CAN PRAGMATICS FIX PARAMETERS ?

Neil SMITH

Abstract

This paper investigates the role of pragmatic principles in the fixing of syntactic parameters. The question is first clarified by excluding a number of possible unintended interpretations, and an outline of the central claims of relevance theory and of the notion of parametric variation is provided . There follows a brief critique of Hyams's claim that the pragmatic principle of "Avoid pronoun" is causally involved in the fixing of the pro-drop parameter. This leads into a general discussion of how parameters might be fixed, with examples drawn from the "Head-first/Head-last" and "Subject antecedent" parameters, paying particular attention to the role of the principle of relevance in determining the child's choice. The conclusion is a hedged affirmative: pragmatics provides some of the evidence for the analysis which leads to the fixing of the parameters.

1. Introduction

The appropriate response to the question in the title is presumably Joadian: it all depends on what you mean by "pragmatics", by "fix" and by "parameters". A useful answer as opposed to such a temporising response, might also depend on what you mean by "can", and whether it is to be taken as suggesting "does", but for the moment the problem is complex enough without including modality.*

The problem is complex because the simple answers "yes" and "no" both seem obviously right. If the domain of pragmatics includes "the interpretation of utterances in context", the answer has to be "yes", as it seems reasonably clear that the child learning his or her first language must be able, at least partially, to interpret the utterances which constitute the primary linguistic data on the basis of which the grammar is learned. But the (pragmatic) interpretation of an utterance standardly presupposes the grammatical analysis of that utterance, so the answer has to be "no", as it seems reasonably clear that the child cannot use a device which presupposes the grammar to learn that grammar. In one of his recent compilations, Chomsky (1987: 7) says: "These processes of [language acquisition] take place in different ways depending on external events but the basic lines of development are internally determined". This seems to suggest a "no" answer, but - again depending on what precisely constitutes an internal or external event - could conceivably lend itself to the opposite interpretation. Given that parameter settings, by definition, vary from language to language, one might *ipso facto* expect their fixing to depend on external events - e.g. pragmatic factors: i.e. a "yes" answer looks plausible.

To make the question explicit enough to be answerable at all I shall assume the pragmatics to be that of Sperber and Wilson (1986)'s relevance theory, and the parameter fixing (equivalently "setting") to be that of Chomsky's principles and parameters theory (e.g. Chomsky, 1981a, 1981b, 1986; Roeper and Williams, 1987). As a general background I also presuppose the validity of Fodor's language of thought hypothesis (Fodor, 1975).

This combination of choices (i.e. relevance theory, the language of thought, and the principles and paarameters framework) provides a more reasoned basis for the question posed at the outset. For Sperber and Wilson, pragmatics is included within a general theory of cognition; for Chomsky, "the way in which the development of the grammar takes place is ... independent of other kinds of social and even cognitive interactions" (1982: 115), so we would appear to have an explicit "no" answer to our question, a view which I have previously explicitly endorsed (Smith, 1988a: 198). I wish to argue here, however, that that answer is overly simple. Before looking more closely at the details of the theories involved, it is worth spelling out what else these choices exclude.

2. Exclusions

Fodor's by now well-known position on first language acquisiton is encapsulated in the quotation: "learning a language presupposes the ability to use expressions coextensive with each of the elementary predicates of the language being learned" (Fodor, 1975: 80). This leads directly to the conclusion that there must be an innate language of thought, with at least the expressive power of any natural language. Although the detailed implications of Fodor's claim are still a matter of contention, (see, e.g., Carey, 1982, esp. p.357) it is reasonably certain that this thesis renders implausible the position of e.g. Halliday, who champions the view that language is socially determined and claims that "In the very first instance, he [the child] is learning that there is such a thing as language at all" (1975: 10). The only plausible construal of this remark in the current context would be that the child is becoming aware that communication can be effected by using a syntactically structured medium analogous to that he uses to think with. Such a position is compatible with the possibility that, given a few lexical items, the child can initially bypass natural language syntax by exploiting pragmatic processes to set up a representation in the language of thought. As the natural language is gradually mastered, the child would then establish a mapping between the language being learned and the language of thought. (For discussion of Halliday's position, see Smith 1988b; for the position that the language of thought is the natural language acquired, see Smith 1983.)

