Basis of Articulation or Articulatory Setting?

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Basis of Articulation (BA) and Articulatory Setting (AS) have been used for decades as synonyms but they represent two distinct, although closely related, ideas that are not interchangeable. The paper gives an assessment of the application of the BA and AS concepts in pronunciation teaching and shows some implications and advantages of differentiating them within the proposed framework.

Those readers, who have been with Speak out! from the 1980s, probably remember Jenner’s article The wood instead of the trees (1987). Articulatory Setting was actively debated at that time but the discussion somehow ran out of steam and this topic had all but disappeared by the late 1990s. Perhaps, the problem was not in AS as such: this period was also marked by a general loss of interest in pronunciation which did not have any significant role in the CLT method. However, recently pronunciation has regained a certain degree of importance. With this renewed attention to pronunciation teaching there appears to be some revival of interest in the AS concept.

This paper summarises my MA (Applied Linguistics) dissertation (2011). Its aim was to clarify an obscure area of terminology and to document the background of the development of the concept of AS, and its possible application in pronunciation teaching.

Background

Anyone wishing to learn about AS is bound to be confused not only by the inconsistency of its definitions but also by the fact that the same concept also appears under the names of ‘Basis of Articulation’ or ‘Articulation Base’. While AS is a relatively modern notion first proposed in Honikman (1964), few people are aware that its predecessor, BA, has a long history full of controversy.

Malmberg (1963: 71) defined BA as [...] a convenient, but not strictly scientific label for all the articulatory habits which characterise a language. Among other ‘epithets’ of BA there is ‘nebulous’ (Kelz, 1971) Indeed, much about this term appears. This uncertainty is reflected even in dictionary definitions. In The Routledge Dictionary of Linguistics, AS is listed under ‘articulation base’ and defined in two completely different ways:

1) Group of articulatory characteristics common to all speakers in a speech community. 2) Starting position (= resting position) of the articulators in the articulation of a speech sound'.

The apparent synonym ‘Articulatory Setting’ was defined by Honikman as ‘the disposition of the parts of the speech mechanism and their composite action’ but also as ‘the overall arrangement and manoeuvering of the speech organs necessary for the facile accomplishment of natural utterance’.

However, the multitude of definitions can be grouped, resulting in a contrasting pair: ‘neutral (starting, optimal) position’ versus ‘nexus’ (overall arrangement, general direction), which may be further simplified to ‘static’ vs. ‘dynamic’. To understand the inherent causes of this dichotomy we shall have to return to the origin of the term ‘Basis of Articulation’.

Basis of articulation

BA was first mentioned by Sievers as Operationsbasis, which referred to a particular state of vocal organs (Ruhelage [resting position]) in the speech ready mode, and to a particular position of the tongue (Lagerung der Zunge [storage position of the tongue]) which, as Sievers believed, was maintained throughout speech in between articulations and in pauses. This position was also believed to be language specific, so the idea was that by changing it to match that of the target language, the ‘characteristic sound nuances [...] would follow all by themselves’ (Sievers; 1876). After a few years Sievers adopted a more precise term Operationsbasis [Basis of Articulation] coined by Felix Franke.

The idea was picked up enthusiastically by Viëtor, notorious as a ‘militant theorist’ of the language teaching movement known as the ‘Reform Movement’, which had become influential in this period. However, in Viëtor’s interpretation BA did not relate to the ‘tongue storage position’ or the ‘resting position’ but to other features like timbre, modulation, the ‘exhalation of breath’ etc. (1887). In Britain Henry Sweet made a similar conversion of BA, merging it with the the long established tradition of ‘articulatory habits’ of Wallis, Cooper and Bayley in his ‘Organic Basis’. Thus the originally simple idea of the BA as a language specific tongue posture and a key factor systemically influencing vowel quality, became ‘nebulous’
and ‘not strictly scientific’ only after it started to be taken up as a generic term for a wide range of voice quality phenomena.

