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## **Towards a useful theory of language**

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### 1. FUN AT SOAS

I joined the SOAS Department of Phonetics and Linguistics as a 21-year old PhD student in 1961 – one of the most exciting moments in my life. At Cambridge I'd discovered linguistics – the subject I had been longing to study since I was about 12, without knowing that it existed – but only a few courses were available at that time, so I'd had to fill in with literary courses that I didn't really enjoy. But SOAS offered as much linguistics as I wanted, with a year of original research thrown in. Better still, SOAS students were an amazingly exotic bunch compared with the undergraduate population of Cambridge, and then there was London. My year of field work in the Sudan was probably the most adventurous time I've ever had, and certainly the most intellectually exciting – waking up every morning to wonder what new facts about Beja I was going to discover that day. In short, I really loved my three years in SOAS, and it was there that I first tasted the sheer excitement of research.

### 2. TRUTH

I don't think I ever wondered whether my research was useful; and if I had, I think I might have dismissed the question as irrelevant. I was pursuing the truth, and having a very good time doing so. A few students in the department were interested in practical issues; for example, I remember a Nigerian student who started a discussion group on language and politics. But I'm now embarrassed to say that such things really didn't mean anything to me. All I was really interested in was the structure of language, especially grammatical structure. I put up with phonology because I needed to produce a workable orthography for this unwritten language; but I didn't put up with semantics. Not so my informants in the field, who were clever and could see that semantic details were important, but I wasn't interested. Such was linguistics in the 1960s; we just didn't know what to do with meaning. One result was that my research wasn't any use even to me in getting around in Beja society, because although I knew some words and structures, I never really knew what most of them meant.

I'm not even sure whether I thought my research on Beja would be any use to the Beja, and I'm sure the Beja doubted it when they saw how slowly my Beja was progressing; as they used to tell me, 'my tongue limped'. There are plenty of practical problems for Beja. Although there are about a million speakers it gets no official support from the Arabic-speaking government of the Sudan, who only recognise Arabic as the medium of education; and it has no written form, so it's not used in any kind of publication. On the other hand, it is the main distinctive feature of a complex community who resisted the British – you may have heard of

Kipling's 'Fuzzywuzzies' – and are now resisting the Arabs, so the language means a lot to them and at least some of them are keen to start a literacy campaign. So I might have seen my research as potentially helpful in that area; but I didn't. For me, the language was fascinatingly interesting in its own structural right, and that was enough. Pure research for its own sake and for my own personal fun.

During the final year of my PhD I went to two courses of lectures in UCL, which effectively mapped out the intellectual world that I inhabited for the next forty years. One was on Transformational Grammar, the other on Systemic Grammar – and both arranged, to his eternal credit, by Randolph Quirk, in the UCL English Department. Chomsky's theory came to us via David Reibel, who presented it well; but Michael Halliday presented his own theory (Halliday 1961), and bowled me over. I had no idea that a theory of language structure could be so elegant and comprehensive; whereas I have to admit that I struggled for a long time to see the point of Chomsky's rewrite rules (Chomsky 1957, Chomsky 1965). But interestingly, neither of these theories was meant to be useful in any sense. At least as I understood them, they both tried to make sense of the purely formal patterns in language, with 'meaning' as a kind of shadow lurking in the undergrowth that we weren't supposed to notice. Remember that at that time it was fashionable to emphasise the autonomy of language – language was something quite different from anything else, so linguistics wasn't a branch of any other subject. It wasn't until 1965 that Chomsky started to talk much about competence and performance and the language faculty. As far as these two lectures were concerned, understanding the structure of language wasn't meant to be of any use for anything else, not even for improved understanding of how minds or society work. For many linguists, this is exactly how linguistics should be.

### 3. UTILITY

But Michael Halliday's work had another side to it. In 1964, the year he came to London and gave those lectures, a book was published called *The Linguistic Sciences and Language Teaching*, and he was one of the three authors (Halliday and others 1964). The argument of this book was that 'the linguistic sciences' (i.e. linguistics and phonetics) had an important contribution to make in language teaching. He even put this 'useful' view of linguistics into practice in a spectacularly large research project at UCL, 'Linguistics and English Teaching', which employed a team of about a dozen teachers or linguists from 1964 to 1971 (Hudson 2007a). Again, the idea behind the project was that linguistics could be useful, in this case to L1 English teachers. This idea wasn't just Halliday's, but came from within the educational establishment where there had for a long time been a great deal of worry about the quality of English teaching. The Crowther Report in 1959 (Central Advisory Council for Education 1959) concluded:

We are all agreed that ‘mastery of language’ is one of the most important elements of a general education and one where there is little ground for complacency about the effectiveness of present teaching methods ...

and called for ‘a rethinking of the whole basis for linguistics in the schools’. Nobody is quite sure what Crowther meant by ‘linguistics’, but this was probably the trigger for the generous funding for this project from the Nuffield Foundation and then from the Schools Council. Moreover, the rethinking involved wasn’t just on the part of education; Halliday and his team had to think hard about how to bridge the enormous chasm that existed at that time between university research and school teaching.

