

THE PSYCHOLOGICAL REALITY OF PHONOLOGICAL DESCRIPTIONS

Summary of Moderator's Introduction

Victoria A. Fromkin, University of California, Los Angeles,
California 90024, USA

A phonological description of a language will be a 'true' description to the extent that it is 'psychologically real'. A theory of phonology will be a 'true' theory to the extent that it permits the construction of psychologically real grammars. These assumptions are required of an empirically based phonological theory. What we seek then is evidence that will help decide whether a particular description is 'psychologically real'. There are no a priori principles which can be depended on. We do not know in advance whether, for example, the human mind can or does relate two levels of phonological representation--phonemic and phonetic--by ordered rules, nor do we know the extent to which the immature child's brain can draw highly abstract generalizations from a limited set of input stimuli. In fact, we have not progressed too far since 1887 when Fournie observed that "Speech is the only window through which the physiologist can view the cerebral life". Psychologists, neurologists, and linguists depend, to a great extent, on linguistic facts to determine the capabilities of the human mind. We have not found any direct ways, as yet, to observe what is "'in people's heads' (and) since we cannot look into people's heads directly we can only hypothesize what goes on there on the basis of indirect evidence" (Chafe, 1970). Even when we do look into people's heads directly, we cannot find in the physical brain matter, in the 10^8 neurons, or even in the neural organization of the cortex, the information we seek regarding the nature of the internalized grammars, the information which will tell us whether our theory, or which theory, of phonology is psychologically real or 'true'.

This symposium is concerned with the kinds of evidence which will help decide this question. While we all seem to agree on our aims (at least to the extent that we seek 'psychological real grammars') we are not necessarily in agreement as to what counts as evidence, how to weigh different kinds of evidence, or even what is meant by 'psychological reality'.

Cutler suggests a division between the proponents of a

'strong sense' as opposed to a 'weak sense' of psychological reality. The first group considers levels (e.g. phonemic representations) and processes (e.g. P-rules) to be psychologically real if a processing model includes stages isomorphic to levels and mental operations corresponding to the processes or rules. Linell also refers to this division. Cutler's paper presents speech error data to show that lexical stress and word formation rules are psychologically real in the weak sense, but not in the 'operational' or 'strong' sense. Linell also suggests that "rules must not be equated with behavioral processes... (since) conventional phonological rules state nothing but regular correspondences between idealized representations of the same or related pronunciations." In the fuller version of my paper I will discuss some evidence from speech errors which suggests that at least some rules and some levels are real in the strong sense of the term, but that this should not be a criterion for a theory of phonology.

Derwing's paper seems to support the 'strong' view. For example, he questions "what psychological sense can possibly be made... of a notion of 'rule ordering' which has no relation to real time" and further proposes that "if grammars relate in any way to psychological events or states (my emph.) then we need to interpret grammars psychologically." Grammars can, however, 'relate' to events or states without being identical or even isomorphic to them. And one can conceive of ordered relations, hierarchical for example, in a non-behavioral way and on a non-real-time basis. The alphabet may be represented in memory ordered from A to Z even for a brain damaged patient who cannot retrieve the letters in that order in real time. Cognitive psychologists concerned with lexical storage are providing evidence for intricately ordered classification systems based on ordered basic and primary levels of categorization in the levels of abstraction in a taxonomy (Rosch, 1978). Derwing also discusses aspects of the question which relate to the philosophy of science (as do Linell and Skousen), some points of which I will further discuss. But it is clear that whether a theory or a grammar is psychologically real must depend on empirical evidence rather than one's philosophical biases.

Bondarko's paper is neutral as to some of the controversies discussed in the other papers, positing three psychologically

real levels of phonology--production and perception of speech sounds, the phonemic level, and the level of word formation rules--as evidenced by perception experiments.

Campbell, Dressler, Gussman, and Skousen, are concerned with the importance of internal versus external evidence in the testing of linguistic hypotheses and the evaluation of theories. Internal evidence refers to facts drawn from the overall grammar, significant generalizations, simplicity factors, distributional criteria, morphemic alternations etc. External evidence refers to acquisition data, language disturbance, borrowing, orthography, speech and spelling errors, metrics, casual speech, language games, historical change, perception and production experiments etc. (Cf. Zwicky, 1975). Campbell and Skousen, and to a certain extent, Dressler, place major emphasis on external evidence. Campbell is very convincing in his demonstration of how language games in Finnish and Kekchi, for example, strongly support the reality of a vowel harmony rule and a vowel-epenthesis rule, respectively. He provides similar evidence in support of morpheme structure conditions as opposed to syllable structure rules. Skousen uses similar arguments. But Dressler shows that external evidence can be contradictory and Gussman provides some detailed illustrations supporting this. Interestingly, where Skousen posits external evidence from tongue slips to show the correctness of analyzing the affricates in English as non-sequential units, /č/ and /ǰ/, Gussman provides other external evidence, i.e. low level phonetic rules, which argue for the sequential analysis. Gussman points to the Fromkin (1971) data cited by Skousen to illustrate this contradiction. He also ties in the question of 'abstractness' with 'psychological reality' and correctly, I believe, shows that the question should not be how abstract is an analysis, but is it right or wrong. An important question to be discussed in the symposium, then, is what to do when different kinds of evidence are contradictory. It is also important for us to clarify how both internal and external evidence are to be used. If we find in Kekchi, for example, that an experiment on loan words supports morpheme structure conditions is this to be used only for the grammar of Kekchi or as evidence for the meta-theory of phonology? If speech error data argue for a rather abstract representation in some language, is this evidence that one can provide such abstract

representations in all languages? In other words, are we looking for evidence as to constraints on a general theory of phonology or for evidence concerning a grammar of a particular language?

Given the extent to which individual grammars may vary across speakers of one language, should we not seek constraints on the general theory which will permit us to construct the optimal, 'psychologically real' grammar for a language? The papers already cited reveal the problems we face. Data alone, and multiple-kinds of evidence alone will not provide all the answers. We need universal principles and a theoretical framework which in a principled fashion will help us constrain phonological descriptions to psychologically real ones. Skousen presents such a principle-- a principle of maximizing acoustic differences. Hale's paper is primarily concerned with just such questions and posits a 'principle of recoverability', with supporting evidence from Papago and Maori. What we need is more principles, supported by clear empirical evidence. For we can probably all agree that "However difficult it may be to find relevant evidence for or against a proposed theory, there can be no doubt whatsoever about the empirical nature of the problem" (Chomsky and Halle, 1968).

References

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