

## CONCERNING THE PHILOSOPHY OF PHONOLOGY

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*Three different approaches to the philosophy of phonology are examined in this paper. First, Trubetzkoy regards phonology as a social science that investigates intersubjective 'sound norms' (Lautnormen). Second, Linell regards phonology as part of psychology, defining the phoneme as 'phonetic plan'. Third, Halle and Bromberger attempt to interpret phonology in physicalist terms, thus eliminating the distinction between phonology and phonetics. It is concluded that Trubetzkoy comes closest to the truth even if his position too may be amended to some extent.*

**Keywords:** phonology, Trubetzkoy, Linell, Bromberger, Halle

### GENERAL REMARKS

Bromberger and Halle (1992) claim that those who have examined language and/or linguistics from the philosophical point of view have always ignored the **phonological** level of language. They wish to amend the situation, by offering a consistently **physicalist** account of phonology, i.e. an account that deals exclusively with "concrete mental events and states that occur in real space [and] in real time" (p. 210) as well as with equally concrete articulatory-acoustic events. Their physicalism is in agreement with Bromberger's (1992) general metaphysical position, according to which "linguistic theorizing is like that in any of the other natural sciences" (p. 176); and the natural sciences deal with "empirical information, that is, information that must be obtained by attending with one's senses" (p. 170). Because **sense-impression** is defined as the only source of knowledge, it follows that the existence of **linguistic intuition** is

ruled out a priori. Bromberger and Halle correctly note (p. 228) that their undertaking amounts to an attempt to elucidate the Chomskyan notion of **I-language**.

In this paper I intend to continue the discussion on the philosophy of phonology. To put things into the proper perspective, I shall first present Trubetzkoy's (1958 [1939]) view on the matter. This will be followed by a brief discussion of Linell (1979). Then I shall examine Bromberger & Halle's (1992) proposal in some detail. I shall conclude with a brief summing-up.

### TRUBETZKOY (1958 [1939])

Trubetzkoy accepts Saussure's *langue – parole* distinction, but he defines it more consistently than Saussure did. His own terms for the basic dichotomy are *Sprechakt* ('speech event') and *Sprachgebilde* ('linguistic system'); together, they constitute language (*Sprache*). While the two are con-

ceptually interdependent (i.e. one cannot exist without the other, and vice versa), they are quite different (= "ganz verschieden", p. 5). The speech event, occurring in space and time, is accessible to one of the sense-organs, whereas the linguistic system, qua social institution, is supra-individual (*über-individuell*) and not accessible to the sense of hearing (or of touch). Language has two sides, namely meaning (*das Bezeichnete*) and form (*das Bezeichnende*). The meanings and forms of speech events are ephemeral whereas the meanings and forms of the linguistic system are (relatively constant) norms and conceptual schemas. Accordingly, there are two types of the study of sounds, one that concentrates on sounds as units of speech events, and the other that concentrates on sounds as units of the linguistic system. The former, called **phonetics**, uses the methodology of the natural sciences, whereas the latter, called **phonology**, uses the methodology of the human sciences (*Geistes- oder Sozialwissenschaften*, p. 7). On this interpretation, then, phonology is the study of the social **norms of sounds** (*Lautnormen*).

Trubetzkoy takes great pains to define and defend his position. He singles out (p. 5–17, 37–41) three distinct positions which, while accepting the 'phonetics vs. phonology' distinction in principle, diverge from his own and must therefore be rejected.

E. Zwirner had claimed that the phoneme ought to be defined as the **statistical average** of sounds. Trubetzkoy retorts by pointing out (p. 11–12) that it is not possible to 'ascend' from spatiotemporal occurrences to norms. For instance, the German phoneme /k/ is pronounced differently before consonants and before vowels, and again differently before stressed and unstressed vowels. An 'average' of all these different types of pronunciation would correspond to noth-

ing in reality. In fact, Zwirner fails to see that the ability to identify all these different sounds as the sound *k* presupposes the knowledge of the corresponding phoneme /k/. It is a conceptual truth that if A presupposes B, it is not possible to 'start from' A and then to 'arrive at' B.

