

## A Plaintive Note re the Recent IPA Revisions

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At the 1989 IPA Convention in Kiel it was decided that in the latest version of the IPA writing system no recognition be granted to a feature of force of articulation. At the time I questioned the advisability of this action, but another viewpoint won the day. Very possibly the refusal to allow for the notation of 'fortis-lenis' judgments in IPA transcription was based primarily on the conviction that 'articulatory force' has no generally accepted physical correlate, but whatever the basis for the decision, I would reiterate the opinion that it was wrongheaded, even though I too am reluctant to accept any of the suggested meanings attached to the terms 'fortis' and 'lenis' as sufficient for regarding force of articulation as an independent dimension of phonetic description. However, the function of the IPA alphabet is to facilitate the communication of phonetic judgments of speech. It has not been proposed, so far as I know, that the IPA alphabet represent only those judgments couched in terms that allow for physical disconfirmation.

Therefore I would argue that whether or not phonetic judgments can be supported in some way or other (e.g. on the basis of measurement data appropriate to agreed-upon physical definitions, or 'merely' as the consensus of phoneticians generally,) is quite beside the point. As Bloch and Trager, (1942: 36) said: "At its best, a phonetic transcription is *impressionistic*: it claims no more than to record the writer's impression of the way the utterance sounded to him." Not all practitioners of the art of phonetic transcription are concerned with the question of whether their judgments can be correlated with physical properties of speech, or are prepared to suspend such judgments pending receipt of appropriate laboratory findings. Thus Chomsky and Halle (1968: 26) seem prepared to accept the possibility that aspects of the stress pattern attributed to an English sentence may have their origin in a listener's knowledge of the grammar and lack any ascertainable physical correlates. Refusing to recognize a 'fortis-lenis' dimension means to disallow as phonetic descriptions such judgments as those of Trager and Smith (1951), Gimson (1980), and Jones (1972) on the 'fortis' nature of English /p t k/ as against the 'lenis' productions of English /b d g/. We may also note also that a good many of the transcription specimens in *The Principles of the International Phonetic Association* (1949) are prefaced by comments on the degree of 'strength' of particular sounds. Consequently, statements in these specimens as to the 'weakness' of certain sounds of Spanish, German, Polish, Finnish, Estonian, Georgian, Persian, Tamil, Burmese, Chinese (Pekingese and Cantonese), and LuGanda should also be considered suspect, if not entirely without phonetic meaning. And what precisely is to be made of phonetic arguments that appeal to the notion of 'ease of articulation'?

Thus, whether or not there is agreement that judgments of degree of articulatory force lack any ascertainable physical basis, it is undeniable that many phoneticians and other linguists have invoked the terms 'fortis' and 'lenis', among them a fair number of currently active speech researchers, such as Debrock (1977), Fujimura and Miller (1979), Fischer-Jørgensen (1979), Hardcastle (1973), Kohler (1979), Kohler and van Dommelen

(1986), and Ladefoged (1971). It is true that they may not always agree in the specific application of these terms: consider the notorious case of the English stops after initial /s/, which Swadesh (1934) and Hultzén (1962) characterized as lenis, while Hockett (1942) judged them fortis. (Whether those terms are applicable generally to the English stops is also subject to dispute.) However, in many cases there *is* substantial agreement, so that it seems cavalier to deny any meaning, however tentative, to force of articulation as a phonetic dimension, that is, as a dimension of *impressionistic* phonetic description.

Of course the fact that force of articulation may not have a generally accepted physical definition does not mean that none has been proposed. Thus Daniel Jones proposed that “unaspirated voiceless plosives fall into two classes, viz. those uttered with considerable force of exhalation, and those in which the force of exhalation is weak” (Jones 1972: 153), a view seconded by Zinder (1979). Somewhat similar definitions have been suggested by Malécot (1970) and Ladefoged (1971), while rather different ones have been proposed by Hardcastle (1973) and Debrock (1977). While none of these has gained general acceptance, it is not clear that sufficient evidence has been marshalled to decisively reject every one of them. Presumably the test of any particular physical definition entails certain presuppositions, among them the identification of certain sounds as ‘weak’ and others as ‘strong’, and a significant correlation between this classification and physical measurement data. In any case, the failure to define articulatory force to everyone’s satisfaction has not put an end to the use of the terms ‘fortis’, ‘lenis’, and their synonyms, no matter what the prevailing opinion as to their physical meanings.

