ONGOING SOUND CHANGE AND THE ABDUCTIVE MODEL:  SOME SOCIAL
CONSTRAINTS AND IMPLICATIONS

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Underlying the present discussion of some aspects of sound
change is the notion that language not only, as energeia, (or,
explicitly, as a set of largely automatized processes definable
in more or less accurately phrased rules), is susceptible to for-
mal analysis of some degree of descriptive adequacy and explana-
tory power but that, in addition, it can be conceived of as an
inherent and integral part of human thought and imagination.
Adopting the latter point of view, language can be said to form a
conceptualized (verbalized) mirror image of mental activities (cf.
the notion of language as the primary modeling system, elaborated
in Soviet semiotics).  The former approach, concerned with build-
ing models of linguistic structure (or parts thereof), views lan-
guage as a — particularly sophisticated — semiotic subsystem
(operating within the parameters set by its specific neurophysio-
logical premises) and strives to explain its functioning in this
capacity.  The other kind of inquiry into the nature of verbal
communication places the chief emphasis on language as a cultural
manifestation of the human mind (in the sense of Geisteswissen-
schaft) and seeks to understand its performance in society.  The
former approach may be termed generative (in the broadest meaning),
the latter hermeneutic.  Both, if applied pragmatically and with-
out any ad hoc constraints, have a sociolinguistic dimension.

It is a fairly common view that sound change takes place
gradually in a series of minimal, barely noticeable adjustments
and modifications at the phonetic (subphonemic) level and that it
is only at the functional or semantically distinctive (phonemic)
level of sound production and, in particular, perception that the
impression of abrupt sound change obtains.

Some years ago, Andersen (1973), while critical of 'standard'
TG phonology but adopting a broadly generative approach to lin-
guistic inquiry in terms of positing specific speaker/hearer
'grammars', i.e., sets of rules generating acceptable sound
sequences (utterances), proposed an intriguing model of phonologi-
cal change.  In addition to induction and deduction, he intro-
duced, following Peirce, a third mode of inference termed abduc-

tion. Applying deduction and abduction specifically to sound change, Andersen (1973, 777, fn. 13) points to the "unique role of abduction ... vis-à-vis the other modes of inference, which merely test what has been arrived at by abduction" and suggests that "one can evidently describe the process of encoding as essentially deductive, and that of decoding as abductive". In closing, he submits (1973, 791) that while early structuralism (Jakobson) "could insist only that every phonetic innovation be interpreted in terms of the system that undergoes it ..., it is [now] possible to interpret every phonological innovation — abductive or deductive — in terms of the system that gives rise to it".

In a subsequent paper, Andersen (1974, esp. 25-6, 41), in discussing and summarizing his typologies of innovation in the content and expression systems of language, distinguishes between adaptive and evolutive innovations, with the former subclassified, on the expression plane, into remedial and contact innovations; the evolutive innovations are subdivided into deductive and abductive, with the abductive innovations of the expression plane further specified as pertaining either to the phonemic system ( a) feature valuation, b) segmentation, c) ranking), or to pronunciation rules. In a more recent study, with his theoretical reasoning again firmly grounded in Slavic diachronic and dialectal data, Andersen (1978, section 4.2) arrives at the conclusion that we must "acknowledge that conceptual factors take precedence over perceptual or articulatory ones in determining how a phonological system may be changed as it is transmitted from generation to generation ... and recognize that it is the structuring principle of linguistic form — the fact that the speech signal must be segmented, that distinctive features are binary, and that they must be ranked — and not the articulatory or acoustic or perceptual substance that shape its historical development. We are led to conclude that the ultimate source of dialect divergence — and of linguistic change in general — is the process of language acquisition, in which the speakers of a language impose form on the fluctuating and amorphous substance of speech." Novel and incisive though these formulations are, they not only allude to Jakobson's views about DF analysis and language acquisition, but in their reference to form and substance, content and expression also echo some of the basic tenets of glossematic theory. Yet, essential-

ly, the abductive model of sound change, pertinent, above all, to the decoding process, is of course Andersen's, at least as consistently formulated by him and solidly underpinned by theoretical considerations. The model implies that the output of 'grammar 1' serves as the input to 'grammar 2' which in turn yields a reinterpreted 'output 2', slightly, yet significantly different from 'output 1' (1 and 2 here symbolizing successive generations); cf. esp. Andersen (1973), 767 and 778, figs. 1 and 2.

It should be noted, however, that observations and inferences of a similar kind have been made with regard to phonological change also prior to Andersen's sketching of his model of abductive innovation in phonology, as well as after the appearance of his first, seminal paper on the subject. As an example of the latter — arrived at independently, it seems — may be quoted some remarks made by Hetzron in discussing two principles of reconstruction in genetic linguistics. Thus, Hetzron (1976, 96) writes: "In diachrony ... what is transmitted from generation to generation is not the structure, but a set of data which is analyzed by the child acquiring the language so that he could establish a structure for his own use. Language change is precisely justified by the fact that a subsequent generation may analyze the facts perceived by learning the language from the older generation, and this may eventually require some adjustment in the facts, some modification of the perceivable data". To be sure, Hetzron's formulation is less precise than Andersen's in addition to being couched in traditional structuralist ('taxonomic') rather than in broadly generative terms. But in essence, this is in line with Andersen's more elaborate and tightly argued model of phonological innovation.[1]

When stating his premises, Andersen (1973, 767) wrote: "What is needed is a model of phonological change which recognizes, on the one hand, that the verbal output of any speaker is determined by the grammar he has internalized, and on the other, that any speaker's internalized grammar is determined by the verbal output from which it has been inferred." And he qualified

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(1) For an earlier comment on the similarity of Andersen's and Hetzron's reasoning and a first criticism of a shortcoming they, in my opinion, share, see Birnbaum (1977), 28-30.

