ARGUMENTS AND NON-ARGUMENTS FOR NATURALNESS IN PHONOLOGY:
ON THE USE OF EXTERNAL EVIDENCE

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§1.0 The concept of naturalness has become a major concern for
many phonologists. In my view, the concept of naturalness should
be best regarded as a basic principle of a phonological theory and
should be tested by the judicious use of external (or substantive)
evidence.

As to the relationship of naturalness to psychological reality,
my point is that a natural phonological analysis of a phenomenon
claims psychological reality for its concepts and constructs.
However, not all psychologically real constructs in a phonological
analysis need to be phonologically natural. E.g., a phonological
process (henceforth PR) posited by the linguist may refer to con-
structs of natural morphology (cp. Mayerthaler to appear), especial-
ly in case of so-called morphonological rules (cp. Dressler, 1977a).
§1.1 In the theory of Natural Phonology (henceforth NatPhon), as
proposed by Stampe since 1968 (see now Donegan and Stampe to ap-
pear) and 'Polycentristic Phonology' (Dressler 1977a), naturalness
occupies a central place. Phonological systems are phonetically
(and I add, psychologically and, to a lesser degree: sociologically,
historically) motivated. The basic constructs of Natural Processes
in the sense of "mental substitutions which systematically but sub-
consciously adapt our phonological intentions to our phonetic ca-
pacities" (Donegan and Stampe to appear, §1, including its per-
ceptive converse) are substantive universals.
§1.2 Similar to adherents of NatPhon, S. Schane and M. Chen (see
Sommerstein 1977, 230, 233) have claimed that particular languages
select PRs from a fixed universal set of natural processes and may
impose constraints on their applicability. In the best of cases
a PR forms a subset of a universal process (as characterized by
the theory) and any restrictions vis-a-vis the general form of the
respective universal process can be derived from the hierarchies
of the universal process and from a fairly small number of prin-
ciples of restrictions.

But what if a PR is not such a regular subset of a universal
process? In this case NatPhon (or at least Polycentristic Phonol-
ogy) cannot appeal to frequency or intuitive plausibility, but

must explain why the given PR is not a regular subset of a universal process. Several avenues are open: 1) Modification of the universal process. 2) The deviation is due to language acquisition; in this case well-motivated linguistic and psychological concepts must explain the deviancy. 3) The deviation is due to historical circumstances (including sociological factors). 4) The PR is not totally (phonologically) natural, a possibility avoided in NatPhon (but cp. Dressler 1977a; Sommerstein 1977, 235f). Since such PRs (diachronically) must go back to totally natural PRs, explanation 4) includes explanations 3) and 2).

§1.3 Thus, it becomes clear that external evidence, at least from language acquisition, diachrony, and sociolinguistics is not external for NatPhon, but forms an integral part of the area it has to cover. Moreover, there is no theoretical or methodological principle which should exclude other dimensions of external evidence from investigation:

§1.3.1 Take sociophonology: The restriction to the investigation of only one level of formal, maximally differentiated speech as practised in most of generative phonology and almost all of structural phonology is an undue limitation of interest and of access to natural speech, whose variation is apt to give important insights even to formal principles of rule application (cp. Dressler 1975). However, any detailed and theoretically sound work on casual vs. formal speech presupposes the inclusion of both, psychological/psycholinguistic theory (cp. Vanecek and Dressler 1977) and sociological/sociolinguistic theory (cp. Wodak and Dressler 1978).

§1.3.2 Or: The differential (and always non-random!) breakdown of phonology in aphasia gives important insights into the structure of phonology. However, studies so far have not completed the desirable integration of all disciplines relevant to aphasia, e.g. the brilliant thesis of Keller (1975) neglects all recent phonological theories, whereas the present writer's studies (Dressler 1977b; 1978) have not yet integrated neuropsychology. For other types of external evidence, see Linell (1974), Fischer-Jørgensen (1975, 224ff), Zwicky (1975), Skousen (1975).

§2. Non-arguments for naturalness

In the literature we find certain non-arguments/fallacies:

§2.1 "Facts about the real working of the brain are most important".