Arvo Sotavalta (a Finnish scholar, by the way) had claimed that one ought to make **generalizations** about particular ('phenomenological') experiences of sounds in order to achieve the concept of phoneme, just like in zoology or botany one makes generalizations about particular animals or plants. Trubetzkoy points out (p. 15) that Sotavalta commits a mistake similar to the one committed by Zwirner. The analogy to the natural sciences is misconceived because within the natural sciences there is no counterpart to the 'linguistic system vs. speech event' dichotomy. When observable sounds are uttered and perceived, the linguistic system must be there already ("muss schon da sein"), because it is presupposed both by the speaker and by the hearer. Speech events belong to the realm of empirical phenomena ("eine Welt der empirischen Erscheinungen") whereas the linguistic system, like all social institutions, belongs to the ('non-empirical') domain of relations, functions, and values ("eine Welt von Beziehungen, Funktionen und Werten").

Baudouin de Courtenay had claimed that the phoneme ought to be defined as "the mental equivalent of the sound". In the same vein, Trubetzkoy himself had claimed in the earlier stages of his career that the phoneme ought to be defined either as phonetic idea (*Lautvorstellung*) or **phonetic intention** (*Lautabsicht*). Refuting both de Courtenay and his own earlier self, Trubetzkoy points out (p. 37–38) that defining 'phoneme' as 'phonetic intention' is based on a vicious circle, because the latter already

presupposes the former. This becomes evident once one formulates the definition explicitly: 'the phoneme /k/ is the intention to produce an exemplification of the phoneme /k/'. Moreover, the notion of phonetic intention is not only redundant but also defective because it does not, as such, differentiate between different 'intentional levels', e.g. between the (higher-level) intention to produce *k* in general and the (lower-level) intention to produce *k* before a stressed vowel. Trubetzkoy then goes on to argue against the view that the phoneme could be defined as any kind of psychological entity. It is of course a conceptual truth that if phonemes are supra-individual (= social), they cannot be individual (= psychological).

Trubetzkoy sums up his position by quoting an analogy due to Roman Jakobson: phonology is to phonetics what economy is to numismatics. The phonologist is analogous to the person who considers a five-dollar bill in terms of its value, whereas the phonetician is analogous to the person who regards a five-dollar bill as an elaborately designed piece of paper.

Trubetzkoy could be criticized for making too few distinctions. There is every reason to clearly distinguish between institutions and spatiotemporal occurrences of institutional behavior. It is wrong, however, to interpret institutional behavior **only** in terms of space and time, or purely physically (as Trubetzkoy seems to do). It is clear that a discipline like empirical pragmatics or (empirical) discourse analysis must contain both a phonetic and a phonological component (not to speak of other linguistic levels). Thus, the distinction between phonology and phonetics cannot be simply identified with that between linguistic system and speech event.

## LINELL (1979)

Linell (1979) has tried to revitalize the notion of *Lautabsicht* (= phonetic intention) by redefining the phoneme as 'phonetic plan'. While Trubetzkoy's charge of circularity remains in force, Linell's project could be defended as follows.

Because phonology investigates **norms** (of sounds), and because a norm is necessarily a norm for **acting**, and because actions necessarily entail **intentions** to act (cf. Itkonen 1978: 119), it makes sense to include a reference to intentions or plans in the definition of 'phoneme'. More generally, any action exemplifies a means – end schema and presupposes the possibility of a choice: given a goal, one has to choose (what one believes to be) a means adequate to achieve it. The structure of action may be represented as follows (cf. Itkonen 1983: 2.4.2, 3.2):

$$\{[G:X \ \& \ B:(A \rightarrow X)] \vdash G:A\} \Rightarrow *A$$

*X* and *A* are mental representations of goal-states and actions, respectively. The prefixes *G* and *B* represent the propositional attitudes of **intending** (or simply wanting) and **believing**. The schema says that if someone intends to achieve the goal *X* and believes that an action *A* (which he is capable of performing) contributes to bringing *X* about, then he **must**, as a matter of conceptual necessity, intend to do *A*. (The necessity is indicated by the entailment sign  $\vdash$ .) Thus, intention is 'transferred' from goal to action. (As Aristotle already put it, "who wants the end, wants the means".) Having this goal and this belief will then bring it about that he does *A*. The simple arrow and the double arrow stand for ordinary causation and mental causation, respectively. While *A* is the mental representation of an action, *\*A* is its spatiotemporal counterpart. *\*A* is a