The relevance of these remarks here is that for many people pragmatics subsumes notions of social interaction and control, which are irrelevant to the acquisition of grammar except in so far as they are concomitants of the normal input of data the child needs as triggering devices. That is, there is no evidence that differences of social environment determine differences of grammatical development.

As Dore (1979: 360) put it: "... while abstract linguistic structures can not be acquired by the child on the basis of his communicative experience, a communicative environment is necessary to provide the child with empirical sources against which to assess his hypotheses about structure". Apart from the questionable assumption that children *test* their nascent hypotheses, this remark seems as valid now as a decade ago. Despite the cogency of Dore's observation, the same volume contains typical examples of a not unusual confusion between the acquisition of grammar and the acquisition of the ability to participate in inter-personal interaction. For instance, Bates and MacWhinney claim that "the child's acquisition of grammar is guided not by abstract categories, but by pragmatic and semantic structures of communication interacting with the performance constraints of the speech channel" (Bates and MacWhinney, 1979: 168). Elsewhere in the same article (p.210) they talk of the child "encoding" aspects of the language in a way which presupposes the existence of the grammar which is putatively being acquired.

There are two further exclusions it is necessary to make. First, a number of writers have suggested that certain rules or principles of the grammar might be usurped by pragmatic considerations. That is, what were previously deemed to be *bona fide* grammatical rules may turn out not to need incorporating into the grammar at all as the phenomena concerned fall out automatically from independently motivated pragmatic considerations. A typical example is provided by Lust (1986) who discusses whether part of binding theory can be reduced to pragmatics. Similarly, Kempson (e.g. 1988 and work in progress) has embarked on a revisionist attempt to construct a grammar in which binding theory, while articulated within the grammar, is implemented outside it, with the appropriate generalisations captured by relevance theory. Clearly, to the extent that such attempts are successful, there will be in these domains simply no parameter to fix. For present purposes I shall assume that in some domains (including binding theory), there are parameters and that therefore the question of whether pragmatics is causally involved in fixing them remains coherent.

Second, there is an extensive literature on the effect of "pragmatic context" on the child's interpretation of sentences to which he is exposed. For instance, Lust (1986: 82ff) discusses the effect on children's judgments of coreference of priming with the name of one of the characters mentioned in the test sentences, and shows that it increases the probability of their opting for coreference when this is configurationally excluded. Again, the conclusion must be that such considerations are irrelevant to the fixing of parameters, as the experimental paradigm concerned presupposes that the relevant part of the grammar has already been at least partly internalised, even though certain aspects of it may be over-ridden. There is no coherent possibility that the "pragmatic context" determines the form of the grammatical rules as opposed to the interpretation of individual sentences construed by reference to those rules.

3. Relevance

With these clarificatory preliminaries out of the way, we can turn to an outline of the main features of the pragmatic and linguistic theories invoked. The following remarks are intended to act as priming devices for the already initiated rather than as tutorial overviews for the neophyte. The latter are referred to Sperber and Wilson (1986) and Chomsky (1986) respectively.

The heart of Sperber and Wilson's theory is the principle of relevance given in (1):

(1) Every act of ostensive communication communicates the presumption of its own optimal relevance (1986: 158)

This somewhat opaque formulation can be taken for present purposes as equivalent to: "Every utterance carries a guarantee of optimal relevance to the hearer", which can be further interpreted as follows. An utterance is *relevant* if, and only if, it has "contextual effects", that is, if it allows the hearer to deduce conclusions that would follow neither from the utterance alone nor from the context alone; it is *optimally* relevant if, and only if, it achieves adequate contextual effects, and puts the hearer to no unjustifiable effort in achieving them. It is consistent with the principle of relevance, on a given interpretation, if, and only if, a rational speaker might have expected it to be optimally relevant to the hearer on that interpretation. All comprehension involves the (unconscious) use of the criterion of consistency with the principle of relevance, as can be most clearly seen in, for instance, processes of reference assignment and disambiguation. Consider the utterance of (2):

