level) who serve as gatekeepers may be motivated to participate in a literacy "revolution." However, some books do have an impact on societies. I would like to see what happens if this book is widely read.

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*How to set parameters: Arguments from language change*. David Lightfoot. Cambridge, MA: MIT Press, Bradford Books, 1991. Pp. 225.

The principles-and-parameters approach to language learning was introduced in Chomsky (1981). This view develops the thesis that the problem of language acquisition can be reduced to the problem of setting the correct values on some small set of parameters. The set of possible combinations of these parameter settings is seen as enumerating the possible types of human languages. The idea that the complex facts of language acquisition (Slobin, 1985) might be reduced to a few core facts is obviously quite attractive, and there has been a veritable avalanche of work elaborating the parameter-setting approach to language learning.

The literature on parameter-setting is fairly difficult to assimilate. Most of the treatments currently available focus on some specific narrow proposal for a particular parameter, seldom surveying the general approach. This is fine for the linguist who is immersed in this tradition, but workers in allied areas need a more direct presentation. In particular, a person seeking to evaluate this approach needs to know: (a) what parameters are being proposed, and (b) how these parameters are set during language learning. In searching for an answer to the first question, I have found much disagreement about the actual parameters being proposed. Although there is repeated mention of parameters involving such factors as branching direction, verb position, and subject deletion, the actual default settings for these parameters, the potential interactions between the parameters, and the ways in which parameters determine language structure are generally only treated in a piecemeal fashion. No single book or article has yet presented anything close to a unified account of the candidate parameters.

Lightfoot promises a direct answer to the second question of how parameters are set. The basic claim is that parameter-setting requires a triggering experience, and that only nonembedded, simple structures can serve as triggers. Moreover, morphology plays a crucial role in providing this robust simple evidence. Lightfoot's book builds on two earlier published works – his monograph (Lightfoot, 1979) on diachronic linguistics and his *Brain and Behavioral Sciences* article (Lightfoot, 1989) on degree-0 learnability. The new book mixes linguistic analysis, diachronic data, and arguments regarding language learning. Because the core argument focuses on the facts of language learning, and because the diachronic facts are already fairly well known, I will devote most of my attention to those issues that involve language learning.



Lightfoot begins with an application of the notion of degree-0 learnability to facts from French and Dutch. He argues that the setting of the Subjacency parameter in French and a parameter having to do with Comp Percolation in Dutch can be achieved by paying attention to information in main clauses, and that the child does not need to process cues found in embedded clauses. If it is true that children can set these and other parameters on the basis of simple, nonembedded data, much of the machinery introduced by Wexler and Culicover (1980) and others can be eliminated.

Lightfoot realizes that attempts to demonstrate the application of degree-0 learnability for all parameters in all languages might embroil him in an interminable debate over structural facts and possible triggers. The successful application of degree-0 learnability would support the theory, but it could never really prove it. For a supposedly stronger form of proof, Lightfoot turns to diachronic data. The idea is that changes in language structure have to accommodate to the fact that young children are degree-0 learners. Alternatively, the argument is that certain patterns of change that affect embedded material could mislead the child, and that the actual course observed in language change only makes sense if the learner is focusing exclusively on main clauses.

Lightfoot uses a comparison between German and the development of English to develop his analysis. He relies on analyses by Clahsen and Smolka (1986) to support the view that German children use main clause triggers, such as particles and verb specifiers, to set the value of the verb-movement parameter. These triggers are supposed to lead the child to set object–verb order as the underlying order despite the fact that verbs often appear in pre-object position in main clauses.

Turning to the issue of the development of Middle English from Old English, Lightfoot argues that Old English children also had a set of triggers for setting object–verb order, but that none of these were as reliable as the triggers in main clauses in modern German and Dutch. However (and this is the crucial point), Old English did have reliable object–verb cues in embedded clauses. The fact that Old English lost object–verb order, whereas Dutch and German did not, can therefore be attributed to the obedience that children show to degree-0 learnability. If Old English children had attended to data outside the main clause, they would have picked up the solid cues to underlying object–verb order and English would have failed to change its basic word order.

The resetting of the verb-order parameter then led to further consequences for case-marking in embedded clauses. Lightfoot uses some of the details of the changes in the use of infinitival subjects in Middle English and parallel current changes in Brazilian Portuguese to argue for his definition of degree-0 learnability in terms of binding domains rather than clauses.

A second mechanisms for linguistic change envisioned by Lightfoot involves the loss of the ability of certain structures to serve as triggers for grammatical properties. The loss of main verb morphology on modals and

the decline of accusative subjects such as "me thinketh" serve as examples. As these forms lost morphological support from the system, they became obsolescent and eventually disappeared.

Lightfoot's book will be useful to linguists who have committed themselves to working within the framework of current generative linguistic theory. Such readers will find this book logically consistent and well reasoned. However, researchers who are not able to uniformly accept the complete set of assumption of generative theory are likely to encounter serious problems with Lightfoot's arguments. A major barrier is Lightfoot's stated contempt for empirical data on language learning. He declares, "Since the triggering experience is a subset of the total linguistic experience, the research program followed here will gain little from costly experiments in which tape recorders are strapped to the backs of children for long periods, recording what kinds of expression are uttered around them." Fortunately, child language researchers both inside and outside the G-B school understand the shortsightedness of this approach and have been busy conducting analyses of the large corpora in the CHILDES database (MacWhinney, 1991), which were collected using the very tape recorders that Lightfoot finds so superfluous. Indeed, the CHILDES database includes the data from Clahsen upon which Lightfoot crucially relies and which were collected in just this tedious and careful way. Neither data nor theory are sufficient in themselves. Jordens (1990) argued that Clahsen's analyses fail to support a strong setting of the object–verb order. Clearly, this debate shows how important it will be to collect ever better data sets in many different languages. Our data on Old English cannot be significantly improved, but our observations of child language learning can be continually refined.

A second major problem with the analysis is the placement of all responsibility for language change on the shoulders of the 3-year-old. Work by Labov (1972) and others has indicated that older children and teenagers can play a major role in language shift. Moreover, many of the crucial triggering structures required by Lightfoot's and similar parameter-setting accounts are seldom used, or even encountered, before age 5. Even if we are willing to accept the idea that 3-year-olds are unable to process triggers in embedded clauses, are we willing to claim this for older children?

This question brings us to the central failure in Lightfoot's analysis. Despite its title, Lightfoot's book never tells us how to set parameters. It says that the learner does not need to pay attention to cues in embedded clauses, but it never tells the learner how to handle all the potentially useful, and often conflicting (MacWhinney, 1988), cues found in the main clause. Should these cues be given a weighted analysis, as in Pinker (1987), or are they processed in terms of some precedence order? Can a setting be reversed, and what data are needed to do that? In retrospect, Lightfoot's failure to address this core issue is not too surprising. After all, how can we decide how to set parameters when we still do not know what the parameters of human language actually are.



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