his theoretical framework by adding the crucial requirement:
"The model that is needed must show how phonological innovations
can arise in a homogeneous speech community ..." While the broad-
ly generative (and logic) premise sketched seems most useful
indeed, the formulation of the sociolinguistic condition is some-
what questionable (his reference to Labov's definition notwith-
standing). What, in fact, is a homogeneous speech community?
And what exactly is meant when Andersen (like Hetzron) speaks
about the transmitting of a phonological system (or a set of data)
from generation to generation? As I had an opportunity to cau-
tion (Birnbaum, 1977, 30): "... the transmission of a linguistic
system or subsystem (or a grammar or grammatical component genera-
ting this system or subsystem) from one generation of speakers to
the next must not be conceived of in all too rigid, mechanistic
terms since the distinction of successive generations in any real
speech community is never very clear-cut and easily ascertainable."
Put differently, even though sound change in reality — on the pho-
netic level, accessible to physical scrutiny and measurement —
occurs gradually and it is only on the more abstract phonemic
level that one sound, at some point, simply replaces another, it
is nonetheless a fact that, given the passage of time, an actual
sound shift (e.g., $e > o$, $ou > u$; $d > t$, $k > č$) is ascertainable
also at the phonetic level. How do such phonological changes
come about? Surely not as a result of any simultaneous gradual
adaptation by each entire membership of a number of clearly defin-
able consecutive generations. Obviously, a real speech community
is never truly homogeneous, nor does it consist of a limited set
of neatly separable generations.

Considering the interpenetration of synchrony and diachrony
— in phonology, ongoing sound change — it would seem more realis-
tic not to posit a limited set of coexistent generations at any
given time (as is implied in Andersen's abductive model as well
as in Hetzron's informal reasoning) but rather to assume the con-
tinuous pattern-setting effect of parents on children, teachers
on students, leaders on followers, older on younger playmates and
fellow workers, more prestigious on less prestigious population
groups, etc., all interacting at various ages and stages of their
development. While such a view of society and language does not
vitiate the validity of Andersen's abductive model of sound

change altogether, it certainly makes his scheme more problematic;
also, given these complicating factors, his technique for describ-
ing, analyzing, and explaining actual phonological innovation is
in need of further refinement.

Here one more point should be briefly discussed. It has
become customary to attribute great significance to the process
of acquiring language, i.e., the mastering of one's native tongue
in early childhood, also when it comes to explaining certain
basic facets of sound change. (The partial or complete acquisi-
tion of a foreign language presents analogous but also additional
problems.) Andersen's abductive model, in this respect influ-
enced by Jakobson's work on child language, is but one example of
this conception. However, it seems worth considering whether,
precisely as regards modifying one's pronunciation habits, i.e.,
introducing incipient or, occasionally, even full-fledged phono-
logical innovations, it is actually in early childhood (say,
before the completion of the fifth year) that the definitive
articulatory profile of a person is usually formed and stabilized.
Rather, I would submit, that is the age when growing-up speakers,
by imitating their elders, attain the same or nearly same pronun-
ciation as their models. True, in the process they may very well,
by 'misreading' (i.e., slightly incorrectly perceiving) the phone-
tic output of 'grammar 1', internalize, initially at least, a
somewhat deviant 'grammar 2' (or, rather, its phonological compo-
nent) producing — following Andersen's reasoning — a phonetic
'output 2' not fully identical with 'output 1' of their model.
Yet, very often (if not as a rule) most of the misperceived pro-
nunciation is subsequently noticed and rectified except, perhaps,
where the resulting differences in pronunciation are so minimal
as to be considered insignificant even by the maturing child; it
is only their cumulative effect over a longer period of time that
ultimately may give rise to a genuine sound change. However, it
appears that attitudes at a somewhat older age, especially in the
teens, may more directly, noticeably, and lastingly affect pronun-
ciation habits and cause partial or even full sound shifts (or,
rather, sound substitutions) to occur within one generation. I
am referring here to the fashionable pronunciation or talking
fads which, particularly in our day and age, so markedly leave
their imprint on the speech habits of the teenage generation. It

is my impression, based on observations from several languages, that the modification of the articulatory manners and preferences affecting these young people are more radical, since they are deliberate, than are the difficulties in imitation and pronunciation adjustment encountered in early childhood. If Andersen's abductive model of phonological innovation is to be applicable also to currently observable sound change — and not only to interpreting and elucidating instances of historically attested or reconstructed phonological shifts — these sociolinguistic and psycholinguistic considerations will somehow have to be accounted for in his model.

Viewing sound change primarily as a sociolinguistic phenomenon, best studied while in progress, it must be said — with all due respect to Labov's 'integrated' explanation[2] — that we are still far from genuinely and fully grasping its causes. So far, there has not been much more than a general realization of the permanent and highly creative interplay between, on the one hand, language's striving for economizing (ultimately tending toward ellipsis while preserving a measure of redundancy as a safety valve to ensure comprehension and information transfer; cf. Martinet 1955) and, on the other, its making for diversity of expression to distinguish among even the finest shades of meaning. Though sound, at the phonemic level, does not by itself carry, but merely distinguishes meaning, it and its modification are crucially affected by this dialectic tension characteristic of language as a semiotic system.

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(2) The study of ongoing sound change viewed in its social setting has in America been pursued, in particular, by Labov; cf. esp. Labov (1963), (1966), (1970), (1972), (1973); and Labov et al. (1968), (1972); for a brief assessment of Labov (1973), see, e.g., Birnbaum (1975), 284-6. Of more recent work by scholars with other ideas, see, e.g., Bailey (1973), Peng (1976), and Itkonen (1977).

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