(2) He's taken the collection

The grammar tells us that some male person has done something involving a collection, but whether "he" refers to the churchwarden you were just chatting to, or an unknown burglar; whether "take" is synonymous with "solicit" or "steal"; and whether the "collection" is the money solicited or the Meissen absconded with, are pragmatically determined. If you have just entered a ransacked room with someone who then says (2) to you, you will interpret it as a comment on a theft rather than as a quotation from a vicar, simply because that is the only construal that a rational speaker could have thought worth your attention: the only reading that is consistent with the principle of relevance. If you have just asked your pew neighbour where Fred has disappeared to and he responds with (2), you will take it as a comment on a normal part of the church ritual. In neither case is the other interpretation impossible, given additional contextual assumptions, but the complexity of the contextualising legerdemain necessary to arrive at it makes it vanishingly unlikely.

Our ability to exploit contextual information in this way is automatic and unconscious: so much so that we frequently fail to notice indeterminacies or ambiguities in utterances addresssed to us. Even the child still in the process of acquiring his first language

can represent to himself enough of the context to make some understanding possible, (see Smith 1988b, for further discussion), and it is not implausible that the tendency to maximise the relevance of incoming stimuli, and the notion of optimal relevance, are innate. If so, one might well imagine that considerations of relevance could be exploited in the process of language development.

4. Parameters

The principles and parameters framework argues that U(niversal) G(rammar) is characterised by a number of principles which, despite their universality, allow of a certain amount of parametric variation. The simplest example is provided by the "Extended Projection Principle", according to which all sentences in all languages have a subject. Manifestly, however, not all sentences do have overt subjects, and languages can differ with respect to the classes of sentence in which they allow the subject position to be empty. One part of this variation is accommodated by the "pro-drop parameter".

The pro-drop parameter, which is set differently for English and (for example) Italian, accounts for a constellation of differences between the languages, of which the most obvious is the potential absence of one class of subject pronouns in Italian and typologically similar languages, and their obligatory presence in languages such as English. Thus, beside (3), Italian also allows (4), whereas English allows only the former:

(3) Giovanni ha mangiato una mela - Giovanni has eaten an apple

(4) Ha mangiato una mela - *Has eaten an apple

Correlating with this difference is the existence in "pro-drop" languages of so-called "free inversion" of the kind exemplified in (5):

(5) Ha mangiato Giovanni - Giovanni has eaten

and a number of other phenomena, including the presence of expletives such as *it* and *there*. A central task of current work on language acquisition is to determine the precise developmental sequence in the emergence of parametric phenomena and to discover what causes that sequence.

5. Hyams

In recent work on the acquisition of the syntax of pro-drop, Hyams (1986) argues that children assume that English is pro-drop and have to learn that it is not, on the basis of their exposure to particular pieces of evidence. This claim is of particular interest because it is diametrically opposed to the prediction of the "Subset Principle", according to which precisely the reverse sequence of stages is gone through. That is, as a non-pro-drop language constitutes a proper subset of a pro-drop language, and as negative

evidence is, by hypothesis, unavailable, the child acquiring English will start by assuming that it is non-pro-drop. (For discussion, see Wexler and Manzini, 1987.)

The evidence that Hyams claims children use is in part structural, e.g. whether the language being learned contains expletives, and in part pragmatic: specifically, the exploitation of the "Avoid Pronoun Principle" which, in Chomsky's (1981a: 65) formulation is "interpreted as imposing a choice of PRO over an overt pronoun where possible".[1]

The Avoid Pronoun Principle acounts for a choice of (6) rather than (7) (taken from Chomsky, *ibid.*) where *his* is to be construed as coreferential with *John*:

(6) John would much prefer going to the movie
(7) John would much prefer his going to the movie

According to Chomsky (1981a: 227) this principle is one of those which "interact with grammar but do not strictly speaking constitute part of a distinct language faculty, or at least, are specific realisations in the language faculty of much more general principles ... ". Hyams herself describes it as a "universal pragmatic principle" (1986: 96), and it follows logically from the principle of relevance with its requirement that processing costs be minimised with respect to any intended effect. That is, (7) is more complex than (6) in virtue of the presence of *his*. The presence of this item has to be interpreted as conveying relevant information not recoverable from the empty category in (6); specifically that its antecedent is not the obvious, linguistically present one, *John*, but some other person. Similarly, any overt linguistic entity must be interpreted as contributing to the interpretation of the utterance containing it, and if no such contributory function is discernible, then the item concerned should be avoided.

