A BIBLIOGRAPHY OF X-RAY STUDIES OF SPEECH

SARAH N. DART

UCLA Phonetics Laboratory, Dept. of Linguistics, Los Angeles, CA 90024-1543 U.S.A.

ABSTRACT

This paper reports the compilation of a bibliography of all studies of speech which include some x-ray data. The bibliography has been entered into a data base program for implementation on the Apple Macintosh computer and is currently being used by the UCLA Phonetics Lab Group.

Over the years, we at the UCLA Phonetics Laboratory have been compiling a bibliography of speech studies which contain some x-ray data. This has primarily been to gather a large data base of x-ray tracings and photographs for use in our research. During the past two years we have expanded this bibliography tremendously and entered it into the Microsoft File database program for implementation on the Apple Macintosh computer. This enables us to search entries with certain specific characteristics, such as language, author, or a certain segment of interest.

As a point of departure we took the existing bibliographies of Macmillan and Keleman (1952) [1] and Simon (1961 [2] and 1967 [3]) and reviewed each entry that we could locate, putting it into our database format. In addition, we have searched and reviewed many more sources not listed in those previous bibliographies and are still adding to the collection. Presently our bibliography consists of over 335 entries from 270 different sources (sources involving more than one language are listed in separate entries for each to facilitate searching).

FORMAT

We have organized each entry in our data base into ten "fields" according to the format shown below. These fields are: 1) author 2) year of publication 3) bibliographical reference 4) language involved 5) type of x-rays (i.e., still or cine-x-ray and if the latter, the frame speed) 6) segments covered (in the IPAPlus phonetic font developed at UCLA) 7) number of speakers filmed 8) location in our laboratory of the full publication 9) other data provided in addition to x-rays 10) a short abstract giving more specific information as to the type of data provided and the usefulness thereof, but not intended to be a summary of the author's claims or intent.

Figure 1. Blank format for each entry in the database.

A sample entry is given below to clarify the format.

Charbonneau, R.   1970
Le phonème /ɛ̃/ en français canadien. In B. Hala,
M. Romportl and P. Janota (eds.), Proceedings of
the Sixth International Congress of Phonetic
Sciences (Prague 1967), pp.253-264. Prague:
Academia.

French (Cdn.)   36 fps
ɛ̃,p,t,k,f,s   2
                                                         X
spectrograms

Describes in detail the realization of [ɛ̃] in
Canadian French. Two speakers were filmed at 36
frames/sec saying phrases consisting of 4
syllables, the last one containing [ɛ̃]. 33
composite tracings are given, showing successive
frames of the syllables [pɛ̃, kɛ̃, fɛ̃, sɛ̃, pɛ̃:t, tɛ̃:t].
Spectrograms are also given of the same phrases
and of the corresponding oral vowels.

Figure 2. Sample database entry.

APPLICATIONS

Each of these "fields" can be searched
independently. Thus, for example, one can search for all
entries from a particular language, or all those containing
palatograms as well as x-rays, or those involving a
particular segment. We have found this to be a useful
tool in our research for easily locating articulatory data to
compare segments or languages and check hypotheses.
As an example, one of the laboratory members, Dr.
Patricia Keating, was able to quickly perform a
comparison of the differences between fronted velar
consonants and true palatals by comparing x-rays from

several different languages brought together for her by
the x-ray bibliography database. Without this easy
location of the relevant sources and the immediate
knowledge of whether there even existed an appropriate
body of data to examine this question, this study would
have been tedious and time-consuming to the point of
perhaps precluding the investigation altogether. With the
exception of the location field, which refers only to our
laboratory here at UCLA, this bibliography can also be
useful to other phoneticians, either as a simple printout
for reference or as a computer database program. We
have no doubt that many participants at this congress
know of sources of x-ray data that we are not aware of as
yet. We look forward to widening our database from the
contributions and suggestions of the other participants.

REFERENCES

[1] Macmillan, A.S. and G. Keleman (1952) "Radiography
of the supraglottal speech organs: a survey". A.M.A.
Archives of Otolaryngology 55:671-688.

[2] Simon, P. (1961) "Films radiologiques des
articulations et les aspects génétiques des sons du
langage". Orbis 10:47-68.

[3] Simon, P. (1967) Les consonnes françaises:
mouvements et positions articulatoires à la lumière de la
radiocinématographie. Bibliothèque Française et
Romane, Série A, No. 14. Paris: Klincksieck.