PHONETICS AND NATURAL PHONOLOGY

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ABSTRACT

Introduction to topics and principles of mutual
relevance for phonetics and the model of
Natural Phonology (NPh)

Among various concrete and/or phonetically oriented
phonological theories (4, 10, 27, 33, 50) there is
the model of Natural Phonology (NPh) as founded by
Stampe (48) and later developed in various directions
(49, 11, 13, 3, 8, 18, 19, 21, 38, 39). The
selection of our topic for this symposium gives evidence
for the congress organizers’ recognition that phonetics and NPh hold a particular relevance for
one another. In this introduction to our symposium we
want to briefly explore this mutual relevance.

1) NPh delineates the field of phonology in a way
which facilitates cooperation with phoneticians:

a) Boundaries to morphophonology are defined rather
sharply (notwithstanding diachronic transition
phenomena), sharper than e.g. Textual Phonology (40):
phonological processes of a given language represent
constraints on production and perception (cf. already 3, 46), morphological rules do not. Thus
both phonemic and allophonic processes of final ob-
struent devoicing in many languages (e.g. German
and Polish) are phonological, whereas Russian final
devoicing may approach a transitional stage towards
morphology (cf. final voiced stops in Bashk and abbreviations such as NPh). The consequences for
phonetic experimentation are obvious.

b) No boundaries are set towards phonetics, there
is no despite of ‘low level rules’ or of ‘performance
factors’ (note NPh work on speech errors as in
36, 22), i.e. there is no puristic dichotomy be-
 tween phonology and phonetics as often in structural
phonemics or Natural Generative Phonology (50).
Therefore the division between phonetics and phono-
logy is rather a division of labor.

2) In contradistinction to Generative Phonology
(1, 2, 25) NPh acknowledges and investigates the
extralinguistic bases of its principles (18, 19, 19).
These bases lie generally in phonetics, but also in
neurological, psychological, and social phenomena,
and in general properties of semiotics. Thus phon-
etics is a founding discipline of phonology. This
comes out in NPh as a great concern for phonological
universals.

3) NPh and phonetics share a functional perspective
(34, see Bashall and Bertinetto at this symposium).

a) In order to avoid proliferating functional ad
hoc assumptions it seems useful to subsume func-
tional considerations into a semantic notethtory (18, 19); for other semantic approaches to phonology see
34, 1, 47). Clearly all phonetic acts involved in
production and perception are parts of semiotics,
because acts of semiotics (or sign chains) mediate
between ‘substance and form’. In this perspective
the puristic dichotomy between sound substance
as domain of phonetics and sound form as domain of
phonology can be eliminated.

b) Any functional explanation has to account for
functional conflicts: NPh has highlighted two con-
trasts well-known to many linguistic and phonetic
schools for a long time:

a) phonological-phonetic vs. morphological tend-
encies, whose diachronic version has been heralded
by the Hoengrammair’s “Lautgesetz und Analogie”
(cf. now 45, 19, 51, 30);

b) tendencies towards “ease of articulation” vs.
“optimal perception”. NPh has elaborated on a classi-
fication of opposed universal phonological process
types of fortition (foregrounding) vs. lenition (back-
grounding) with opposed hierarchies (see 12,
34, 19). The single process types can be classified
according to the following antagonistic subgroups:
processes of dissimilation (polarisation incl.
dysphonization) vs. assimilation (incl. fusion),
strengthening vs. weakening, lengthening vs. short-
ening, Insertion vs. Deletion. The calculation of
these conflicts needs psycholinguistic, sociolinguis-
tic models, and phonetic operationalization (see
1 below).

c) Form-function relations are typically many-to-
many, as can be seen in overlapping phonetic ex-
planations of, e.g. vowel lengthening before voiced
stops: This draw-back of functionalism unfortunately
makes satisfiability more difficult (cf. 19).

On the other hand functional considerations can pre-
vent the assumption of ad hoc hypotheses (cf. Berti-
netto at this symposium).

4) NPh does not assume an abyss between competence
and performance or langue et parole which would be
difficult to bridge. Thus NPh has been open to (and
directly attachable by) experimental evidence, even
before Chala’s important design of Experimental Pho-
noology (cf. now 43). Nor does NPh restrict its do-
main to the analysis of citation forms (of native
informants) or spelling pronunciations (of grammars
and dictionaries). Since its very beginnings NPh has
emphasized the importance of studying first
language acquisition (48, 24), phonological varia-
tion (45, 14, 15, 20, 23, 26, 43) as well as other
fields of external/substantive evidence (16, 18, 19,
8, 37, cf. 50), e.g. second language acquisition
where NPh can better cooperate with phonetics than
other models (cf. 28, 29, Dzulbaleka at this sym-
pousm).

Among other specific fields of common inquiry for
phonetics and NPh I would like to single out the
following ones:

1) Concepts of “ease of articulation” and “optimal
perception” (308) have been shunned as too vague by
many investigators. Lindner’s (35) model of context
free and context sensitive articulation suggests re-
presses an important step forwards for the first
concept. Clearly “ease” may mean either “local”
application of one given phonological process in
cross-linguistic and universalist studies, e.g.
hierarchies of consonant palatalisation or vowel
centralisation and deletions irrespective of the
phonotactic results, or “global” effects in terms
of prosody or consonant/vowel clusters (e.g., avoidance or elimination of consonant clusters resulting from vowel deletion). More detailed phonetic investigations are needed to help phonologists differentiate process types, e.g., is intervocalic lention of atopes a weakening or an assimilation process? Or should we rather envision overlapping parameters?

Optimization of perception first studied by Angenot (partially referred to at this symposium, cf. also Baskëll and Dogil).

II) Following Beaudouin de Courtenay (5, cf. now 37, 9, 42) phonemes are defined as sound intentions within NPh. This entails selection of phonemes to occur on a more conscious level than other acts of phonological sentience. One of many consequences can be seen in phonological variation: If speakers select a dialect phoneme instead of a standard phoneme then this choice can be much better controlled by speakers (and perceived/evaluated by hearers) than other phenomena of dialect mixing (23, 41). However this does not entail that phonetic realizations are entirely unconscious, automatic consequences, as studies of coarticulation have shown. Since all phonetic acts are parts of semantics, all-or-nothing distinctions between phonetic intentionality and unintentional application of phonological processes must be wrong from a deductive point of view as well. However the fine-grading of "consciousness" or "intentionality" awaits further empirical elucidation. E.g., should one draw a clear line between segment deletion and physical articulatory undershoot?

III) A similar gradience must be allowed for phonetic-phonological realization phenomena in speech on automatic speech processing/recognition (cf. e.g. 6). Such empirical studies may lead to a radical reformulation of some phonological processes, at least at "lower levels" (cf. Dogil at this symposium).

IV) NPh is the only model of process phonology where considerable attention has been paid to speech disturbances (17, 24, 32, 32, 44, 22). Here as well a similar gradience comes into play (cf. Dogil's unpublished work on aphasia vs. dysartria). All of these and other interesting matters only some can be discussed in this symposium. More at the next Phonologettagung! (Sixth International Phonology Meeting, Krems, July 1-4, 1988, organized by the Institut für Sprachwissenschaft der Universität Wien).

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