So there we have the other pole of the contrast I want to make between two different reasons for doing linguistics: the pursuit of Truth and the search for Utility. Halliday’s mega-project is typical of the Utility camp in pursuing utility in the field of education. The choice presented by these options is by no means new. The Ancient Greeks did a lot of grammar, but sometimes it was for the sake of better language education while at other times it was pure philosophy (Robins 1967:13-14). For the Ancient Indians it was philosophy (Kiparsky 1994), whereas the Babylonians (who were doing grammar by about 2,000 BC, i.e. even earlier than the Greeks and Indians) taught verb-paradigms to apprentice scribes who no doubt found them very useful (Gragg 1994).

Of course education is not the only kind of utility that can be served by linguistics. In 2007 SOAS the obvious example is language preservation, with language documentation and education among the methods for achieving the goal. There are many others, ranging from forensic linguistics through pathology to computational linguistics. I believe the problems I describe below apply to all of them.

#### 4. APPLICATION

Does it matter why we do linguistics? After all, a verb paradigm looks pretty much the same whether it’s presented as a little bit of truth or as something useful; and a good descriptive grammar or dictionary can be used for either pure or applied research. I think it does matter, but I don’t think there’s an ultimate conflict between truth and utility because I’m convinced that what’s false can’t be useful and what’s useful must be true. Before I can discuss these issues in relation to linguistics, however, I think it’s important to distinguish two different interfaces between truth and utility. Let me explain this point.

The most familiar interface is the one between the whole of ‘general linguistics’ and its various applications such as language teaching, language preservation, natural-language processing by computer and so on. What language teachers, for example, want is a good description of the target language and the students’ existing language, coupled with a framework of good ideas about how language works to inform their teaching practice and to help it to be coherent,

sensible and generally successful. Let's call this interface 'Applied Linguistics'. In Applied Linguistics, the 'theory' is some selection from the whole of linguistics, which is applied to some practical project.

There is another interface, however, between theoretical models and description. Some of us care deeply about high theory and see descriptions of English, French, Chinese and so on mainly as test-beds for our theories; but I suspect we're in a minority, and for most linguists the descriptions are the main point, with theoretical models as potentially useful tools. I'll call this interface simply 'Descriptive Linguistics'. What a descriptive linguist wants is a framework of categories and (again) ideas that will help make sense, or at least order, out of the mass of descriptive facts that any language yields. To make this interface more comparable with the first, we can call this framework 'the theory' in contrast with 'the project', the description in which it is applied.

At both of these interfaces, the ultimate criterion is usability as judged by the user, the person who applies the theory to the project. In one case, the user is the descriptive linguist in search of an analytical framework, while in the other the user is the language teacher, language preserver, computational linguist or whoever. And ultimately, the user makes the choice in a human way, under the guidance of human emotions. As a SOAS PhD student, I was a typical case: I liked Halliday's theoretical framework, so I chose to apply it to my language. Why did I prefer it to Chomsky's framework? I don't know, but it most certainly had something to do with my personality. I could understand the idea of choices ('systems') and realizations, which helped me to organise my data into paradigms and tables. In contrast I just couldn't see the point of rewrite rules. That's how I was at age 23. I'm different now, but the point is that a theory is no use to anyone unless someone is willing to apply it at one of these interfaces; so ultimately it has to pass the acid test of uptake.

## 5. SIMPLICITY

Let's recapitulate briefly. I've suggested that linguistics (and linguists) can be focused on either Truth or Utility, but I've also suggested that there are two interfaces where this contrast can be applied. In Applied Linguistics, we have the interface between some kind of theoretical Truth and a Utility consisting of a practical real-world project such as language teaching; but in Descriptive Linguistics, the interface involves a theoretical Truth and the Utility of a descriptive project. In both cases, one measure of success for the theory concerned is how much uptake it has among potential appliers. Is it popular? But does popularity have anything to do with truth, and, if there's a tension, how might it be resolved? Could we have a situation where theory X is overwhelmingly popular among descriptive linguists or among practical problem-solvers, but is demonstrably wrong? And if there could be, what could be done about it?