rational action to the extent that it is indeed an adequate means of bringing about *X*. The **rational explanation** of an action consists in showing that the agent thought it to be an adequate means for attaining some goal (cf. Itkonen 1983: 3.7). As Newton-Smith (1981: 241) has put it: "To explain an action as an action is to show that it is rational. This involves showing that on the basis of the goals and beliefs of the person concerned the action was the means he believed to be the most likely to achieve his goal." It must be added, however, that even (prima facie) **irrational** actions must be explained by using the schema of rational explanation, i.e. by showing how the action that was in fact irrational could have appeared as rational to the agent. Otherwise the action just remains incomprehensible.

Even if reformulating phonemes in terms of intentions brings, as such, no new information, one must of course mention intentions in the study of **speech production**. Thus Levelt (1989), referring to Linell (1979), points out that uttering a sentence contains several 'phonetic plans' which exemplify the general structure of action given above: "A speaker's phonetic plan represents which phones go in successive timing slots. The sequence of phones in a syllable specifies the articulatory gesture to be made by the speaker **in order to realize that syllable**" (p. 295; emphasis added). As the emphasized part of the quotation shows, there is a (sub)-

goal here, to be achieved by performing a (sub)action.

### BROMBERGER & HALLE (1992)

Bromberger and Halle, too, have come to the realization that 'intentions bring about actions': "more specifically, [an agent] has certain effects in mind, and plans [actions] in ways calculated to achieved those effects" (p. 213). They wish to apply this insight in their philosophy of phonology. Interestingly, and in stark conflict to Linell (1979), they wish to interpret the framework of intentions and/or plans in purely **physical** terms. This entails, for them, that there are **no abstract concepts** or 'types' (like morphemes or phonemes), but only **concrete tokens** (like phones). As they see it, the ontology of language can be exhaustively described in such rather ascetic or 'minimalist' terms.

Bromberger and Halle illustrate their view of phonological analysis with the following example (p. 212). Assume that a unique speech event has occurred, designated by [ðəmərʃntsoldʃɛlvz], and corresponding to the written sentence *The merchant sold shelves*. The analysis, or explanation, of this event takes the form of a four-stage **derivation**, as shown in Figure 1. (Dotted lines indicate possible intermediate stages, which are omitted in the present context.)

- (a). {ðə, Art ...} + {[mərʃənt], Noun ...} + {Q, Sing ...} + {[sɛl], Verb ...} + {Q, Past ...} + {[ʃɛlf], Noun ...} + {Q, Plur ...}
- .....
- (b). {[ðə, Art ...} + {[mərʃənt], Noun ...} + {Q, Sing ...} + {[sol], Verb ...} + {Q, Past ...} + {[ʃɛlv], Noun ...} + {Q, Plur ...}
- .....
- (c). ðəmərʃntsoldʃɛlvz
- .....
- (d). ðəmərʃntsoldʃɛlvz

FIGURE 1.

We would like to say that the line (a) stands for lexical and grammatical **morphemes**. This option is not open to Bromberger and Halle, however, because they deny the existence of such abstract concepts as 'morpheme'. Instead, they speak of word or affix **intentions** (which are supposed to be concrete occurrences). Thus, each pair of curly brackets stands for some entry which has been retrieved from the speaker's memory when the event designated by the line (d) is about to be produced. There is another problem that concerns the role of phonetic symbols like the *m* in [mɔrtʃənt]. We would like to say that this is the phoneme /*m*/. However, Bromberger and Halle cannot say this because they deny the existence of phonemes. They admit that the roles of phonetic symbols like *m* are very different in the lines (a) and (c) (corresponding to the traditional distinction between phonemes and phones). They formulate this difference in the following way. In (a) the symbols "play a computational role"; they appear in (a) "essentially to simplify computations within the theory". In (c) "they have that role but they also represent phonetic intentions".