Anttila (1977, 221) believes to have found direct evidence, as opposed to indirect neurolinguistic evidence, against generative grammar, when he cites the biologist W. Wieser about the brain not working exactly, often blundering and correcting itself, not proceding logically, but according to similarities, being extremely redundant, etc. However, Wieser has informed me that these phenomena at the micro-level do not preclude precise rules at the macro-level (which is the level of interest for linguistics), just as Heisenberg's indeterminacy relation does not vitiate the precise working of laws of classical physics in macrophysics. Here we might speak of a micro-anatomic fallacy.

§2.2 There is a similar fallacy which one might call the macroanatomic fallacy or mistaken equation of phonology and phonetics, which is an exaggeration of the Physical/Phonetic Basis Condition (Botha 1978 II, 16ff) of phonology. This line of argument neglects the interaction between phonological and morphological or phonological and lexical naturalness (cp. Dressler 1977a) and of what Hyman (1977) has called phonologization (which in my view starts with allophonic PRs producing extrinsic instead of intrinsic allophones).

§2.3 Still more common is the false equation of naturalness with concreteness, since as a result of refusing the abstractness involved in standard generative phonology, many phonologists have regarded concreteness as a virtue in itself. However, phonological concreteness has often been achieved at the expense of morphology for which very few 'concrete phonologists' (e.g. Skousen 1974) have cared to provide a theoretical framework. More important still, concreteness has been defined (if at all) as restrictions on the relationship between underlying phonological and surface phonetic representations. In my opinion it is possible to define the naturalness of processes and of representations (be it as structural symmetries as found by phonemicists or natural asymmetries as derived from processes, see Stampe (1973)), but not the naturalness of relationships between representations. Notice both the failure of Kenstowicz and Kisseberth (1977) to find universal formal constraints on the distance between phonological and phonetic representations (cp. Gussman 1978, 154, 167f; Sommerstein 1977, 237 n. 47), and the undesirable results of the much more rigorous restrictions of Natural Generative Phonology (see Hooper (1976) and

its critique by Gussman (1978, chapter 1) and Donegan and Stampe
to appear, §3.1., §4).

As an example I simply want to refer to the abstract analysis
of German [ŋ] as underlying /ng/ (discussed in detail in Dressler
to appear; cp. Dressler (1977a, 51)). For the much debated PR
g → Ø/ŋ —— (except before non-centralized vowel), I have found
external evidence, e.g. in loan-word integration and sociophono-
logical variation (e.g. [ˈaŋgɛla] vs. [ˈaŋəla] 'Angela'), in child
language (Mandarine 'tangerine' → [maŋgaˈriːnə] vs. [maŋəˈriːnə])
and aphasia (see Stark 1974). Thus, multiple external evidence
has been found in support of the psychological reality of this PR,
although this analysis implies a very abstract underlying repre-
sentation (cp. Kenstowicz and Kisseberth (1977, 7f, 53), Gussman
(1978, 168), see below §3.4).

§2.4 Often natural is falsely equated with productive. This
equation (Fischer-Jørgensen (1975, 228f); Skousen (1975); Linell
(1976), etc.) might hold most of the time, but not always (Dressler
(1977a, 1977c)).

§2.5 Still weaker and never explicitly justified is the equation
of natural and (e.g. typologically) frequent. Frequency might be
a first indicator for the phonologist looking for universals, but
what counts is explanation in the sense of causal argumentation.

§3. Counterarguments against external evidence

§3.1 "External evidence is unnecessary, internal evidence suffices".
This 'Nonnecessity Thesis' has been proved by Botha (1978 II) to
be incompatible with empirical mentalism. Formal, 'pure' lin-
guistics cannot alone do the job of vouching for psychological
reality. Due to the serious underdetermination of standard data
(internal evidence), various sources of external evidence must be
adduced (cp. §1.3 and Botha (1978 II, III §5.3)).

§3.2 "External evidence is too unclear". However, internal
evidence based on intuitions as utilized in generative phonology
is unclear itself in many respects as Ringen (1975) has shown.
Moreover, it must be noted that evidence from diachrony and loan-
word integration seems to be accepted by many who shun other ex-
ternal evidence.

Unfortunately, the use of both types of evidence has been
grossly simplified by most generative phonologists; for loan-words
see Fischer-Jørgensen (1975, 229), Kiparsky (1973, 112ff), Dressler

(1977a, 35ff). As to diachrony, both structuralists and generati-
vists have limited themselves far too often to nomological explana-
tions (e.g. symmetry, rule simplification), while neglecting the
all-important genetic explanation, e.g. by confusing sound change
with sound correspondences; thus context-free processes have been
liberally adduced as evidence, although they are, I believe, always
the final result of generalizing context-sensitive sound change.

