

THE QUEST FOR PSYCHOLOGICAL REALITY: EXTERNAL EVIDENCE IN PHONOLOGY

Lyle Campbell, State University of New York at Albany, Albany, New York, U.S.A.

The principal goal of linguistic description is to account for a language in a way which reflects the competence of its speakers. This goal of achieving psychologically real descriptions (grammars) is reasonable. However, generative phonologists too frequently assumed that child language learners were somehow constrained to acquire the simplest possible grammar, and because the notation was designed to convert true generalizations into considerations of length, the simplest grammar the linguist could write was taken to be the psychologically real grammar. For this reason, arguments based on formal simplicity alone were considered sufficient to resolve many issues, e.g. abstractness, rule ordering, etc. However, formal simplicity (internal evidence) is not sufficient. Questions about psychological reality and the learnability of rules cannot be answered through considerations of surface patterns, distribution of allomorphs, combinatory properties of phonological elements within a linguistic system, and the like. The real question is, how can the linguist be certain that the rules he postulates to account for phonological patterns he perceives in his data correspond to the rules that speakers of the language establish? There are at present no successful formal criteria for determining from a given set of data what the speaker's rules may be.

A serious search for answers to this question must involve "external evidence", evidence not confined to surface-pattern regularities, but evidence which shows speakers behaving linguistically in ways where they must call upon their knowledge of the rules and underlying forms of their language in overt and revealing ways. The goal of this paper is to argue that external evidence should be given a stronger role in phonological investigation and to illustrate its potential.

Sources of external evidence that have been used with some success are: Metrics and verse (Kiparsky 1968, 1972; Zeps 1963, 1973), word games (Sherzer 1970; Campbell 1974, 1977) borrowing (Campbell 1974, 1976), experiments (Ohala 1974), speech errors

(Fromkin 1971, 1973), construction of orthographies, language change, etc. Here I will attempt to show the relevance of external evidence for validating aspects of individual grammars and for refining linguistic theory.

External evidence can demonstrate the psychological reality of certain rules. I will consider two examples, both involving word games (secret languages). The first is vowel harmony in Finnish. Since Finnish vowel harmony has many exceptions and complications, some have suspected that it may not be a psychologically real rule of Finnish grammar. In *kontti kieli* (or *kontin kieli*) "knapsack language", one of several Finnish word-game secret languages, the first consonant(s) and vowel of a word are replaced by ko (of kontti), and the material for which ko is substituted is placed before ntti (of kontti). Thus veitsi "knife" becomes koitsi ventti, susi "wolf" is kosi suntti. In this language game, vowel harmony adjusts the remaining vowels of the word to agree with ko (the harmonic series are back a, o, u, front ä [æ], ö [ø], y [ü], and neutral i, e):

pysähtyköön "let him stop" becomes kosähtukoon pyntti  
 kylpylössä "in the baths" becomes kopuloissa kyntti  
 hänkö "him?" becomes konko häntti

If vowel harmony were not a psychologically real rule of Finnish, speakers would not be able to adjust the vowels productively to agree with the back vowel when ko is substituted. (For full arguments, see Campbell 1977, in press.)

The second case is from Kekchi (a Mayan language of Guatemala). In *Jerigonza*, the Kekchi word game, one places p after each vowel followed by a copy of that vowel; for example q'eqi<sup>v</sup>, the name of the language, is q'epeqipi<sup>v</sup> in *jerigonza*. This game shows several Kekchi rules to be psychologically real, for example the rule of vowel-epenthesis before voiced labials ( $\emptyset \rightarrow V_1/V_1C \{b^m\}$ ) (examples: kwiq'ib'a:nk /wiq'-b'ank/ "to break it", k'oxob'a:nk /k'ox-b'ank/ "to seat something"). In normal speech, these forms never occur without the epenthetic vowel, but one may speak *jerigonza* optionally leaving out the epenthetic vowel: kwipiq'b'apa:nk or kwipiq'ipib'apa:nk, and k'opoxb'apa:nk or k'opoxopob'apa:nk. The rule of vowel epenthesis must be psychologically real; speakers must know the rule because they take it

into account in producing jerigonza forms -- they never leave out the wrong vowel, only the vowel which results from the rule of epenthesis.

These word games provide evidence for the reality of several other rules in these two languages, as well. Here, the external evidence helps resolve issues concerning the correct description of the individual grammars. External evidence has important implications for theoretical issues, also. I will present just one example, also from Kekchi.

Bilingual informants in Spanish and Kekchi were presented a list of loan words, some from Spanish into Kekchi and some from Kekchi into Spanish, and asked to judge whether the forms were borrowed, and if so, which they thought was the original language. Judgements were based on several parameters (cultural, semantic, and phonological). These parameters were determined by asking the informants why they thought particular loans to be Spanish or Kekchi in origin. Reasons volunteered by these informants involved, among other things, native views of morpheme structure in the two languages. For example, informants said pio:c̣ "pickaxe" (from Spanish piocha) and vilte:p "small chile" (from Spanish chiltepe), and similar forms, were from Spanish because Kekchi does not have those kinds of sounds together (vowel clusters in the first case, consonant clusters in the other). In actual fact, Kekchi does have vowel-vowel and consonant-consonant clusters, but only across morpheme boundaries (e.g. ke-ok' "get cold", ke- "cold" plus a verbal suffix), but never within a morpheme. This shows that these morpheme structure conditions of Kekchi are psychologically real, since speakers actively called upon them in making judgements about the origin of lexical items. To be sure, this evidence helps validate aspects of Kekchi grammar, namely its morpheme structure conditions. (For details, see Campbell 1974, 1976).

Perhaps more importantly, however, this external evidence shows that morpheme structure conditions are real, and cannot be accounted for merely by syllable structure rules as proposed by "Natural Generative Phonologists" (Hooper 1975). Thus external evidence provides the means for testing theoretical claims. External evidence has been shown to have important implications for several issues in linguistic theory, e.g. the controversy over

extrinsic ordering of rules, abstractness, morpheme structure conditions, etc. (See Campbell 1974, 1976, 1977; Kiparsky 1974.)

To conclude, psychological reality can be investigated empirically but it takes more than ransacking a body of data for the internal patterns and processes a linguist might find. It requires that evidence outside these internal patterns be sought which shows speakers using the rules of their language productively. As more and more cases of external evidence are considered, important issues in phonological theory may be resolved, and the answers to important questions found, questions such as: how different from the surface may underlying forms be and still be learned by speakers?; how many forms must illustrate a rule before speakers learn the rule rather than the variant forms piecemeal?; how do exceptions, non-productivity, non-phonetic conditioning factors, "opacity", and the like affect the learnability of rules?, etc. To answer these and related questions, we need sufficient external evidence, and until we answer them, phonological theory will be found wanting.

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