. In most cases, when terms change, the entities change too – sometimes subtly, sometimes grossly. And to have one term for a variety of clinical entities is commonplace (e.g. *dyspraxia*, *delay*). In other words, terminological inclarity may exist, but the cause lies not in the terms themselves, but in our uncertain grasp of the clinical symptoms to which they refer. There can be no rational terminology, without an accurate symptomatology.

It is here that the dangers of using clinical tests as part of research procedures are most in evidence. Clinical tests (such as articulation tests) have an essential routine role, and are used to excellent effect everyday. But by their nature they are highly selective, both in terms of the number of articulations included, and their distribution and context of use. They cannot give a complete account of the nature of a disorder – that is not their purpose. Hence to use a test in the empirical investigation of a condition at research level is full of dangers, in that the researcher will see only what the test lets him see. Because articulation tests generally test only consonants, and not vowels, for example, there is a general view that difficulties with vowels do not enter into the condition we have been discussing. I do not share this view, and have records of several patients whose vowel systems are grossly impaired. Indeed, I would go so far as to say that a safer hypothesis would be that there is *usually* something wrong with the vowel system in such patients (vowel length being a source of particular difficulty, with its concomitant effects on stress and rhythm).

One cannot solve the empirical issues by a rigorous programme of testing. The matter is more fundamental, and requires a more comprehensive approach. And it is here that my own main research interests lie – and not in clinical lexicography at all. In looking back over the whole field of linguistic handicap, in so far as I am able, I am struck by one amazing fact: that, to date, there has been no single published account of *all* aspects of a patient's disability, in linguistic terms. There have of course been innumerable fragments, of varying degrees of accuracy. But when we consider all the variables – a complete account of the grammatical constructions used, a complete account of the phonology (including intonation, stress, and other prosodic and paralinguistic features), a complete account of the semantics (from both grammatical and lexical points of view) – it is evident that we have a long way to go before even an approximation to comprehensiveness is achieved, for even a single sample. I do not doubt that there are such approximations hidden in case records up and down the country, and I have seen some good moves in this

direction in the case studies of students. But there is nothing in the scientific literature, which is where it has to be, if genuine progress is to be made. Even more worrying, from the point of view of speech therapy, there is no comparably detailed published *longitudinal* account either – of the spontaneous or therapeutically-managed progress of a patient over time – which is a prerequisite step in the development of our ideas about the efficacy of therapeutic strategies.

The reason for this unhappy state of affairs is not inherent in the stage that language analysis has reached, as a theoretical enterprise. Adequate prosodic analyses of speech have been around for decades, as have grammatical analyses; and while adequate semantic analyses are still some way off, there is a great deal that can be done using simple measures of vocabulary range and type. I can put this another way: all that is needed is a level of descriptive achievement which is at least comparable to that routinely achieved in other branches of applied language work. One might note the descriptive detail obtained in the stylistic analysis of texts, for example (cf Crystal and Davy, 1969); or accounts of linguistic behaviour in foreign language teaching (cf Crystal and Davy, 1975); or the level of thoroughness provided in the child language research (e.g. Wells, 1980). Or again, if I have a student who expresses an interest in Turkish or Punjabi, I will send him over to the library to read a descriptive outline or handbook of the language. I would dearly like to be able to send one of my language pathology students over to the library also, to obtain a *descriptive* account of a dyspraxic patient, or a stammerer, or a voice patient – or anyone.

