

INHERENT STRUCTURE OF SEGMENTS: EVIDENCE FROM NATURAL EXPERIMENTS

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It has been assumed that a theory which includes only a set of distinctive features cannot adequately characterize the inherent structure of segments, since certain feature conjunctions are more likely than others. Several proposals have included a hierarchization of features as a partial solution to this problem. We describe a general experimental paradigm which permits us to bring ontogenetic evidence to bear on the issue of inherent structure. Application of the method to a specific case indicates that ontogeny may provide unequivocal evidence for feature ordering.

Quechua has three obstruent series: /p/, /t/, /k/, /ç/, /q/; /p^h/, /t^h/, /k^h/, /ç^h/, /q^h/; /p^ʔ/, /t^ʔ/, /k^ʔ/, /ç^ʔ/, /q^ʔ/. This symmetrical system constitutes a natural experiment in which we can isolate the features for aspiration and glottalization, while holding constant all other feature values. We recorded 250 hours of dialogue between 10 monolingual children (aged 1;4 to 5;1) and interlocutors in an Andean village. Three-hour samples were collected at monthly intervals for periods up to 22 months. For each subject we made five tests of the hypothesis that aspiration developed before glottalization by examining /p^h/ vis-a-vis /p^ʔ/, /t^h/ and /t^ʔ/, etc..

We found that for all pairs the development of C^ʔ implied the development of C^h, and that C^h implied C. Additional experimental and naturalistic data collected from a larger sample of subjects five years after the initial study revealed no counterevidence. Moreover, when we look at less conservative dialects of Quechua we find that development predicts the change which has occurred in those dialects with respect to the laryngeal subsystem.

The Quechua result is especially interesting because the frequency of glottalized obstruents in texts and mature dialogue is significantly greater than the frequency of aspirated obstruents. When we examined the frequency of these ten obstruents in the speech which mature interlocutors addressed to the subjects, we found a frequency reversal at critical junctures in development.

Our results suggest the possibility that the feature ordering we found in Quechua may be universal to the species. The examination of evidence from additional natural experiments may be expected to corroborate or reveal additional inherent structure.