I doubt if any of us really believes that popularity is a measure of truth, but they're quite hard to separate, and especially so in the minds of students. The

problem is complexity. The undergraduate mind can cope with so much complexity, but no more; and the graduate mind isn't that much better. What students would love to hear is that there's a single theory of language, and it's quite simple. Then they could concentrate on applying this simple theory to the complexity of language data or language problems. Noam Chomsky is very good at presenting his current theories in that way, which must explain at least part of popularity of those theories. If you're looking for a really simple idea about how sentences are structured, nothing could be simpler than a phrase-structure tree, and rewrite rules are really simple formal structures for grammatical rules. There's plenty of complexity in the footnotes, but for a beginner this simple system is very appealing, and especially so if it's all presented as innate so that there's no problem of learnability. A famous experiment in New Zealand showed that even non-academic 14-year olds could learn the system well enough to be able to apply it to new sentences (Elley and others 1975, Elley and others 1979). And it's not just a matter of attracting students; a simple system is useful at least in the sense that it can be learned and applied. If the theoretical package comes with the tag 'mainstream', so much the better, as the main stream is where most people swim so there's no need either for a justification or a map if you decide to swim there too.

One particularly important part of this package is modularity, the idea that language is a distinct module with its own rules and structures and very few links to anything else, and that the language module may be decomposed into a number of sub-modules such as phonology and syntax which are similarly autonomous (Chomsky 1986, Fodor 1983). This view follows the twentieth-century tradition of structuralism which stresses the internal organisation of language as 'a system where everything holds together' (Meillet 1903:407), combined with the idea that language is 'sui generis', different from everything else. But it also builds on the intellectual and publishing traditions which distinguish dictionaries from encyclopedias on the one hand, and from grammars on the other. This idea of modularity is very attractive at the applied interfaces because it guarantees that, however complicated language may be, nothing else will add to the complexity. It will be possible to write a grammar without worrying about lexical details, and to write a dictionary without worrying about culture. Intellectual boxes make the task seem more manageable.

## 6. COMPLEXITY

But suppose this theory isn't true. Suppose instead that language is actually irreducibly complex, like society or the brain. Suppose each of us learns the whole of language from experience, and to the extent that there are general patterns, these are generalisations that we induce from thousands of recorded exemplars. And suppose that the mechanisms for learning language, storing it away and then using it for speaking and hearing are all general-purpose cognitive mechanisms that we use for other purposes – the ordinary machinery of attention, memory, planning and so on. Both of these claims are part of 'cognitive linguistics'

(Barlow and Kemmer 2000, Croft and Cruse 2004, Evans and Green 2006). And suppose that language is typically embedded in social interaction (following J. R. Firth in SOAS and Bronislaw Malinowski at the LSE - Firth 1957:181, Malinowski 1935) so that linguistic meaning cannot be treated separately from the ‘encyclopedic’ content of the relevant culture and society. In short, suppose that there is no modularity at all and that, instead, language is just one area – the area dealing with words – of a single gigantic cognitive network. And suppose, finally, that each individual has a different network, so we cannot take any one individual as a true representative of a whole community; and that we cannot allow ourselves to ignore this diversity by concentrating on some arbitrarily selected standard variety (even when there is one – which for endangered languages typically isn’t the case).

The view that I have just invited you to imagine is the one that I believe to be true, and my version of the view is called ‘Word Grammar’ (Hudson 1984, Hudson 1990, Hudson 2007b). Maybe because of the seeds planted in my young and impressionable mind in SOAS, I think Firth had a point. Language isn’t modular, so there are no natural boundaries between language and the rest of knowledge, nor between the various parts of language. Following a somewhat different route, I’ve ended up in the same place as the cognitive linguists such as Adele Goldberg, who puts it very nicely: “Knowledge of language is knowledge” (Goldberg 1995:5). Language is our memory for words and their properties, so like the rest of memory it’s held in a network of nodes linked by connections that carry activation; and it’s the spread of activation among these nodes (and those carrying all sorts of other kinds of knowledge) that explains how we speak and understand one another. And of course, we learn it, like the rest of knowledge, from experience, and since each of us has a unique experience we also have a unique language. According to this view, at least in principle the idea that you and I speak the same language is no more sensible than the idea that we both have the same set of friends. That’s my view of the truth – I’ll add a bit more in a minute to make it more palatable, but if challenged I could defend what I’ve said so far with the usual kinds of research evidence.

## 7. IRRELEVANCE?

But suppose, now, that you’re concerned about an endangered language, and you want to write a grammar or plan an education programme. How does my truth strike you? Pretty discouraging, I should imagine. What I’m telling you is that you can’t isolate language from the rest of human knowledge and behaviour, nor can you generalise from one person to another. If you’re aiming at completeness, all you can do is to describe the total knowledge of one individual, and gradually work through the entire population on that basis.