If Hyams is right in claiming both that the "Avoid Pronoun Principle" is pragmatic and that it is causally implicated in the fixing of the pro-drop parameter, then the question we started with has been answered in the affirmative. Given that the "Avoid Pronoun Principle" follows from the principle of relevance, the first clause seems to be uncontroversially true; what is still problematic is its causal implication in the fixing of the pro-drop parameter. Let us examine this claim a little more closely. Hyams argues that by hypothesis the child "operates under the Avoid Pronoun Principle, and hence, expects that subject pronouns will be avoided except where required for contrast, emphasis, etc. In English contrastive or emphatic elements are generally stressed. Once the child learns this, any subject pronoun which is unstressed might be construed as infelicitous ... the child could then deduce that if the referential pronoun is not needed for pragmatic reasons, it must be necessary for grammatical reasons; i.e. a null pronominal is impossible, and hence, AG $\neq$ PRO" (1986: 94), that is, English is not pro-drop.

As pointed out in Smith (1988: 245ff), there are several problems with this argument. First, there is some experimental evidence, summarised in Solan (1983), to the effect that children

older than those discussed by Hyams have not mastered the role of contrastive stress. As Solan puts it: "it's easier at first to talk loudly than it is to learn syntax" (1983, 182), so it is at best dubious to suggest that children can use their knowledge of contrastive stress as a basis for learning other parts of the system. Second, the assumption that pro-drop languages do not have expletives is suspect. Welsh is (probably) a pro-drop language but normally manifests expletives in sentences like that in (8):

(8) cy ydy e
dog is it - It's a dog

so the structural evidence the child can use is less clear-cut than Hyams's argument requires. Third, while "general", it is not the case that stress is a *necessary* concomitant of subject pronouns (in pro-drop or non-pro-drop languages), so the evidence available to the child is of minimal salience.

Because of such considerations and in particular because of the need for pragmatic principles of interpretation to have an antecedently cognised syntactic structure to work on, I concluded previously that "it is in principle impossible for a pragmatic principle to be ... implicated [in the fixing of parameters]" (Smith, 1988a: 197).

6. Fixing

This position in turn, however, is not unproblematic. In particular it is not self-evident that the mode of operation of pragmatic principles, whereby they operate over linguistically decoded strings of the grammar, carries over unchanged from the synchronic analysis of adult speech to the ontogenetic development of the knowledge the child ends up with. That is, in order for the child to convert some linguistic input into a representation in his language of thought, it may not be necessary for him to have a (completely) syntactically analysed string for his pragmatic principles to work on.

Let us see a little more closely how a parameter becomes fixed, working on the assumption put forth in Chomsky (1987: 61) that "the initial state of the language faculty can be regarded as ... a deterministic input-output system that takes presented data as its input and produces a cognitive system as its output". Consider how the child might fix the Head-first/Head-last parameter on the basis (in part) of exposure to an utterance like that in (9):

(9) Fred ate beans

It is assumed that the child knows the meanings of the individual words and that he perceives some relation between these words and the actions associated with them on particular occasions. By hypothesis, moreover, UG will provide him with categories like V and N, and X-bar theory will give him the category VP. Accordingly, *ate* will be identified as a V, *beans* as its internal argument, and *ate beans* will be automatically analysed as a VP. As V is the head of VP

it follows that the parameter will be set to head-first. That is, given the data and innately specified knowledge about UG, in particular X-bar theory, the analysis is indeed deterministic.

Provided one accepts that the child's perception of the situation described above allows him to identify *beans* rather than *Fred* as the internal argument of *ate*, it is not difficult to see how this particular parameter can be fixed deterministically in the absence of further pragmatic considerations. Is it possible to provide an equally deterministic account of the fixing of other parameters in the same autonomous fashion? Take as an example the subject antecedent parameter, according to which a proper antecedent for an anaphor is either; (a) a *subject* NP, or, (b) *any* NP. In English, the setting for the parameter is (b); in most other languages it is (a); so (10) is ambiguous in English, with *himself* able to refer to *John* or *Bill*; whereas its congener in Hindi or Swedish is univocal, with only *John* as a possible antecedent.