Sievers’ *Operationsbasis* was truly insightful, and it has found confirmation in modern empirical research. Studying X-Ray cinematography films Perkell (1969) observed that the tongue invariably returned to a certain state at the release of one consonant and before the start of the successive sound behaving dynamically and spatially quite similarly for the two vowels /a/ and /æ/. He defined it as a ‘generalized vowel state’. In Russia Skalozub (1963), performing similar experiments but on several different languages, noted that in each of these languages, in intervocal positions the tongue tended to assume a specific posture which she defined as ‘the neutral position or the state of speech resting position’. These findings were later confirmed fully or partially by Gick et al. (2004), Wilson (2006). The only current ongoing research, funded by the ESRC, is exploring articulatory settings of English/German bilinguals with particular attention to language specific inter-speech postures (ISP) Schaeffler (2010).

The above citation from Skalozub (1963) shows that the notions ‘Basis of Articulation’ and ‘neutral position’ are connected but should not be treated as exact synonyms. The ‘state of indifference’ or the ‘neutral position’ should be taken as a general cover term for the overall disposition of the speech organs in the speech mode in the ‘speech ready state’ or between utterances, while BA is a particular active element of this disposition.

**BA, the tongue, and pronunciation**

A legitimate question would be to ask how these language specific postures can affect vowel quality and pronunciation in general. In many languages the word ‘tongue’ is a synonym of either ‘language’ or ‘speech’. This is recognition of the central place of the tongue as the most important speech organ. We often perceive the tongue as a rather small flat organ, but in reality it is a complicated and interconnected complex of muscles which are traditionally divided into two groups: intrinsic and extrinsic. They are connected to other organs of articulation: the jaw and (via the hyoid bone) the larynx forming a tongue-hyoid-larynx-jaw dynamic system in which the tongue is the ‘dominant’ agent par excellence.

Traditionally, extrinsic muscles are considered responsible for vowel articulation, while intrinsic muscles are assigned the major role in the articulation of consonants. Based on the specific functions of the principal groups of tongue muscles, Perkell (1969) identified two centres of articulation: the extrinsic vowel producing system, and the intrinsic consonant-producing system. He also assigned to extrinsic muscles the role of positioning the ‘semi-rigid tongue body’ into the speech-ready position. These two centres could be taken as corresponding to the ‘tongue-body’ (TB) and ‘tip-blade’ (TBL) systems in Hardcastle (1976) (Fig. 1).

![Figure 1: Two systems of tongue movement (adaptation of Hardcastle (1976))](image)

In this model the gross TB system serves as the positioning agent for the TBL system. This interaction of the two systems is not so much subordinate as complementary. Perkell assigned to the TB system the co-articulatory function affecting the manner of articulation, and primarily responsible for such secondary features of articulation such as palatalisation, velarisation and pharyngealisation - areas traditionally assigned to the AS domain. Although Perkell did not mention that such speech-ready position of the TB system could be language specific, cross-linguistic research does indicate that its ‘neutral’ position or ‘centring’ is actually language specific.

In articulatory phonetics, speech is viewed as a chain of articulatory gestures. Each gesture is a constellation of movements of various articulators. These movements are subject to a number of physiological constraints. One of them is known as the ‘economy of speech gestures’ rule which was defined by Lindblom (1983) as follows: ‘[i]n human speech extreme values of parameters are avoided’. Its principle was very explicitly shown by Lindblom in this humorous picture (Fig. 2).

The apparent solution of how to make this overstretched (extreme) movement (on the left) more comfortable would be to walk to a more advantageous position (on the right).
However, there is at least one other solution: to change the section of the window to clean.

Figure 2: Extreme vs. comfortable movement. (after Lindblom (1983)).

Lindblom’s picture is convenient for explaining the BA concept to students. We may imagine the person as the TB system and his arm with the sponge as the TBL system. Going further along this route we may consider the window as the oral cavity. Integrating into this modified picture the idea of the presumed multiple TB centres, it would look as shown on Fig. 3.