We would like to say that the line (b) stands for **allomorphic rules** (like *sell* → *sold*) and **allophonic rules** (like *shelf* → *shelves*). It is the purpose of the symbol *Q* to encode knowledge of precisely this type of variation. Again, Bromberger and Halle cannot say this because they deny the existence of allomorphs and allophones. To be sure, they admit that they are dealing with rules of some sort. This is how they characterize the line (b): "Unlike (a) and (c) it does not represent intentions at all, though it does represent a mental set of sorts." Also the precise status of phonetic symbols as used in the line (b) remains vague: "They play a role as symbols in the formal compu-

tations of the theory. We conjecture that they also stand for something specific in the production of [the line (d)], but if they do, what they stand for is not something clearly understood at this time" (p. 220).

Finally, the line (c) stands for a series of **phonetic intentions**: "each letter in (c) stands for such an intention" (p. 214). For instance, the letter [*m*]"represents an intention (at the time) that called for simultaneously closing my mouth at the lips, lowering my velum, adjusting the stiffness of my vocal folds, and thereby producing a sound *m*" (p. 214–215). The line (c) literally represents the 'mental equivalent' of what the line (d) refers to, so much so that the two are formally identical.

Do Bromberger and Halle succeed in establishing a purely physicalist phonology and, eo ipso, in obliterating the distinction between phonetics and phonology? No, they do not. There are so many mistakes to be corrected that it is advisable to give a 'graded' answer, divided in several parts.

i) Halle is generally regarded as an expert on generative phonology. Therefore it is interesting to learn to what extent he is out of touch with the history of phonology. (Bromberger may be excused in this respect.) The notion of phonetic intention is introduced as a great new discovery, with no awareness that it is as old as phonology itself.

ii) Halle and Bromberger repeatedly refer to 'rules' and 'norms' of language, but they never explain what they mean by these terms. Had they tried to do so, they might have realized that it is difficult (in fact, impossible) to give a consistently non-social account of rules, as demonstrated by Wittgenstein's private-language argument (cf. Itkonen 1978: 4.2.5, 1983: 5.1.4). They might also have realized that it is inconsistent for them to use the term 'norm' at all,

because to them language is something purely physical; and, by common consent, physical phenomena are inherently non-normative. They also repeatedly use such terms as 'English' and 'our language'. But it is surprisingly difficult (in fact, impossible) to give a **purely physical** account of either 'us' or of 'our (English) language'.

iii) One look at the 'derivation' of Figure 1 suffices to establish that the first three lines are identical with traditional morphemic-*cum*-phonemic analysis, allomorphic-*cum*-allophonic analysis, and phonetic analysis, respectively. Reformulating these three levels in terms of 'computations' is an empty gesture, because no additional information is provided by this reformulation. The term 'computation' is neither defined nor exemplified, apart from the fact that phonetic data are claimed to be 'computed' from morphemic-*cum*-phonemic data via allomorphic-*cum*-allophonic data. To be sure, the fetishistic use of 'computation' is characteristic of generative linguistics in general, not just of Halle & Bromberger (1992). For instance, Ray Jackendoff has written a book about the 'computational mind' (= Jackendoff 1987) in which he does not give a single example of any computation. Moreover, he correctly claims that generative linguistics has always been interested in structure, and not in process; but it is hard to see how computations could be conceived of in non-processual terms. In fact, I submit that the idea of 'structure-immanent' computations is incoherent. – My critique of Jackendoff's philosophy of linguistics, similar in some respects to the present critique of Halle & Bromberger (1992), has been reissued as the chapter 26 of Itkonen (1999).

