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SEMANTIC CONSIDERATIONS IN PHONOLOGICAL ANALYSIS

Past discussions of the links between semantics and phonology have resulted in the generally accepted view that linguistic organisation – including syntax, morphology, and the lexicon – is crucially involved in mediating between the two levels. The impact of the linguistic subcomponents depends on whether segmental or suprasegmental phonology is taken into account; in the former case the rôle of morphology and the lexicon is much more obvious than in the latter case while syntactic and also pragmatic factors are immediately relevant in the assignment of intonation contours (see Marek (1981) for a useful survey of research areas in prosodic phonology with special reference to intonation). What remains relatively uncontroversial is the indirectness of the links between the two extreme spheres of language, i.e. between sound and meaning. For segmental phonology such indirect connections depend upon the unit which is recognised as the domain for the operation of phonological regularities. Structural phonology, particularly the post-Bloomfieldian tradition, basically restricted the scope of such regularities to the mutual influence of immediately neighbouring phonemes (for a summary of past discussion in this area, see part I of Ohlander's (1976) monograph).

As is well-known, standard generative phonology – in contradistinction to both earlier and later trends – takes the morpheme to be the fundamental unit, with morpheme alternants serving as exponents or bearers of phonological regularities. This view translates fairly easily into an analytic procedure where processes are extracted from allomorphs; these processes may or may not be reinforced by distributional regularities and restrictions as well as the emerging phonological structure. The regularities arrived at in this way are then extended to non-alternating forms, which is one of the major reasons for the pervasive abstractness of descriptions developed in this framework.

I will return to the abstractness issue later on; for the moment let us concentrate on morpheme alternants. They serve as prerequisites to phonological analysis – in other words it is necessary to know that two or more surface forms are variants of the same morpheme before phonological regularities can

be established. That identification of morphemic variation cannot be a matter of surface similarity is beyond doubt; otherwise patent absurdities would arise where words such as

liver, otter, water, hammer, spider, letter

could be regarded as bi-morphemic, with *-er* being a separate morpheme, also found in *climber, hard-liner, Londoner* etc. It is normally thought that purely formal criteria should be supplemented by semantic ones. Opting for a measure of semantic sameness does not really solve the problem. Bolinger (1950) showed this quite dramatically: the words

must, dust, rust, crust

could be claimed to contain the morpheme *-ust* denoting 'surface formation' and hence exhibit the absurd, or totally insignificant, morphemic structure *m+ust, d+ust, r+ust, cr+ust*. Likewise we could regard as morphemically complex the words *handle* (because of *hand*), *hear* (because of *ear*), *scene* (because of *see*), *crumble* (because of *crumb*) where a degree of semantic similarity goes hand in hand with the phonetic identity of parts of the words. Bolinger (1950:215) characterised the issue by asking the pertinent question: "how far must two forms having the same morpheme diverge before they cease to contain the same morpheme?". Implicit in this formulation is the recognition of the need for a well-articulated theory of semantic descriptions including, in particular, a universal semantic alphabet. Despite the considerable interest that semantics has spawned during the past twenty years, we are not really much closer to tackling semantic descriptions. This is also evident from the development of generative morphology and phonology.

Consider the following statement by Hoard (1972:137) "The morpheme /Θr/ meaning "family relationship", occurs also [apart from *father* – E.G.] in *mother, brother, sister* and *daughter*". The (Θr) morpheme denoting "family relationship" is not really different in kind from the /ust/ morpheme denoting "surface formation" in Bolinger facetious examples just quoted. Invoking evaluation measure in such cases is, as McCawley (1979:296) observes a red herring since "an evaluation measure is supposed to provide a rate of exchange between rules and examples: each rule has a 'cost' that is offset whenever the number of examples to which is applies exceeds a certain threshold. But it gives no clue as to what examples should count as instances of a particular rule, e.g. it gives no clue as to whether *cholera* is a derivative of *coal*, with a derivation involving trisyllabic laxing".

A way out of this predicament might be a return to the old tenet forcefully supported, among others, by Chomsky, Halle and Lukoff (1956) and by Ross (1972) to the effect that all boundaries (hence morphological complexity) should be syntactically justified. The justification, as we understand it today, should come not so much from syntax but rather from morphology or, specifically, word-formation.