This is why I began my research programme in the early 1970s, the principles of which appeared in this journal a decade ago (Crystal, 1972). The long-term aim was to provide a set of descriptive accounts of the various clinical syndromes, to enable precise differential diagnoses to be made, accurate assessments, and principled bases for remedial intervention. But it proved impossible to proceed to the empirical task directly. There were no methods available to perform the task. I could not use traditional tests, for the reasons I have already given; and there were no clinical linguistic procedures (or at least, none of sufficient generality – there was Lee (1966), for example, but that was for children only, whereas I wanted something for adults as well; it also dealt only with grammar, whereas I wanted other levels of analysis covered). It was plain we would have to invent our own, and the first of these, LARSP, was duly published in 1976. This was a procedure for grammatical description – an area which we chose to concentrate on first because that seemed at the time to be where guidelines were urgently needed. (Unfortunately, its focus on grammar is badly reflected in the acronym. It was to have been a "*Gra*mmatical Assessment Remediation and Screening Procedure", until we reflected on the potential embarrassment of therapists referring to their patients having been GRARSPed!) We were never exclusively concerned with grammar, however, and once LARSP was published, it was possible to develop the other profiles which I hoped would help to plug the methodological gaps referred to above. There are now in fact three other profiles: a segmental phonological profile, known as PROPH; a non-segmental phonological profile, which focusses on prosody, and is referred to as PROP; and a semantic profile, which is called PRISM. These have been in use in a special assessment clinic at Reading since 1978, undergoing clinical trials. PROP has received preliminary publication (Crystal, 1980a, b), and the theoretical background to these procedures has also been published (Crystal, 1981); but the first full-scale exposition of these approaches, and the charts which identify them, will not appear until 1982 (see references below).

The concept of *profile* is pivotal in all this. A linguistic profile is a principled

description of just those features of a person's (or group's) use of language which will enable him to be identified for a specific purpose. The purpose is to enable an accurate assessment of a patient's disability to be made, sufficient to provide a basis for remedial intervention. The aim is to generate hypotheses concerning the nature of the disability and its remediation, which it is the purpose of subsequent intervention to confirm or disconfirm. There are thus two main goals: (a) to identify the linguistic level P has achieved, in relation to the level he should be achieving; and (b) to suggest a remedial path, which will take him from where he is, to where he ought to be. The main difficulty in all this research – and the main reason why procedures take so long to come out (5 years, on average) – arises out of the opposed demands of routine clinical practice and academic diagnostic research. Therapists and teachers are currently faced with a savage and frustrating conflict of criteria. On the one hand, there is a growing realization of the highly complex and individual patterns characteristic of linguistic handicap, and of the gap between methods of traditional training and the findings of current research. There is a concern to learn as much as possible about the problems facing an individual patient, in order to provide him with the best possible teaching, and to safeguard oneself against charges of professional ineptitude. On the other hand, the demands made on T's time, arising out of heavy caseloads/pupil ratios, lack of secretarial help, and other well-known factors precludes the in-depth study which is ideally required as a solid foundation for remedial work. It was my hope that linguistic profiles would provide a method of bridging the gap between the demands of theory and the exigencies of practice. By reducing the number of descriptive categories on each chart to a certain minimum, and grading them in certain ways, I thought it possible to (a) give therapists a tool capable of being used routinely, once the concepts involved had been mastered; and (b) to give those interested in clinical research a tool which was sufficiently sophisticated to enable properly detailed diagnostic statements to be made. I think I have the balance about right: the criticism by therapists of LARSP on the grounds that it is too complex and time-consuming is just about matched by the criticism of academics that it is too oversimplified and not sufficiently explanatory!

To be sure, what must be appreciated by clinicians is how elementary a descriptive tool a procedure like LARSP is. There is a tendency in some quarters to identify LARSP with "doing linguistics" – an identification which does no justice to either. The same point applies to the other profiles referred to above. They are little more than systematic frameworks which enable one to describe samples of linguistic handicap in a comprehensive and graded way. They are the simplest of tools, which will enable us to do the job which needs to be done – the precise identification of the linguistic symptoms of the various forms of handicap. LARSP, PROP, PROPH and PRISM are not "the research": they are the tools we need in order to get any descriptive research done at all. The *real* research has hardly begun. The real research will take the form of the establishment of linguistic and phonetic syndromes, based on aggregates of phonetic, phonological, grammatical, semantic (and other) criteria. A large number of such syndromes exist within the broad categories of "language delay" or "Broca's aphasia", for example. And when these syndromes come to be demonstrated, they will be given names. Then, and only then, will the older, broader and thus emptier terms (such as "delay") fall into desuetude. It will take a long time, but that is to be expected.

