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Historiography of Phonetics: the State of the Art

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1. Introductory observations

If we are to believe Panconcelli-Calzia (1941), the history of phonetics goes back three millennia, and probably as far back as the study of language in general. However, while the history of linguistics has in recent decades become a widely practised field of scholarly endeavour, with a specialist journal and several associated monograph series available since 1973, nothing comparable has occurred with regard to the history of phonetics. There is no indication that a concerted effort is under way to remedy the situation and to establish the history of phonetics as an integral part of the study of phonetics as has been done with regard to the history of linguistics for well over fifteen years. The present paper offers a critical survey of previous scholarship in the historiography of phonetics and presents a few ideas that may strengthen the interest in the historiography of (linguistic) phonetics and encourage someone to undertake a major, comprehensive work in this field.

It appears that the strong emphasis on phonetics as an empirical science and the tendency of its practitioners to emulate adjacent fields such as experimental physics and physiology has led to the situation that Kuhn complained about some twenty years ago — that his courses in the History of Science were frequented by historians, not scientists, and that it appeared to him that “science destroys its past” (Kuhn 1969, 1971). Perhaps the impression prevails among students of phonetics today that their field progresses cumulatively and in a linear fashion, and that there is no reason to bother with earlier theories, findings, or techniques of discovery, as they are thought to have been supplanted by new discoveries and technologies.

Historians of linguistics have almost exclusively concerned themselves with the presentation of the development of the study of language in terms of grammatical theories and linguistic philosophy. They have tended to disregard by and large that branch of language study that could most directly be compared with the natural sciences and thus support those in whose opinion linguistics should be recognised as a science, namely, phonetics. The neglect of this aspect of linguistics by the historians of the discipline appears all the more surprising if we note that human curiosity about the phenomena of speech production has a tradition as long as the Indian grammarians’ analysis of Sanskrit (Allen 1953, Al-George 1966, Gupta 1972) and the Ancients’ reflections upon language, its meaning and use (Robins 1957). Prehistorical and archaeological evidence (e.g., from stone carvings) suggests a very early interest in the physiological explanation of the human voice going back at least three millennia (Panconcelli-Calzia 1961). The fact that the term ‘phonetics’ appears to have been first proposed by the Danish scholar Georg Zoega only in 1797 (Zwirner 1966: 18) should not be taken to suggest that the science of sound did not begin much earlier; we would otherwise have to draw a similar conclusion from the fact that ‘linguistics’ is an early 19th-century coinage.

It is still more surprising to see a scholar writing a historical overview of the ‘biological basis of language’ (Marx 1967) expressly leaving aside phonetic studies. One may only

- ROHLFING, H. (1984). *Die Werke James Elphinstons (1721-1809) als Quellen der englischen Lautgeschichte: Eine Analyse orthoepistischer Daten.* (= *Anglistische Forschungen* 172.) Heidelberg: Carl Winter.
- SARA, S.I, S.J. (1990). Phonetics and Phonology, 1949-1989. In Dinneen, F.P. & Koerner, E.F.K. (editors), *North American Contributions to the History of Linguistics*, 211-229. Amsterdam & Philadelphia: John Benjamins.
- SEELMAN, E. (1895 [1892]). Phonetik. *Kritischer Jahresbericht über die Fortschritte der romanischen Philologie* 1, 1-24.
- STEVENS, C.J. (1956). John Pickering's 'Uniform Orthography'. *Quarterly Journal of Speech* 42, 139-143.
- SUBBIONDO, J.L. (1978). William Holder's *Elements of Speech*: A study of applied English phonetics and speech therapy. *Lingua* 46, 169-184.
- SWOBODA, W. (1891). Zur Geschichte der Phonetik. *Phonetische Studien* 4, 1-36; 147-182.
- TECHMER, F. (1890). *Beiträge zur Geschichte der französischen und englischen Phonetik und Phonographie*. Ulm: Kerler.
- TRUBETZKOY, N.S. (1933). La phonologie actuelle. *Journal de Psychologie normale et pathologique* 30, 227-246.
- VÉRTES, O.A. (1963). Phonetisches in den Hochschulvorlesungen des Albertus Magnus. *Phonetica* 10, 80-91.
- VIÉTOR, W. (editor). (1886). *Christoph Friedrich Hellwag: Dissertatio inauguralis physica-medica de formatione loquela*. Heilbronn: Gebrüder Henninger.
- VIÉTOR, W. (1888-1890). Aus C.F. Hellwag's Nachlaß. *Phonetische Studien* 1, 257-261; 3, 43-55.
- VIÉTOR, W. (editor). (1916). *Franciscus Mercurius van Helmont: Kurtzer Entwurf der Eigentlichen Natur-Alphabets der Heiligen Sprache.* (= Supplement to *Vox Internationales Zentralblatt für experimentelle Phonetik* 26.) Berlin: Fischer's Medicinische Buchhandlung; Hamburg: Friederichsen & Co.
- VIÉTOR, W. (editor). (1917-1918). *Johann Conrad Amman: Dissertatio de loquela (1700), mit der deutschen Übersetzung von Georg Venzky (1747).* (= Supplement to *Vox Internationales Zentralblatt für experimentelle Phonetik* 27/28 = *Phonetische Bibliothek* 2.) Berlin: Fischer's Medicinische Buchhandlung; Hamburg: Friederichsen & Co.
- WÄNGLER, H.-H. (1959). 50 Jahre Phonetisches Laboratorium in Hamburg. *Orbis* 8, 529-539.
- WILDGEN, W. (1973). F. M. van Helmont (1614-1699): His contribution to phonetics. *Language Sciences* 24, 7-10.
- ZWIRNER, E. (1936). Bemerkungen zur Geschichte der Phonetik. In Zwirner, E. & K. *Grundfragen der Phonometrie*, 6-59. Berlin: Metten.
- ZWIRNER, E. (1966). Bemerkungen zur Geschichte der Phonetik. In Zwirner, E. & K. *Grundfragen der Phonometrie*, 17-110. Basel: S. Karger.
- ZWIRNER, E. (1967). Giulio Panconcelli-Calzia. *Phonetica* 16, 111-115.
- ZWIRNER, E. (1970). Observations on the history of phonometrics. In Zwirner, E. & K. *Principles of Phonometrics* translated by Herman Bluhme, 8-81, 157-170 (notes), 175-189 (bibliography). University, AL: University of Alabama Press.