Figure 3: Multiple TB centres (Adaptation of Lindblom (1983))

Applied to the tongue, this would mean that in each language the TB system would tend to retain a certain position which could allow it to perform articulations, defined by the specific phonetic system of a language, with the least effort and in a most efficient way, avoiding redundant movements. Because of the variety of speech movements this position has to be a certain ‘compromise’ between the habitual articulations. It is this position to which Sievers referred as Lagerung der Zunge [the storage position of the tongue], Gick et al. (2004) as inter-utterance positions and Schaeffler et al. (2008) as inter-speech posture.

This model has some important implications for pronunciation teaching. If a language specific BA indeed predetermines articulatory properties, then changing it to match as close as possible the BA of a target language would lead to a natural and systemic change in vowel quality and create a favorable environment for consonants articulation facilitating a more native-like pronunciation.

This does not mean that the well established term AS should be discarded. Instead, it should remain as a convenient and generally accepted all-inclusive cover term. Recently the view of a language as a COMPLEX SYSTEM that emerges from interaction of its components is gaining support. Such a system is also considered as heterogeneous (i.e. made up of both agents and elements), and may include other subsystems ‘nested’ in one another. The agents, elements and subsystems of a complex system are in a state of ‘mutual causality’ which is not always symmetrical. There may be some agents which exert more influence and form a nucleus of stability for the system. The initial idea of the ‘classic’ Basis of Articulation actually related to one such global agent.

**BA and AS in practice**

The understanding of the BA as a higher level system-forming agent can be incorporated into both AS based and voice quality based methods. In the former case the principle, formulated by Jenner and Bradford (1982), needs to be modified as follows: pronunciation instruction should start by establishing the Basis of Articulation and its consequences for the Articulatory Setting before working on individual sounds.

Resurrecting the notion of the Basis of Articulation in its original meaning helps to resolve the confusion in terminology. It does not displace or diminish the generally accepted concept of AS, but serves as a system-forming nucleus without which the various ‘voice setting’ and ‘voice quality’ features may appear as an assembly of random units.

For example, the lip activity feature, randomly taken out of the general system, may appear unscientific to language teachers. It is not surprising that the advice advocated by some to improve pronunciation by controlling the lip movement holding a pencil between the upper lip and the nose, could be taken as a sort of alchemy only to “waste students’ time and money” (Derwing and Munro, 2005, 390).

Importantly, the BA concept is not in conflict with either the traditional bottom-up nor the more recent top-down approaches. In fact, it can help to form a common platform between them. Critiques of the top-down approach point out its serious weakness: students often have difficulty...
with suprasegmentals since many sounds of the target language 'are virtually impossible to produce unless the articulators adopt the same positions, types of movement, and degree of muscular activity as those employed by L1 speakers’ (Jenkins; 2000, 157). Introducing the BA of the target language at an early stage may help students to grasp the gist of the AS.

The traditional bottom-up method may also benefit from explaining the BA of the target language before moving to individual sounds. Instead of presenting phonemes in an arbitrary manner, they will appear as a system centred on the BA. Importantly, students will become aware of the internal logic of the particular phonetic system. Once they realise that the specific retracted basis of English predetermines the alveo-palatal type of articulation not only of the majority of English consonants, but also directly affects vowel quality, and that this posture should be maintained during speech and even in pauses, they will be less likely to make certain typical mistakes like those described by Kulešov and Mišin (1987) for Russian-L1 learners of English. They noted that usually Russian students were well aware of the alveo-palatal articulation of [t] an [d] in English so they made an effort to pronounce them correctly, but immediately after they relaxed and slipped into their habitual Russian setting: they lowered the tongue blade causing additional articulation so the sounds started to resemble affricates [tʷ] and [dʒ] or [ts] and [dz] (1987: 30).

Making students aware of the specific BA of English and teaching phonemes as a system, could help to cut down the time employed in explaining each individual articulation, and free it for practical work on, for instance, the exploration of suprasegmental features and AS settings.

**Conclusion**

The concept of the Basis of Articulation has a long history. It has proven itself to be viable and has received empirical confirmation, so its re-installment as an active agent of speech production viewed as a Complex System, could introduce clarity into the current understating of the Articulatory Setting, and, perhaps, assist in developing new methods of pronunciation teaching.