How much time it will take depends largely on how many people involve themselves in this kind of research. I can provide a long-term time estimate, but only if I am given an indication of how much short-term time outlay we can rely upon. For,

who is to do all this research? Should it be clinical linguists? I do not think so, for their training does not usually allow them to have a first-hand experience of all the variables. If the "whole patient" is the focus of the enterprise, then a balance must be struck between the linguistic descriptions which provide the initial symptomatology, and the psychological, social, educational and medical descriptions which accompany them. (There is work to be done under these other headings too – such as more refined analyses of cognitive development – but that is another story.) In my view, the research has to be done by speech therapists – the people whose professional identity, it seems to me, lies precisely in their ability to integrate, interpret, and implement these descriptive findings through patient (in both senses) interaction.

"But we have no time". This is the criticism most commonly levelled at myself and my colleagues, when we ask for questions, after slogging for a couple of days on a LARSP course, or the like. It is the most dispiriting and dangerous of criticisms, because of course it is a non-criticism. It is not the fault of the clinical linguist that his analyses are time-consuming. There is one reason, and only one reason, for the relative complexity and protractedness of such analyses, and that is that phonetic and linguistic handicap is a complex, multi-faceted and variable phenomenon. It is only natural for clinicians with heavy case-loads to demand analytic procedures which are as short and as simple as possible – but the operative words are *as possible*. There are limits beyond which it would be unwise to go, and where a procedure would cease to be illuminating and become unreliable. And all linguistically-based procedures which have so far been devised have, in the absence of empirical research which might indicate the nature of these limits, erred on the side of caution. Readers would not thank me if, following this paper, I presented a quick, ten-minute grammatical analysis, which would enable them to state the obvious and carry their understanding of their patients not a whit further forward. But the corollary follows: if one wants understanding, insight and remedial confidence, time must be spent. Such prizes are not glibly won.

It is certainly true that the various components of a linguistic approach to handicap demand an outlay of time on the clinician's part which is far above that which would be normally provided on the basis of traditional practice. While it is possible to do certain types of analyses on certain types of patient in an hour or so, anything at all complex will regularly require a commitment of a half-day or a whole day. An initial sample has to be transcribed, analysed, written-up; remediation has to be devised, carried out and the results re-analysed; and the cycle may need to begin again. The greatest outlay of time is in fact on the first of these: the transcription. Whether one is doing a phonetic, phonological, orthographic, prosodic or other transcription, or some combination, this is where the bulk of one's time is going to go. If done well, it is neither mechanical or boring. Anyone who has taken the trouble to write down a patient's speech accurately and comprehensively knows how illuminating an exercise it can be. When forced to decide between whether a sound is X or Y, whether a construction is one sentence or two, whether enough contextual information is provided to enable an utterance to be interpreted – such experiences shed fresh light on the inadequacy or instability of a patient's linguistic resources. Nor is it a job which can be left to an unsupervised Other. One must remember that a transcription, once made, is going to be referred to again and again; the same transcription might have to serve as the basis for a prosodic, grammatical, semantic or other analysis. Often, one does not foresee, in making the transcription, what uses it will one day be put to. So one has just got to be able to guarantee its accuracy and comprehensiveness, to the best of one's ability. To

know that, in that 10 minutes, *everything* the patient did, linguistically, is down on paper, provides an empirical datum whose value cannot be underestimated. Transcriptional time is time well-spent. On it, the whole basis of one's analytic edifice stands.