Several models of word-formation have been put forward or further developed in recent years, but following Aronoff (1976) it is possible to argue that rules of word-formation provide words with morphological structure either when they actively derive words from base words, e.g. by *un-* prefixation (*unkind*), by *-ly* or *-ness* suffixation (*kindly, kindness*) or when they derivatively analyse items of the lexicon and thus function as redundancy rules, e.g. abstract nouns in *-al* (*arrival*) or in *-ity* (*density*). Thus the existence of word-formation rules would be responsible for the assignment of boundaries – whether they should be just morpheme boundaries as some claim (Strauss 1979) or also include other types (Aronoff 1976, Allen 1978) is not germane here. The point is that boundary assignment would not be an arbitrary procedure motivated by ad hoc phonological needs. Derivational rules in their generative or analytic functions could provide justification for boundaries in *sender, government, realise* and at the same thime deny any morphological complexity to words such as *otter, torment* or *wise* despite the phonetic identity of the final parts of the two sets of words. Things, however, are not that simple.

Although the interpretative aspect of word-formation rules is not enlarged on and Aronoff (1976:34) claims that "rules for analyzing words are essentially degenerate versions of the rules for forming new ones", it goes without saying that rules of any kind must apply to a number of forms if they are to qualify as rules. Unfortunately it is not the case that word-formation rules – either in their generative or interpretative function – exhaustively cover all cases of morphological complexity. Consider the English nouns *laughter, complaint* and *constraint*; it cannot be doubted that these nouns are bi-morphemic in view of their semantic and formal closeness to the verbs *laugh, complain* and *constrain*. This being the case we must introduce a morpheme boundary before *-ter* and *-t*, which thus become elevated to the status of suffixes. The crucial point to be noted here is that the insertion or assignment of morpheme boundaries cannot be performed by any word-formation rule in view of the fact that there do not seem to be other cases of derivatives involving these suffixes. One example from Polish will illustrate the same instance of unquestionably related forms where the suffix is completely isolated in the sense that no other example of its existence can be detected in the language. The root morpheme of *rękˇ+a* 'hand' appears also in the derivative *rękˇ+aw* 'sleeve', where the suffix *+aw* is not recorded anywhere else in the language[1]. Similarly the relatedness in Polish between *pokój* 'peace' and *spokój* 'quietude, peace of mind' seem to call for morpheme boundary after the initial consonant in the latter noun, a situation which is lexically not paralled anywhere else in the nominal derivation. Since no word-

[1] Strictly speaking, there is the word *nogawka* 'trouser leg' which is clearly related to *nogˇ+a* 'leg'. Here the *awk* sequence could be analysed morphologically as /av+ĭk/; the point is, however, that *-aw-* /av/ does not appear anywhere else in the language on its own.

formation rule can be intelligently postulated, the morphological complexity of such lexical items can only be reflected directly in the lexicon. The unavoidable admission that morpheme boundaries can be matter for the lexicon only, creates serious problems since we are immediately confronted with a host of squishy pairs such as *ease – disease, bar – barrier fond – fondle* where there is little, if anything, to guide us in deciding whether it is the same morpheme which appears in both members of each pair. In such cases one cannot but agree with Linell (1979:164) that "it is completely futile to try to find any exact limits for morpheme identity recognition". If this is indeed the case then we have to conclude that the attempt to by-pass the pitfalls of morphemic analysis, made by Bolinger and others, by invoking derivational morphology and rules of word-formation cannot be fully successful. In other words, there will always be cases where morphological boundaries cannot be justified or verified. I will return to boundary assignment after considering a recent constraint on abstractness in phonology.

Without attempting to review the by now vast literature on abstractness I will just point to the shift of emphasis that seems to have taken place: instead of the original constraints on underlying representations, what has come into focus is the way rules apply. The constraint deriving from Kiparsky's (1973) claim that non-automatic neutralising rules are limited to derived contexts only, has resulted in a theory of strictly cyclic phonology (Mascaró 1976, Halle 1979). Part of Halle's (1979:337) characterisation of the application of a cyclic rule entails the claim that any such rule necessarily involves material across morpheme boundaries. Thus no strictly cyclic rule can apply morpheme internally, which means that if there are segments identical to reflexes of a strictly cyclic rule and are found morpheme internally, then they must be present as such in underlying representations. This is the contribution of the strictly cyclic phonology to the abstractness issue: in contradistinction to the standard SPE theory it prohibits the transferral of certain generalisations holding good at morpheme boundaries into morpheme internal position.