Although the International Phonetic Association has decided to make no recommendation as to how a fortis or lenis impression might be represented in transcription, it should be pointed out that in the IPA alphabet as presently constituted a dimension of relative articulatory force *is* recognized by implication. Thus in the consonant chart we find that the symbols for plosive consonants are shown in pairs, e.g. [p b] [t d] [k g], and are said to represent voiceless and voiced sounds respectively. At the same time, however, provision is made for representing some voiceless plosives as [p̥ t̥ k̥] and, less often, some voiced ones as [p̬ t̬ k̬]. The use of [p̥ t̥ k̥] rather than [p t k] for voiceless plosives seems to be justified by the remark that [p̥ t̥ k̥] are “weak voiceless plosives” (*The Principles of the International Phonetic Association*, IPA 1949: 16). The same statement is repeated in recent material addressed to the purchaser of the LaserIPA™ font (Payne 1991). From this, the reader may reasonably infer that [p t k] are reserved for sounds perceived as strong voiceless plosives (that is, if those are their “common European values” (IPA 1949: 11), while [p̬ t̬ k̬] stand for strong voiced ones. (Although the justification for using [t̬] to represent the voiced flap of American English *tighter* quite escapes me. Trager and Smith (1951: 32) did the same, but called the sound voiced and fortis.) To be sure, the sounds represented by [p t k] may not be very strong, since Ladefoged (1971, p. 24), for one, has felt the need to represent the ‘strong’ stops of Luganda and the ‘fortis’ (per Kim 1965) voiceless inaspirates of Korean by writing /p\* t\* k\*/ — a practice that few if anyone else seems to have adopted — indicating presumably that those consonants are even more forcefully pronounced than English /p t k/.

In other words it would seem that the unadorned symbols [b d g] and [p t k] are meant to stand for bilabial plosives that are inherently ‘weak’ and ‘strong’ respectively, and only secondarily or by default ‘voiced’ and ‘voiceless’. Otherwise a symbol [b̥], for

example, must be regarded either as oxymoronic or exactly equivalent to [p]. (The IPA alphabet should allow us to transcribe any two different sounds differently. Are we also to infer that two occurrences of the same sound must be written identically, and that any two sounds written differently are perceptibly different?) It is possible, to be sure, that [b̥] may be understood to stand for a plosive that is slightly more 'voiced' (in some sense) than [p], but on a basis not explicitly expressible in IPA notation, e.g. lower onset frequencies of F0 and/or F1, and at the same time not perceived as differing from [p] in force of articulation.

For fricatives, the other class of obstruents provided with distinct letters for voiced and voiceless varieties, the situation may or may not be different from that of the plosives. From both *The Principles* and from Payne (1991) we learn that "ʒ may represent z," which seems to imply that [s] and [z] do not represent sounds differing in any property other than voicing. But here too [s] and [z] might conceivably stand for phonetically distinct voiced alveolar fricatives perceived as strong and weak respectively. At least one phonetician has suggested that "the lungs push harder for the s than for the z" (O'Connor 1973: 40), so perhaps a sound written [ʒ] would share the 'strong' nature of /s/.