So, in answer to the question, How do we justify such an expenditure of time?, my answer is two-fold. First, there is often no alternative: especially in the more complex cases, the limitations of the traditional approach have left the clinician in a position where it is unclear what might be done, and where the only chance to develop a principled therapy is after an appropriately detailed analysis has been made. Secondly, the question of time has to be seen in the long-term, and weighed against the criteria of success – in most cases, quantifiable and explicable progress; but in the absence of progress, the confidence that comes from *knowing* that no-one else could have done better. A day devoted to linguistic analysis early on in a case may seem trivial by comparison with the overall amount of time devoted to a patient in subsequent months. And how much time might not be saved, by a better distribution of time and resources in the early stages of assessment? There will never be enough time to do everything. "The days needed 36 hours at least" (wrote Elsie Fogerty once, in relation to one period of her life – see Cole, *ibid.*, p. 38). They still do.

The implications of these remarks have yet to be thought through by the remedial professions, and by the bodies which appoint, administrate and pay them. On the one hand, there are several clear statements among the various government reports and professional syllabuses that some kind of clinical linguistic analysis is an essential feature of training and professional practice; on the other hand, no-one has attempted to take the time factor into account in carrying out job-analyses of clinical practice, with reference to the numbers of patients requiring therapy. The recommendations of the Quirk Report, for example, suggested an aim of 3,500 therapists in Britain, to cope with the current needs of the time (7.28); but current need was defined in terms of numbers needing treatment, and not in terms of quality of service. "Case-load", for the Quirk Report, was "the number of patients on the therapist's treatment and observation register at any one time" (7.24). The examples given "assume that the necessary paper work, discussions, administrative duties and so on are fitted in as opportunity arises" (7.25). But in the same report, the whole academic foundation of the subject was in the process of change: "the would-be practitioner of therapy . . . must in future regard language as the central core of his basic discipline (6.60)", and the teaching of linguistics, the science of language, became a formal part of the speech therapy syllabus two years later. But now, having taught new generations of speech therapists (and several of the old) to do some linguistic analyses, the conflict becomes apparent. These analyses are central to the profession, and cannot be lumped together with paperwork, administrative duties, and the like. So how does this affect the notion of case-load? My impression is that, if all speech therapists were by some magic to begin doing appropriate linguistic analyses of their patients tomorrow, the effect would be an immediate halving (at least) of their case-load. To have anticipated the real effects of their recommendation on language analysis, the Quirk Report should have aimed, not for a doubling, but for a quadrupling of speech therapists in subsequent years.

The choice at both individual and administrative levels is clear. If the quality of service to individual patients is to improve, then *either* this has to be at the expense of the quantity of service throughout the community (with some patients not being seen at all, or being seen less often) *or* more therapists have to be employed to

make good the deficiency. What is the point of spending hundreds of hours in training students in sophisticated techniques – techniques which are of undoubted benefit to the patients – that the system will not allow them to use? It is this sense of frustration which is so often voiced these days. Times have changed, with the new training courses. A new generation of therapists has emerged who do not have to be convinced of the desirability or efficacy of clinical linguistic techniques. It is part of their intellectual and professional make-up to think in these terms. But they are then faced with a political, administrative and economic system which has not come to grips with modern research realities. It is always saddening when one hears someone say she has not been able to do what she wanted with a patient, because of pressure of time. And it is always infuriating when people in effect blame clinical linguistics for the situation, by intimating that it is the fault of the procedures that the situation is so dissatisfying.