§3.3 External evidence shows "what in fact counts as internal evi-
dence" (Kenstowicz and Kisseberth 1977, 3). Does this mean that
e.g. English loan-words in Japanese might be used to demonstrate
the necessity of morpheme structure constraints or redundancy rules
within phonological theory, but not for corroborating their specific
forms in Japanese itself?

§3.4 "Internal evidence is more important than external evidence",
a view held by many (called the Nonprivileged Status Thesis by
Botha (1978 II, 12f)). However, quite apart from its theoretical
shakiness (cp. §1), there are counterexamples: E.g. the abstract
analysis of English [ŋ] as /ng/ rests on exceptional (and thus sus-
pect) alternations like lo[ŋ], lo[ŋg]est, whereas the normal, pro-
ductive superlatives are e.g. bori[ŋ]est, winni[ŋ]est; but external
evidence for the abstract analysis is excellent (starting with From-
kin (1973, 223)). Even more extreme is the German situation, where
in most varieties internal evidence is restricted to distributional
evidence (Vennemann 1970), which generativists usually esteem much
less than evidence from alternations, alternations in this case
exist only in external evidence (see above §2.3).

§3.5 Botha (1970, 130ff) has deplored the 'qualitative type jump'
from internal to external evidence and the lack of criteria of ade-
quacy. Since then he has revised his standpoint and has demanded
the construction of "bridge theories" mediating between linguistics
and other disciplines relevant for the given type of external evi-
dence (Botha 1978 III, 27ff). But 'hyphenated' disciplines, such
as psycholinguistics, sociolinguistics, neurolinguistics have strived
just for that since many years!

§3.6 "External evidence is often divergent and incoherent" (Guss-
man (1978, 167f) happily cites Dressler (1977d, 224), where higher
standards in the use of external evidence are demanded). Here
Botha (1978 III, 30, 27ff) correctly states "that the relative
weight of a given kind of external evidence is a function of the

adequacy of a particular bridge theory". In other cases conflicting external evidence may force us to revise phonological theory (e.g. in the case of introducing Korhonen's concept of 'quasi-phonemes' in Dressler (1977a, 52ff).

§3.7 In connection with §3.6 I want to discuss a problem which seems to strike a heavy blow to the theory espoused here: I have linked naturalness firmly with the universality of natural processes. However, processes actually studied, show different hierarchies, both typologically and in external evidence (cp. Drachman 1977; Ferguson 1978), although hierarchies have been claimed to be an integral part of the universal processes constructed by NatPhon. Whereas Atomic Phonology has found a purely formal solution (criticized by Donegan and Stampe (1977)) to this problem, I want to come back to §1.2. The reactions of an individual to innate physiological and psychological restrictions are determined both by maturation and social environment. In this way I agree neither with (rather mystical) strong claims about innate universals (as in certain quarters of TG), nor with the arbitrariness of the outcome of societal constraints (as implied in marxist critiques of TG). Therefore (in Dressler 1977a) I have spoken only of universal tendencies (one type being universal processes) which necessarily conflict and must be compromised by the language learner: Thus, certain universal processes are suppressed either in the language as a whole or in certain domains of external evidence; or they are restricted in ways allowing different process hierarchies. Moreover, a typology of phonological processes must consider advances made in the theory of typology: e.g. ordering typologies may be multilinear (with branchings).

References

Anttila, R. (1977): Rev. of Linell 1974, Lingua 42, 219-222.

Botha, R. (1970): The justification of linguistic hypotheses, The Hague: Mouton.

Botha, R. (1978): On the method of mentalism, Ms., University of Stellenbosch.

Donegan, P.J. and D. Stampe (1977): "On the description of phonological hierarchies", in CLS Book of Squibs, S. Fox et al. (eds.), 35-38.

Donegan, P.J. and D. Stampe (to appear): "The study of natural phonology", in Current Approaches to Phonological Theory D. Dinnsen (ed.), Bloomington: Indiana University Press.