(10) John told Bill about himself

In adult conversation, as presumably in the case if a child, (10) would typically be disambiguated by means of the criterion of consistency with the principle of relevance, giving a mental representation in which either *John* or *Bill* is identified as the person spoken about. It does not follow, however, that the child has used a syntactic analysis in which that interpretation is represented. That is, for the child, *himself* may be identified merely as a referring expression, and the referent may be determined independently of the syntax, and before the syntactic system attains its adult steady state.[2]

Despite the possibility of arriving at a correct interpretation without crucial resort to the syntax, it obviously remains the case that the parameter does get fixed. Moreover, this can happen only after a (syntactic) analysis has been tried out, and has been seen to provide a successful mapping from the natural language to the language of thought. Further, the fixing of the parameter may not be established on the basis of a single successful interpretation (where the natural language syntax might be by-passed): to fix the parameter, that by-pass must be phased out: i.e. the possible neglect of syntax must be superseded by a stage where, after suitable feedback, it is indeed causally involved in providing more tightly constrained possibilities for pragmatic interpretation. Alternatively, there may perhaps be no "by-pass" stage, with its attendant difficulty of requiring a (presumably maturational) specification of when syntax does make an appearance; rather, one might assume that processes of pragmatic interpretation must initially operate on the basis of the configurations provided by Universal Grammar, with default settings for the parameters being gradually replaced by those of the language being learned.

The interplay of syntactic and pragmatic principles enabling the child to construct representations in the language of thought not only accounts for the germ of truth in the claim that (ostensive) communication is prerequisite to language acquisition, but also gives

a partial explanation for the perhaps surprising absence of the "Evil Neighbour Syndrome":[9] the situation where some malicious being sneaks up to the infant and whispers in its ear the misleading (9'):

(9') Fred beans ate

thereby mis-setting the Head-first/Head-last parameter with dire results for the nascent system. Unless the Evil Neighbour correlates his or her interventions consistently with perceived regularities in the child's environment, they are unlikely to optimise relevance for the infant. Accordingly, the possibility of such mis-setting is essentially eliminated by the principle of relevance. If the neighbour is consistently malign, of course, the child will grow up bilingual, with his or her linguistic systems differing precisely in the setting of the relevant parameter.

7. Conclusion

Where does this leave us with our initial question? On the one hand, it is clear that pragmatic factors are not directly causally involved in the fixing of parameters in the way that principles of Universal Grammar such as X-bar theory are, so Chomsky's claim that the development of grammar is independent of cognitive considerations is partially vindicated. On the other hand, Hyams's contention that pragmatic principles play a role is *indirectly* correct, in that it seems necessary to assume that:

> **pragmatics (in the form of the principle of relevance) contributes to providing the data which constitute the evidence for the analysis which, once arrived at, deterministically sets the parameter.**

8. Notes

* This article is to appear in essentially the same form in a book edited by Iggy Roca, to whom I am grateful for inviting me to present its predecessor at the University if Essex, and for coercing me into resuscitating it subsequently. I am likewise grateful to those who contributed to the discussion and forced me to revise my ideas (some of which appeared in Smith, 1988a). I am particularly indebted to Michael Brody, Robyn Carston, Annabel Cormack and Deirdre Wilson, who have all plied me with constructive suggestions and saved me from innumerable solecisms and stupidities. I alone am to blame for remaining errors and infelicities in the paper. Iggy is to blame for its appearing at all. (Joad, incidentally, was a well-known British philosopher who was noted for prefacing his reply to any and every question with the words "It all depends what you mean by ... ")

1. Note that to be able to "avoid a pronoun" presupposes the grammatical knowledge of what a "pronoun" is, though in the present case it might be sufficient to exploit the difference between the presence and absence of phonological content, which would be constrained by considerations of processing effort. See Fodor, Bever and Garrett (1974); Gleitman et al. (1988), for discussion of this problem. For the notion of triggering implicit here, see Davies (in prep.).