This is where the "teeth", referred to in the title of this paper, enter the argument. I bare mine. But I was not thinking of my own teeth when I gave this paper its title; I was thinking of speech therapists', in the metaphorical sense. My dictionary gives several interesting collocations – especially *put teeth into* (increase the effectiveness of), *set one's teeth* (to become resolute), *to show one's teeth* (to exhibit anger), amongst others. It seems to me that these are very relevant orthodontic metaphors, which we ought to assimilate before *we* get too long in the tooth. How then may we increase our effectiveness, realistically, given the constraints on time and numbers which exist? I would be sceptical about any solution which simply proposed "more speech therapists". It is not just a matter of numbers, it is a matter of professionalism. So many of the arguments for and against the term *speech therapy*, in recent debates, resolved into the question of whether that term did justice to what the job was actually about. But that is a defensive attitude, born of unconfidence. A real professional does not care a jot how he is called, because he knows that what really counts is the authority and specialized knowledge he possesses, and to which he or his colleagues have helped to contribute. I sometimes wonder if all the time that has been spent on the name of the profession had been turned instead to the writing-up of research reports on our patients, which policy would have been most effective, in the long-term? For, in my view, this is where the weakness lies – in the lack of a research motivation or initiative at grass-roots level in the profession. There is a common reluctance to think beyond the needs of one's individual patients to the needs of the patient population at large. It is a reluctance born of lack of confidence – of the feeling that research is for others, for the experts, for those with special training. But research is not for a cadre of experts. Every new patient, in our present state of knowledge, is a research problem. Everyone has something they can contribute. And for the more advanced work, research training can be obtained, for those who desire it. It is sometimes said that the new degrees will provide the change we need: there is a lot of professional status bound up in a 4-years honours degree, and it is a source of satisfaction to see the respect which the new degrees generate among those outside. But the new generation needs clinical guidance, as well as training in research design – so the older members of the profession continue to have a crucial, collaborative role. It should never be a question of new vs. old: it has to be new alongside old, if the confident professionalism I am referring to is to become established.

In the end, the problem is not one of time, but of the best use of available resources. As one travels around the country, one cannot but be struck by the amount of duplication of effort – in everything from materials to mini-projects. There are so many brilliant ideas being put into practice, – for instance, in the

provision of materials for teaching phonological contrasts, or for implementing LARSP. One therapist must have spent hours devising, cutting out and constructing a kind of cash register device, which, when the keys were pressed, produced SVO picture sequences of different kinds. I saw that device in Hertfordshire. Some months later, I saw a very similar invention in Birmingham. How much time is lost, in aggregate, due to this process of simultaneous creation about the country? Or again, when our terminology project was begun, several people wrote expressing interest. Some had begun their own terminology groups, locally based. They were wanting to systematize the terminology in their vicinity, but they had got into trouble after several meetings. In the light of the above, it is easy to appreciate why – but was their time well-spent? It is not difficult to accumulate such examples, at all levels, local and national.

I am struck, finally, by an analogy between the current state of speech therapy research and the state of pathological medicine at the turn of the century. The history of the pathological laboratory in this country has yet to be written, but it was a long, slow process. Less than 100 years ago, doctors had to carry out their own pathological analysis, in their own back rooms. Reports of the time frequently complain about – pressure of time. In a sense, the present-day speech therapist is in the position of these old doctors – having to do her own pathological analysis of speech samples. I would like to think that there will come a day when much of the mechanical load will be taken off the speech therapist's back by the provision of automatic analytic techniques – techniques of analysis using word-processors, techniques of remediation using interactive instrumentation. But this will not come until the basic research position is more advanced than it is at present. As so often, the hardware is ahead of the software. The machines will lighten our load, when we have first told the machines what to do – and this is where we are not.

So the priority continues to be – specialization, research, writing, at grass-roots level. Could every speech therapist make it her business to write up one patient thoroughly, every so often, using some of the standard descriptive techniques available? Could this effort be coordinated in some way – some kind of data bank, perhaps? Could some of the data be organized for publication in one or other of the series which are searching for good material on linguistic handicap? There are so many possibilities. The purpose of the present paper, however, was not to investigate solutions: it was to draw attention to a problem – an unhealthy excess of zeal for terminological matters, given our present primitive state of knowledge of clinical linguistic symptomatology. I have argued that these priorities must be reversed, and that time must be found for them, if we are to progress. The solution is in our own – teeth.

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Enquiries & Requests for reprints to:
Professor David Crystal PhD,
Dept of Linguistic Science,
University of Reading,
White Knights, Reading, Berks, UK.