It appears, then, that the follower of *The Principles* is given no straightforward guidance as to how the perceived 'articulatory force' of a speech sound might be represented directly in IPA spelling. As we have seen, *The Principles* instead seems to provide for two ways of indicating the voicing status of an obstruent. Thus the three most common voiceless plosives may be written either [p t k] or [p̥ t̥ k̥], while the corresponding voiced ones may be either [b d g] or [p̚ t̚ k̚]. In a non-IPA transcription that they called minimally different from "the established usage of American phoneticians", Bloch and Trager (1942) suggested that the subscripts [̚] and [̥] be used to indicate weak and strong degrees of articulatory force. In current IPA spelling the subscript [̚] is used to indicate a dental articulation, a function also served by an understrike plus sign (as in [t̚]), while an understrike turned bridge (e.g. [p̥]) is meaningless\*. If dental, i.e. 'advanced' apical plosives, are represented only with the understrike plus as the diacritic (thus [t̚]), just as are advanced dorsal plosives (e.g. [k̚]), then we might resume the once general American practice of using [̚] and [̥] to represent lenis and fortis articulations respectively. Then, if the sign [b̥] is in fact meant to be phonetically different from [p], we could say that the more exact transcriptional equivalent of [p] is [b̥], and that consequently one or the other of these symbols would have to be considered entirely redundant in a purely *phonetic* alphabet. (If it is merely inelegant that in English orthography the same phoneme can be spelled in more than one way, e.g. /k/ as 'k', 'c', and 'q', the possibility of multiple IPA spellings of a sound, for a fixed degree of narrowness of transcription, would seem entirely incompatible with the purpose of phonetic transcription.) On the other hand, [b̥] would be equivalent to [p], and the latter symbol would make explicit a judgment that the plosive was voiceless and lenis. But whether or not these proposals to regularize the use of the understrike plus and bridge diacritics are adopted, we should in any case make up our minds as to whether the letters [b d g]/[p t k] are to represent primarily voiced/voiceless or lenis/fortis plosives. If they are voiced/voiceless, then [b̥ d̥ g̥] and [p̥ t̥ k̥] are "ungrammatical" and to be

\* [̥] is now the approved diacritic for an apical articulation when used with a compatible symbol - Editor.

ruled out; if they are primarily lenis/fortis, then we cannot legally write [p t k] or [b d g].

Whether or not in the phonetic description of some, or indeed any, particular language (e.g. English, Korean) a fortis-lenis feature should be recognized as 'distinctive' is quite irrelevant to the question of whether the IPA alphabet should provide for the expression of an observer's *judgment* as to the 'force of articulation' with which a sound was produced. Observers of speech should be able to convey by IPA transcription their perceptions/ opinions as to the phonetic properties of a speech event, whether or not these happen to have attested physical correlates. For while physical measurement data may occasionally allow us to explain phonetic judgments, they cannot serve, either by their existence or their absence, to explain them *away*. Transcribers should even be permitted the luxury of expressing phonetic judgments with which colleagues may disagree, but which cannot ever be conclusively dismissed as illusory. The best we can do is to show that a phonetic judgment *together with a particular physical interpretation* should be rejected. But the finding that a phonetic judgment as to the 'strength' with which a sound was produced cannot be attributed to a specific physical measure can by no means be understood to imply what cannot ultimately be proven—that the judgment is without physical foundation.

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## Letters to the Editor

### How [h] became a glottal fricative: Comments on the letter by Martin Kloster-Jensen in JIPA 21 (1991)

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Martin Kloster-Jensen (1991) has traced the origin of the view that [h] is a glottal fricative back to the German scholar Brücke (1876). According to MK-J, this wrong view has been repeated in the manuals of phonetics since then and appears again in the new IPA consonant chart.

I am glad that MK-J has taken up this issue and I agree with him in the essential points (my view is presented in Iivonen 1981; cf. also Merlingen 1977), but I believe that the original interpretation must be partly traced to older sources, *i.e.* to Panini and the ancient scholars. The phonetics of the 19th century was in a dynamic stage and tried to find the fundamentals of the discipline. The fundamentals were established in intensive discussion between especially American, British, Dutch, French, German, and Nordic scholars (cf. Storm 1892). An important influence came from old Sanskrit, Greek and Latin studies. Brücke (1876) has a special chapter in his book headed "Systematics of the speech sounds by Indians and Hellenes" (p. 100). He also mentions the name of Panini and the names of the Sanskrit scholars Böthling, Bopp, Benfey and Müller (p. 3). The ancient Sanskrit scholars interpreted [h] as a (voiced!) throat sound, a classification which caused much confusion, because [a] and [k] were also regarded as throat sounds. Later the confusion was observable in the notion of "guttural" (Latin *guttur* 'throat') which could mean 'velar' and/or 'glottal' (cf. Brücke 1976: 166), possibly also 'pharyngeal'.

The classification of speech sounds was vague at the beginning of the 19th century, and several suggestions were made (an overview appears in Trautmann 1884-86; cf. also Brücke 1976: 152-172). The task has resemblance with the classification of plants by