2. That the syntactic and pragmatic systems may be dissociated in this way is evident from cases such as that of "John" (see Blank et al. (1978)) or "Clive" (see Smith (1989)).

3. I am grateful to Jonathan Kaye for this delightful locution.

9. References

Bates, E. & MacWhinney, B. (1979) "A functionalist approach to the acquisition of grammar". In Ochs, E. & Schieffelin, B. (eds) Developmental Pragmatics, pp. 167-211. New York: Academic Press.

Blank, M., Gessner, M. & Esposito, A. (1978) "Language without communication: a case study". Journal of Child Language 6: 329-352.

Carey, S. (1982) "Semantic development: The state of the art". In Wanner, E. & Gleitman, L. (eds) Language Acquisition: The State of the Art, pp. 347-389. Cambridge: CUP.

Chomsky, N. (1981a) Lectures on Government and Binding. Dordrecht: Foris.

Chomsky, N. (1981b) "Principles and parameters in syntactic theory". In Hornstein, N. & Lightfoot, D. (eds) Explanation in Linguistics, pp. 32-75. London: Longman.

Chomsky, N. (1982) The Generative Enterprise: A discussion with Riny Huybregts and Henk van Riemsdijk. Dordrecht: Foris.

Chomsky, N. (1986) Knowledge of Language: Its nature, origin and use. New York: Praeger.

Chomsky, N. (1987) Language in a Psycholinguistic Setting. Special issue of Sophia Linguistica: Working Papers in Linguistics 22. Tokyo: Sophia University.

Davies, M. (in prep.) "Learning, growth and triggering in language acquisition". MS. Birkbeck College.

Dore, J. (1979) "Conversational acts and the acquisition of language". In Ochs, E. & Schieffelin, B. (eds) Developmental Pragmatics, pp. 339-361. New York: Academic Press.

Fodor, J. (1975) The Language of Thought. New York: Crowell.

Fodor, J., Bever, T. & Garrett, M. (1974) The Psychology of Language. New York: McGraw-Hill.

Gleitman, L, Gleitman, H., Landau, B. & Wanner, E. (1988) "Where learning begins: initial representations for language learning". In Newmeyer, F. (ed) Linguistics: The Cambridge Survey Vol 3, pp. 150-193. Cambridge: CUP.

Halliday, M.A.K. (1975) Learning How to Mean. London: Edward Arnold.

Hyams, N. (1986) Language Acquisition and the Theory of Parameters. Dordrecht: Reidel.

Kempson, R. (1988) "Grammar and conversational principles". In Newmeyer, F. (ed) Linguistics: The Cambridge Survey Vol 2, pp. 139-163.

Lust, B. (ed) (1986) Studies in the Acquisition of Anaphora: Vol 1 Defining the Constraints. Dordrecht: Reidel.

Roeper, T. & Williams, E. (eds) (1987) Parameter Setting. Dordrecht: Foris.

Smith, A. (1988) "Language acquisition: Learnability, maturation, and the fixing of parameters". Cognitive Neuropsychology 5: 235-265.

Smith, N.V. (1983) Speculative Linguistics. An inaugural lecture delivered at University College London. Published by the College.

Smith, N.V. (1988a) "Principles, parameters and pragmatics". Journal of Linguistics 24: 189-201.

Smith, N.V. (1988b) "First language acquisition and relevance theory". Polyglot Vol 9, fiche 2: pp. 1-29. (Papers from the 1986 Cumberland Lodge Conference).

Smith, N.V. (1989) The Twitter Machine. Oxford: Blackwell.

Solan, L. (1983) Pronominal Reference: Child Language and the Theory of Grammar. Dordrecht: Reidel.

Sperber, D. & Wilson, D. (1986) Relevance: Communication and Cognition. Oxford: Blackwell.

Wexler, K. & Manzini, R. (1987) "Parameters and learnability in Binding Theory". In Roeper, T. & Williams, E. (eds) Parameter Setting, pp. 41-76. Dordrecht: Reidel.