

# Proceedings of the Iowa Academy of Science

---

Volume 37 | Annual Issue

Article 95

---

1930

## A Sound Wave Analysis of Tlingit Speech

Ray E. Miller

Copyright ©1930 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

---

### Recommended Citation

Miller, Ray E. (1930) "A Sound Wave Analysis of Tlingit Speech," *Proceedings of the Iowa Academy of Science*, 37(1), 351-355.

Available at: <https://scholarworks.uni.edu/pias/vol37/iss1/95>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

A SOUND-WAVE ANALYSIS OF TLINGIT SPEECH<sup>1</sup>

RAY E. MILLER

The sound waves from a phonograph record of a Tlingit Indian's speech were photographed on the Metfessel strob-photograph.<sup>2</sup> The curves on the strob-photograph film were traced onto a reduced musical-scale chart by means of an especially designed transcribing machine.<sup>3</sup> The analysis, which was limited to the frequency of vibration and duration of the sounds, was made under two main headings: (1) intervals, and (2) intonations.

The problem of *intervals* was limited in this study to a *pitch-level* analysis which should answer the question, "Does the speaker follow any sort of scale structure in his speech?" A "level" was arbitrarily defined as *any sound of not more than .05 seconds in duration which includes not more than .2 of a tone variation.*

All of the curves not included under intervals were classed as intonations.<sup>4</sup> These intonations were first classified as to *form*, i.e., rising, falling, circumflex, inverted circumflex, and balanced circumflex. A second classification was made with respect to the *use* of intonations, e.g., whether they were used to attack a level, release it, or were used independently of any level (free intonations). A third classification was made with reference to the *extent* or range of frequency vibration used. A study of the extent of intonation should answer the question, "Does the speaker prefer to use quarter-, half-, whole-tones, or even several tones in his intonational range?"

The conclusions of this study were summarized as follows: The speech sounds occurred on pitch-levels which followed a scale structure approximating the even tempered scale. These sounds ranged in frequency of vibration from B, 122.07 d.v. to C, 258.65 d.v. There was a marked tendency to use some form of circumflex speech. Falling intonations were generally used for "releases" and "free" intonations, while rising intonations were out-

<sup>1</sup> A complete text of this study is published in the International Journal of American Linguistics, Vol. VI, No. 1, Mar., 1930.

<sup>2</sup> Metfessel, Milton, The Strob-photograph: A Device for Measuring Pitch, Jr. of Gen. Psychol., Vol. II, No. 1, Jan., 1929, pp. 135-138.

<sup>3</sup> Miller, Ray E., A Strob-photographic Analysis of a Tlingit Indian's Speech, Thesis, Univ. of Iowa, 1929.

<sup>4</sup> Jones, D., An Outline of English Phonetics, G. E. Stechert and Co., New York, 1922.

standing in the "attacks." This Tlingit voice showed a marked preference for intonations ranging in extent from a quarter- to a half-step on the musical scale. This uniformity existed regardless of *direction* (rising or falling); regardless of *use* (attack, release, or free); and regardless of the *form* (circumflex, inverted circumflex, etc.) in which the intonations occurred.

These conclusions regarding Tlingit<sup>5</sup> (primitive) speech were compared with the conclusions of Merry<sup>6</sup> who worked with highly trained speakers.

---

## JUDGING CHILDREN'S LITERATURE

IVY C. HUSBAND

This study is the outgrowth of the work being done by the Institute of Character Research at the State University under Professor Edwin D. Starbuck. The Institute is publishing a series of guides to literature: lists of books which have a definite character value in and of themselves. These books are ranked, graded, and assigned "situations" indicating the type of situation and attitude toward it which will probably impress the reader.

The first problem attacked deals with the reliability of the grade placement of the books which have been judged. All placements were made on the basis of three or more critics' judgments and given a "best" or "preferred" grade as well as a range of grades. An empirical check up on books read by all the critics, all combinations of three readers against all other combinations gave a reliability coefficient of .97 with a P. E. est of less than half a grade. The range, which always includes at least one grade below and above the "preferred" grade will include practically all misplacements. However, the internal consistency of judgment as shown by the critics does not prove that the grade suggested is actually the correct grade. Perhaps they are all placing books too high or too low. This factor was checked up through the use of graded lists put out by various city school systems, libraries, and state departments.

Twenty odd lists were used. The average grade placement of half the lists vs. that of the other half gave a reliability coefficient of .927 for these lists. The Guide placements correlated with the

<sup>5</sup> See Boas, Franz, Grammatical Notes on the Language of the Tlingit Indians, University of Pennsylvania, The University Museum, Anthropological Publications, Vol. VIII, No. 1.

<sup>6</sup> Merry, G. N., Voice Inflection in Speech, Ph.D. thesis, Univ. of Iowa, 1921.