But of course it’s not quite as bleak as I’m saying. For one thing, your knowledge of language and mine are in fact much more tightly linked than our knowledge of friends. There’s no reason why your friends should have anything to do with mine, but language is different because we learn it from each other and

work incredibly hard at achieving uniformity. Why? Because language is an essential badge of the social groups that we want to be aligned with. (Think elementary sociolinguistics.) So although we learned our language from different experiences, my language is actually very similar to yours, so a description of mine would, in fact, predict yours remarkably accurately - more so, probably, than any other part of our behaviour or knowledge. That's the missing bit of my beliefs that I promised.

Another thing that reduces the problem is that the network is highly structured. It's not just a homogeneous mess, and it includes a great deal of generality as well as all the fine detail. Generalisation is a vital part of cognition because it allows us to predict the future: if you know that the typical cat enjoys being stroked whereas the typical tiger doesn't, that's very useful for planning future behaviour. The same is true in language, but even more so because most utterances are constructed and novel rather than retrieved from memory. So we have general categories such as Word and Syllable, with a rich hierarchy of sub-categories like Verb, Auxiliary verb and the lexeme CAN, each carrying its own rather precise list of properties. Moreover, the same is true for the relationships among the nodes in the network; so for words we distinguish Meaning, Realisation and Dependent, each of which allows sub-classification and generalisation. In other words, what we know about words (and other elements of language) is as complicated, but also as structured and predictable, as what we know about people, plants, food and so on.

## 8. COMPUTERS

Suppose, then, that I could persuade you that this was a reasonable approximation to The Truth about language; but that, as before, you also had some practical project such as describing a language or developing an educational programme. In spite of the caveats I just expressed, you're bound to be daunted by the idea of applying a network analysis to a language. After all, we're all brought up with language descriptions which have two modular parts: a grammar organised in chapters and a dictionary organised alphabetically by lemmas. These works might take a long time to write, but it's fairly clear how you can divide bigger problems into sub-problems until you get something which can be achieved. But how on earth do you describe a language as a network? And how would you use such a description in an education programme (or any other practical project)?

The questions are challenging, but I believe there is an answer: use a computer. Once you accept that a language is a vast cognitive network, the problem of describing it starts to look much more like that of modelling any other complex system (such as the rail network or the internet), and the solution is much the same: a structured database. Indeed, major dictionaries such as the Oxford English Dictionary are already held in this form, but the kind of model that I have in mind would be much more sophisticated. For one thing it would allow far more types of relations, including the very basic 'isa' relation which allows generalisations; and for another, its nodes would be atoms such as words rather

than complex entries such as definitions. Moreover, it would have a user-friendly interface allowing a user to find an entry very easily, view the local area of the total network, and update the entry. The database would accommodate not only words but also the cultural concepts which ‘frame’ word meanings so that eventually the database would include the entire culture (as represented, perhaps, in the mind of a handful of representative members). It would even include the IT equivalent of the motor programs that control speech, as a way of presenting the phonetics (and perhaps even the gestures) of the language.

Unfortunately, this is just a pipe dream. No such software exists (so far as I know). But there’s no reason why it shouldn’t exist, and it’s certainly no more challenging than analysing the genome. The system I’m talking about would be a single very general-purpose model of the human mind which would accommodate language but also much more beside – the whole of knowledge, activation levels, feelings, motor programmes and perceptual structures for at least vision and hearing. The idea is quite ambitious, as you can see, but not much more so than a number of very large-scale AI projects in the United States (Laird and others 1987, Anderson 1996). All it needs is money. Once the system exists, it can be applied to any language or culture (or any other kind of human knowledge including individual beliefs), which will make it much easier to compare languages and cultures than it is at present where descriptions are influenced as much by the theoretical framework as by the facts being described. Better still, the record will not only be permanent (subject to portability in IT terms), but it will be sufficiently flexible to accommodate any information that the researcher feels is relevant but which may not fit comfortably into a conventional grammar or dictionary.

## 9. CONCLUSION

In conclusion, then, I have suggested that the truth about language is that it is much more complicated than mainstream linguistic theory suggests; and although good conventional dictionaries and descriptive grammars give some idea of the scale of the problem, they don’t even start to model the mental structures that are actually needed for language. This is a serious problem for anyone who wants to use linguistic theory in describing a language or in solving a practical problem, because it seems to force a choice between a theory which is usable but wrong and one which is right but useless. At present I think this is indeed how things are, but I can imagine a somewhat distant future in which it will be possible to use computers to reconcile truth and utility.

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