Drachman, G. (1977): "On the notion 'Phonological Hierarchy'", in Phonologica 1976, W. Dressler and O. Pfeiffer (eds.), Innsbrucker Studien zur Sprachwissenschaft, 85-102.

Dressler, W. (1975): "Methodisches zu Allegroregeln", in Phonologica 1972, W. Dressler and F. Mareš (eds.), Munich: Fink, 219-234.

Dressler, W. (1976): "Tendenzen in kontaminatorischen Fehlleistungen", Sprache 22, 1-10.

Dressler, W. (1977a): Grundfragen der Morphonologie, Vienna: Österreichische Akademie der Wissenschaften.

Dressler, W. (1977b): "Morphonological disturbances in aphasia", Wiener linguistische Gazette, 14, 3-11.

Dressler, W. (1977c): "Morphologization of phonological processes", in Linguistic Studies presented to J. Greenberg, A. Juilland (ed.), Saratoga: Anma Libri, 313-337.

Dressler, W. (1977d): Rev. Skousen 1975, Lingua 42, 223-225.

Dressler, W. (1978): "Phonologische Störungen bei der Aphasie", Badania lingwistiyczne nad afazją, Warsaw: Ossolineum, 11-22.

Dressler, W. (to appear): "External evidence for an abstract analysis of the German velar nasal", in Phonology in the 1970's D. Goyvaerts (ed.), Ghent: Story-Scientia.

Ferguson, Ch.A. (1978): "Phonological processes", in Universals of Human Language, J. Greenberg (ed.), Stanford Univ. Press, 403-442.

Fischer-Jørgensen, E. (1975): "Perspectives in Phonology", Annual Report of the Institute of Phonetics, University of Copenhagen 9, 215-235.

Fromkin, V. (1973): (ed.) Speech errors as linguistic evidence, The Hague: Mouton.

Gussman, E. (1978): Explorations in abstract phonology, Univ. of Lublin.

Hooper, J. (1976): An introduction to natural generative phonology, New York: Academic Press.

Hyman, L. (1977): "Phonologization", in Linguistic Studies presented to J. Greenberg II, A. Juilland (ed.), Saratoga, 407-418.

Keller, E. (1975): Vowel errors in aphasia, Univ. of Toronto.

Kenstowicz, M. and Ch. Kisseberth (1977): Topics in phonological theory, New York: Academic Press.

Kiparsky, P. (1973): "Phonological representations", in Three dimensions of linguistic theory, O. Fujimura (ed.), Tokyo: TEC, 1-136.

Linell, P. (1974): "Problems of psychological reality in generative phonology", Reports from Uppsala University, Department of Linguistics 4.

Linell, P. (1976): "Morphonology as part of morphology", Phonologica 1976, 9-20.

Mayerthaler, W. (to appear): Morphologische Natürlichkeit, Ms. TU Berlin.

Ringen, J. (1975): "Linguistic facts", in Testing linguistic hypo-
    theses, D. Cohen and J. Wirth (eds.), Washington: Hemisphere
    Public Corp., 1-42.

Skousen, R. (1974): "An explanatory theory of morphology", Papers
    from the Parasession on Natural Phonology, CLS, 318-327.

Skousen, R. (1975): Substantive evidence in phonology, The Hague:
    Mouton.

Sommerstein, A. (1977): Modern phonology, London: Arnold.

Stampe, D. (1973): "On chapter nine", in Issues in phonological
    theory, Kenstowicz and Kisseberth (eds.), The Hague: Mouton,
    44-52.

Stark, J. (1974): "Aphasiological evidence for the abstract analysis
    of the German velar nasal", Wiener linguistische Gazette 7,
    21-37.

Vanecek, E. and W. Dressler (1977): "Untersuchungen zur Sprech-
    sorgfalt als Aufmerksamkeitsindikator", Studia Psychologica
    19, 105-118. (A preliminary version in Wiener linguistische
    Gazette 9, 1975).

Vennemann, Th. (1970): "The German velar nasal", Phonetica 22,
    65-82.

Wodak, R. and W. Dressler (1978): "Phonological variation in collo-
    quial Viennese", Michigan Germanic Studies 4, 1, 30-66.

Zwicky, A.M. (1975): "The strategy of generative phonology",
    Phonologica 1972, Dressler and Mareš (eds.), 151-168.