To make this discussion somewhat more concrete I will evoke the case of Slavic, especially Polish, palatalisations. It has been argued (Rubach 1981) that these rules are cyclic; thus the alternation [t – ć] in *lot* 'flight' – *locie* 'loc.sg.' is due to the palatalisation rule applying at morpheme boundaries. On this account the segment [ć] which appears very frequently in morpheme (or root) internal position must be entered in lexical representations of word such as *cień* 'shadow'.

This seems to be a very promising framwork but in order for it to remain attractive one condition must be strictly observed: morphological boundaries must be independently motivated and in no case can recourse be had to ad hoc manipulations and adjustments. It is worth noting that no such strong condition was ever needed with the SPE model and in many cases nonsyntactic morpheme boundaries could be argued for (Ross 1972:278-9); in fact, part of

the criticism levelled against that framework referred precisely to the excessive latitude in adjusting, inserting or deleting boundaries of all sorts. Such procedures, while debatable or possibly misguided in individual cases clearly did not invalidate the model as such. It will be recalled that in the SPE model, morpheme boundaries did not possess an inhibiting function, i.e. if the structural description of a rule did not explicitly require the presence of a morpheme boundary, then the rule could apply regardless of its presence or absence in in the string. Adjusting morpheme boundaries within such a framework, as amply evidenced by SPE, may be controversial but is not a priori impossible[2]. Within the cyclic framework on the other hand tampering with boundaries undermines the very fabric of the theory and deprives it of its strongest point. A theory which basing on morpheme boundaries admits arbitrary boundary adjustments becomes unfalsifiable since a rule can always be made to work by having a boundary inserted or prevented from it by boundary deletion. For the theory to be workable, boundaries will have to be justified in total independence of phonological considerations; if this requirement were to be flouted, there is nothing that could save phonology from charges of arbitrariness and ad hocness. The discussion in the first part of this paper, by showing that in a great number of cases morphological divisions are inherently fuzzy, makes doubtful the prospects of a non-arbitrary justification of morpheme boundaries.

A more damaging piece of evidence against cyclic segmental phonology would be a case where some putative cyclic rule could be shown to apply morpheme internally. Such a case can be found in Polish palatalisation processes. As mentioned above, Polish palatalisations have been argued by Rubach (1981) to be cyclic rules. With underlying /r/ the cyclic palatalisation derives [ž], e.g. *ka*[r]*a* 'punishment' – *ka*[ž]*e* 'dat.sg.', which coincides with the palatal reflex of underlying /g/ derived by a different cyclic rule, e.g. *wa*[g]*a* 'scales' – *wa*[ž]*yć* 'weigh'. Consider now the mono-morphemic forms in A and B below:

	A	
o[ž]eł 'eagle'	–	o[r]ła 'gen.sg.'
ma[ž]ec 'March'	–	ma[r]ca 'gen.sg.'
	B	
wy[ž]eł 'pointer'	–	wy[ž]ła 'gen.sg.'
tę[ž]ec 'tetanus'	–	tę[ž]ca 'gen.sg.'[3]

In the words of A, depalatalisation applies after vowel deletion (illustrated here by the gen.sg. forms), which does not happen in B. Since both palatalisations

[2] A marginal argument in favour of the possibility of boundary adjustments (or manipulations) comes from the fact that speakers are often uncertain about morphological divisions or admit contradictory interpretations. Thus morphological vagueness has an intuitive appeal which should not be easily disregarded.

[3] The form is actually *tę*[š]*ca* by voice assimilation.

are cyclic, the segment [ž] cannot be their reflex as it occurs morpheme internally. It must be entered phonologically but then there is no way of describing depalatalisation as applying to the words in A but not to those in B. The problems do not arise with non-cyclic phonology since at least the [ž] in A will be derived by rule from underlying /r/ rather than entered lexically. The cyclic assumptions thus produce a description which is observationally inadequate[4]. This result may be due to a faulty analysis but it is equally possible that the failure is more basic. In view of the inherent fuzziness of morphemic divisions, it is doubtful that phonological systems should rely for the operation of their segmental phonological rules on constituent structure to any significant extent. Thus whatever semantic considerations may be involved in setting up morpheme boundaries, they do not seem crucial in the working of the phonology.

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[4] The analysis and the underlying cyclic theory could still be salvaged by claiming that the [ž] which alternates with [r] as in A is phonologically not /ž/ but rather something different both from /ž/ and from /r/, say, /r'/. Depalatalisation could then apply to the words in A without affecting those in B. This path, however, replaces one type of abstractness by another one without bringing in anything fundamentally new or significant.

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