Pulmonic ingressive phones do not occur in Tsou

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A recent paper in the *Journal* (Fuller 1990) claimed that Tsou, an Austronesian language spoken in Taiwan, has a set of pulmonic ingressive phones. This is incorrect. Fuller based his conclusions on the speech of a single informant from the village of Punguu, who was visiting Pittsburgh, Pennsylvania at the time of his study. Fuller suggested that the reason these phones had not been reported before was because Punguu is relatively isolated, and its dialect was not investigated by the linguists who previously described Tsou (Ogawa & Asai 1935, Tung 1964, Starosta 1974, Tsuchida 1976, Ho 1976, Li 1979). We have visited Punguu, and recorded the speech of 8 men and 6 women. Unfortunately we were unable to record Fuller's informant, who was not in the village at the time, but our speakers included both his mother and his father. We recorded all the words that Fuller mentioned except for one, /hʔisi/ 'ashes', which our speakers did not know. We also recorded a set of about 300 words, designed to illustrate the principal phonetic aspects of the language. A full account of the phonetics of Tsou is in preparation; meanwhile we thought it appropriate to report that none of our speakers had any ingressive phones, pulmonic or otherwise.

In order to check the direction of the airstream, we conducted two simple tests, using apparatus which is readily available to any phonetician. In the first experiment we asked those of our speakers who smoked (which most of the men did) to inhale the smoke from a cigarette, and then say one of the words in question, such as /ʔue/ 'sweet potato' or /ʔisi/ 'hair'. A puff of smoke was readily observable during the production of [ʔ]. This outflow of smoky air was not visible for a brief instant during the last part of the glottal stop, but then resumed for the remainder of the word. In every case we observed outgoing smoke during the fricative. (In accordance with UCLA guidelines on the use of human subjects we did not ask any of our speakers who did not smoke to perform this experiment. Many of our male speakers were in any case smoking throughout our interviews with them.) We obtained valid observations of 8 male speakers in this way. All of them always had egressive bilabial or labiodental fricatives. In most cases these were ejective (glottalic egressive) fricatives in which smoke was visible until near the end of the glottal stop; occasionally we thought we could observe a pulmonic egressive fricative followed by a slightly longer glottal stop. We did not have any instrumental techniques available (such as recording the oral and the subglottal pressure simultaneously) which would allow us to distinguish between ejective [ʔ] and the pulmonic sequence [ʔ]. Our imitations using either possibility seemed acceptable. All our smoking speakers produced pulmonic egressive sounds for the allophone of /h/ which Miller noted in words such as /hmuju/ 'blood'.

For the second experiment we asked subjects to put a thin tube (such as a drinking straw) between their lips while saying one of the words with a labiodental fricative. The

other end of the straw was placed just below the surface of a dark liquid (such as coffee or Coca-Cola). If there were a positive air pressure during the production of the [f], there would be if there were an egressive airstream, then the liquid in the tube would be pushed down and bubbles would appear. This technique was not always successful, as the speakers often did not have a sufficient closure around the tube, or sufficient pressure (positive or negative) behind the lips, to cause any movement of the liquid in the tube. But whenever there was a movement it was always downward, so that bubbles appeared. Both the non-smoking parents of Miller's informant were strong bubble producers. In no case did we see the liquid being drawn up into the tube, as occurs in the production of a phone with an ingressive airstream mechanism. Tsou has (at least for some speakers) a voiced implosive allophone of /b/ in initial position. When this sound was produced, liquid was drawn into the tube.