iv) As was just mentioned, the first two lines of Figure 1 are nothing but traditional morphemic-*cum*-phonemic analysis. As was already pointed out by Trubetzkoy, this type

of analysis is not, and cannot be, derived merely from observing physical utterances, which means that it must be based on **linguistic intuition**, in this case on Bromberger and Halle's own intuitive knowledge of English. Thus, it is an analysis in the tradition of autonomous linguistics. And yet, in the lines (a) and (b) Bromberger and Halle purport to be dealing with 'intentions' and 'mental sets' which are hypothetical psychological phenomena not accessible to conscious linguistic intuition. (They have to admit that "clearly speakers are not aware of performing such actions [as retrieving morphemes from the memory or invoking rules]", p. 228.) It is of course legitimate to make psycholinguistic hypotheses on the basis of one's own linguistic intuition; but it is **not** legitimate to leave it at that, with no attempt to test these hypotheses against experimental evidence. This is in fact the perennial fallacy of generative linguistics, already exposed by Derwing (1973) and others in the early and mid-70's: to pretend to practice psycholinguistics while practicing in fact traditional grammatical analysis.

In Bromberger & Halle's case the fallacy is committed in a particularly blatant fashion. Today there exists a vast body of knowledge about how sentence production and sentence perception take place as **real psychological processes**. At least part of this knowledge has penetrated even into generative linguistics. For instance, Jackendoff (1987: 105) notes that "the production of a phonological structure cannot take place one word at a time"; and he also notes that speech production is not just 'top-down' but also 'bottom-up': "speech production involves feedback from lower-level to higher-level structures" (p. 107). As we have seen, all these insights are conspicuously lacking in Bromberger & Halle's simple-minded 'one-word-at-a-time' and 'top-down' derivation.

It should also be noted that although Bromberger and Halle purport to give a phonological analysis, they in fact only discuss the **production** of sounds and have nothing to say about how sounds are **perceived**. This is no accident. It is only by concentrating on the production side that one can hope to maintain the illusion that traditional phonological analysis might count as psychological description. (All one needs to do is replace – in the standard ‘virtus dormitiva’ fashion – ‘A’ by ‘intention to produce A’.) In the domain of speech perception, by contrast, the amount of experimental evidence that differentiates psychological description from (‘mere’) grammatical analysis is so overwhelming that it can be ignored only by ignoring speech perception in its entirety. This is what Bromberger and Halle have done. The cost is, of course, that speech production loses its identity. This identity can be regained only by taking the asymmetries of production and perception into account: for instance, the latter operates with syllables as basic units in a way that the former does not (cf. Suomi 1993). It is only by acknowledging the existence of such asymmetries that one can hope to construct an overarching phonological theory which is psychologically valid in the sense of encompassing both production and perception. – On p. 227 Bromberger and Halle briefly suggest that, while purporting to give a physicalist and causal account of speech production, they may have the right to concentrate on ‘competence’ only; but this is a meaningless suggestion.

v) Bromberger and Halle draw (p. 224–225) the following analogy between the methodology of the natural sciences and the methodology of phonological (and more generally, linguistic) analysis, as they see it. When we encounter two samples of liquid, we do not know whether they are samples

of the same liquid or not. It is only after they have been analyzed experimentally, e.g. by finding out their boiling point, their freezing point, and their molecular weight, that we may come to the conclusion that they both are samples of water. We reached this conclusion by finding out that the two samples exemplify the same “lawlike or computable relationships”, or that they have the same **explanation**. As Bromberger and Halle see it, “a similar story applies to utterances”. When we first hear two utterances of the same sentence *The merchant sold shelves* we have no way of knowing whether they are indeed utterances of the same sentence or not. It is only after we have discovered that the two utterances must be ‘explained’ by the same ‘computational’ derivation (given in Figure 1) that we can be sure that they are indeed utterances of the same sentence *The merchant sold shelves*.

What is wrong with this analogy? It is the fact that it has nothing whatever to do with what **really** happens. With the two samples of liquid we have to perform – over a certain period of time – certain operations that gradually reveal the eventual similarity of the two samples. With utterances (of our language) the story is entirely different. Suppose that we first hear two utterances of the sentence *The merchant sold shelves*, and that we then hear one utterance of the sentence *The merchant sold shelves* and one utterance of the sentence *John is easy to please*. There are no operations or additional observations that could reveal, after the lapse of a certain amount of time, that in the two cases the utterances are indeed similar or different. All we have are these utterances as objects of our conscious linguistic intuition. If (and only) if we **think** they are similar (or different), then they **are** similar (or different). We can imagine all kinds of hypothetical entities ‘behind’ these utterances but this has no

bearing at all on what they are because – to repeat – they are what they are (commonly thought to be.

This is not only a matter of language, but more generally a matter of the use of our everyday concepts. What we call 'red' and believe to be red is red. In this domain, unlike in the domain of the natural sciences, no experiments can reveal that we have all been mistaken (cf. Itkonen 1978: 42–43). Or, to give further examples, it is impossible that some experimental (let alone 'computational') research could reveal that we have all been mistaken about the meaning of the word *friend* (and that it really means 'table' or means nothing at all); and it is just as impossible that experimental research could reveal that what we have thought to be hope is 'in reality' fear (cf. Itkonen 1983: 230–233). In this domain, then, something exists (as X) if, and only if, it is known (or believed) to exist (as X); and, as a consequence, sentences about X are true if, and only if, they are known to be true (cf. Itkonen 1983: 129–135; 1997: 54–62). This is what makes knowledge of this type a priori or non-empirical; and this is also the justification of my claim that 'autonomous linguistics is non-empirical', namely in this precisely defined sense. – These insights have been rediscovered within the doctrine of 'response-dependence' or 'response-authorization' (cf. Johnston 1993, Pettit 1996: 195–204, Haukioja 2000).

In sum, we may experimentally discover that what we thought to be wine is in reality water. But, contrary to what Bromberger and Halle claim or assume, we cannot discover (by some sort of 'computational-intentional' analysis) that what we thought to be an utterance of the sentence *The merchant sold shelves* was in reality an utterance of the sentence *John is easy to please*.

## CONCLUSION

I think Trubetzkoy's (1958 [1939]) overall view of linguistics is fundamentally correct: on the one hand, there is the non-causal study of language as a social institution, also called autonomous linguistics or grammatical theory (cf. Itkonen 1978), and on the other hand, there is the causal study of linguistic behavior as it takes place in space and time (cf. Itkonen 1983). A congenial view of language and linguistics was given some time ago by the Finnish philosopher Erik Ahlman (in Ahlman 1926).

The arguments against Bromberger & Halle (1992) are simultaneously arguments against psychologism in phonology. In this respect, again, I agree with Trubetzkoy's position. Psychologism in semantics (or in logic) is open to the same sort of criticism (cf. Itkonen 1997).

In today's cognitive science there is a fashionable tendency towards increasing reductionism, expressed in the slogan 'mental is neurological'. The same tendency is evident in Bromberger & Halle's (1992) attempt to reinterpret psycholinguistic phenomena in physicalist terms. In this type of ontology there is no place for non-physical entities. But physics is based on mathematics. Therefore, in the name of consistency, or of scientific rationality, the proponents of physicalist ontology ought to reduce mathematics too to physics (via neurology). However, they do not even try to do so. On the face of it, this is irrational. But fashion, whether in philosophy or elsewhere, has nothing to do with rationality.

The natural sciences exhibit undeniable progress, and there may be some progress in linguistics as well. But philosophy (including philosophy of phonology) is, on the whole, in constant decline.



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## FONOLOGIAN FILOSOFIAA

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Tämän artikkelin kohteena on kolme erilaista tapaa lähestyä fonologian filosofiaa: Ensinnä, Trubetzkoy pitää fonologiaa yhteiskuntatieteenä, joka tutkii intersubjektiviisiä 'äännenormeja' (*Lautnormen*). Toiseksi, Linell pitää fonologiaa osana psykologiaa määritellään foneemin 'foneettiseksi suunnitelmaksi'. Kolmanneksi, Halle ja Bromberger yrittävät tutkia fonologian fysikalistisesti ja eliminovat siten fonologian ja fonetiikan välisen eron. Päätelmänä tässä artikkelissa on se, että Trubetzkoy on lähinnä totuutta, vaikkakin hänenkin katsomustaan voidaan jossakin määrin vielä parantaa.

**Avainsanat:** fonologia, Trubetzkoy, Linell, Bromberger, Halle