We are currently undertaking a full acoustic analysis of all our Tsou material. Our preliminary results for the sounds in question indicate that our informants did not produce these words with the same timing as Fuller's informant, who had intervals of 260 ms and 385 ms between the end of the initial fricative and the beginning of the following vowel in the two spectrograms published. For our speakers there was usually no measurable interval between the end of the fricative and the onset of the vowel. From a phonological point of view /fʔ/ is clearly a sequence of sounds (and can be heard to be so in intervocalic positions); but when word initial the sequence usually becomes integrated into an ejective in which there is friction throughout much of the period during which there is a glottal stop, which is then released directly into the vowel. Occasionally there was a glottal stop without friction present, but it was always less than 50 ms.

The waveform and wideband spectrogram of the Tsou word /fʔisi/ 'hair' is illustrated in Figure 1. The total duration of the fricative plus the glottal stop is a little over 100 ms, which is much shorter than the duration of the intervocalic /s/. (It is not clear whether this intervocalic consonant should be regarded as a geminate.) The fricative has its greatest intensity near the middle of the initial period, and there is some low frequency friction energy towards the end.

Through the courtesy of Professor Sarah Thomason, we have seen a video tape of Fuller's informant, which makes it quite plain that he produced a number of words with pulmonic ingressive fricatives. But he is clearly exceptional among the Tsou. He did not acquire ingressive sounds from the speech of those around him. He appears to be a comparatively young man, and at the time of his work with Fuller he had been in the United States for over three years. He is unlikely to have been speaking Tsou during that time, and may no longer be a fluent speaker of Tsou. On the video tape it looks as if he had difficulty in producing words such as /fʔue/ 'sweet potato'. In his efforts to recall their pronunciation he might have pronounced them incorrectly. As noted, he certainly said them more slowly. Another possibility is that he may always have pronounced these words in this way, simply as a personal idiosyncrasy. But whatever the reason for his use of pulmonic ingressive phones, it is absolutely clear that these sounds do not occur in the speech of other Tsou speakers. It cannot be said that the Punguu dialect of Tsou has pulmonic ingressive phones.

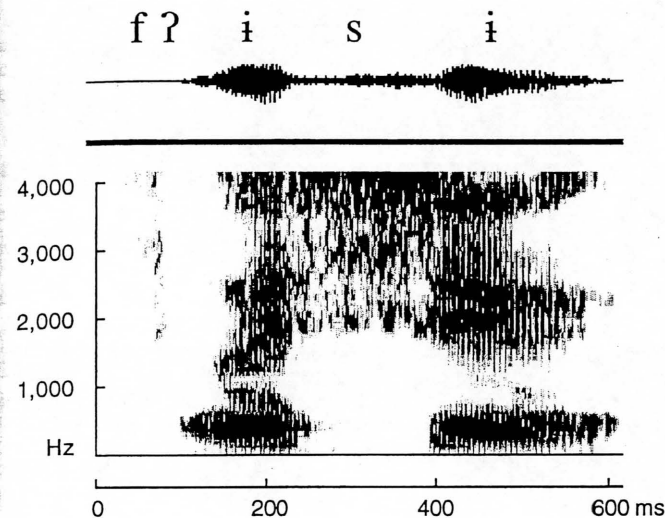


Figure 1. Waveform and wideband spectrogram of the Tsou word /fʔisi/ 'hair'.

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References

- FULLER, M. (1990). Pulmonic ingressive fricatives in Tsou. *Journal of the International Phonetic Association* 20, 9-14.
- HO, D.-A. (1976). Tsou phonology. *Bulletin of the Institute of History and Philology, Academia Sinica* 47, 245-274.
- LI, P. J.-K. (1979). Variations in the Tsou dialects. *Bulletin of the Institute of History and Philology, Academia Sinica* 50, 273-296.
- OGAWA, N., & ASAI, E. (1935). *The Myths and Traditions of the Formosan Native Tribes*. Taipei: Taihoku.
- STAROSTA, S. (1974). Causative verbs in Formosan languages. *Oceanic Linguistics* 13, 279-369.
- TSUCHIDA, S. (1976). *Reconstruction of Proto-Tsouic Phonology*. Tokyo: Studies of languages and culture of Asia and Africa, Monograph Series.
- TUNG, T.-H. (1964). *A Descriptive Study of the Tsou Language*. Taipei: Institute of History and Philology, Academia Sinica Special Publication.