LENITION PROCESSES AND 'GLOBAL PROGRAMMING PRINCIPLE'

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ABSTRACT

A general abstract principle referred to as the 'global programming' is considered which universally governs (i) lenition processes, (ii) slips of the tongue, and (iii) child language restrictions turning their underlying PRs into defective realizations. GPP claims: defective realizations come about due to the distortions of the (next-to-phonetic) phonemic representations (i) by replacing a fine-controlled scaling in the speech production by an overgeneralized plan or (ii) by eliminating constituents the phonological system of a language is made up of. These processes, (i) rule restriction and (ii) elimination of constituents result in narrowing the information space in which an underlying PR is posited.

It is the purpose of this paper, (i) to give a general account of (a polynomial word-level) 'phonological representation' considerably different from that as conceived of by post-*SPE* phonologies. Second, (ii) to argue that the multidimensional interrelationship existing between a low-level PR and a (next-to-phonemic) phonetic representation may be best described in terms of what I call the Global Programming Principle. Finally, (iii) to show, and to exemplify on Hungarian, what kind of consequences the GP hypothesis might have on our conception of rules and rule domains.

(i) Word-level phonological representations (PRs) are taken to be stratified abstract objects. One and the same representation may assume various forms at the different levels of abstraction, depending on the actual perspective taken. As I exemplified on a Hungarian word form (*lássa* 'see' Imp1PSg, cf. [14], 132) submitting it to analyses (= segmentations and structural parsings) of varying depth both in a syntactico–morphophonological and a phonemic perspective, we get different, but equally valid, results in terms of the set of primitives as well as their arrangement. In this instance the stratified PR includes following layers:

a. /la:ʃʃa/

b. //#la:t#/-v-/#j#/-*ms*-/#j(a e)#/p

c. ///#latV*back*#//=//#sV#/-
-/# C(a e)#///

(Needless to say, (a), (b), and (c) are to be considered as partially independent abstract forms; they do by no means appear to be the variants of one and the same basic word form.) The different results we get will be interrelated and derivable from one another.

In the example, above, (b) is related to (a) via morpheme structure rules and phonological rules; the same obtains for (c) and (b) with the proviso that this relation may involve non-productive morpheme structure rules and phonological rules (along with productive ones). Whereas (c) obviously has no role in speech production, i.e. it is 'extra-conscious' with respect to both speaker and listener, (b) is an active component of the speaker's mental processes at a 'pre-conscious' (*vorbewusst*) level, i.e. as a piece of unconscious knowledge that can be elevated to a conscious status and, as such, it may acquire surface realization in special communicative situations (e.g. in spelling).

The level of (a) of PRs generally, and in the above example /la:ʃʃa/ for *lássa*, must be invariant, i.e. discrete and of a constant form, whereas the corresponding word form in actual speech production is not. A set of interface rules must therefore be assumed to mediate between PRs and implementations. In particular, I will assume that two types of interface rules, viz. 'levelling' rules and '*gestalt*' rules, will operate on phonological base forms.

'Levelling' rules will effect transformations like /la:ʃʃa/ ⟹ la:ʃ:a (where ⟹ indicates level shift, and the omission of / / is meant to reflect the fact that the form right of the arrow is neither phonological nor phonetic: rather, as a realizational program, it is an independent category constituting an intermediate level between those two). So we here will have to accept the assumption that morphemes are psychologically real, even if we cannot actually specify to what extent linguistic elements can be taken to be isomorphic with psychological facts (cf., e.g. [5], 10–12). In the above example, levelling rules turn a type (a) pre-implementational, intermediate phonological representation into the corresponding next-to-phonemic phonetic representation by removing the morpheme boundary feature from between /t/+/j/ and replacing /ʃʃ/ by ʃ: via a pronunciation subroutine, in a way corresponding to the mechanism involved in the notion of Kiparsky's [4] Bracket Erasure.

(ii) However, the form *lássa* ⟶ la:ʃ:a will also undergo further operations, including the relativization of the [+long] component of /a:/. This follows from one of the *gestalt* rules – that of temporal organization –, a set of rules whose common property is that they always involve a portion of an utterance as a whole. A correspondence like /a:/ – [a·] or [a], in fact, cannot be interpreted in terms of isolated segments if we wish to maintain the criterion of biuniqueness. The motivation for a derivation /a:/ ⟶ [a]~[a·] can only be found in the structural effect of a word form as a whole, in the present case most immediately in the architecture -*V:C:*-, in particular, the occurrence of ʃ: after a:, i.e. a (temporal) foot organization factor. The main properties of *gestalt* rules (omitting details) are as follows. (ii/a) *Gestalt* rules determine the utterance unit in speech production in a global way. This is unambiguously shown, in terms of my own experimental results, by 'sequence reduction' and 'sequence size truncation'. Another type of evidence comes from the stage of a child's first language acquisition where non-adult, "crude" programming with respect to a given word form results in a disorderly arrangement of the articulatory components involved, one that does not match the order imposed by the phonological base form. For instance, Smith's [10] data include *squat* surfacing as [ɡap], *queen* as [ɡi:m], etc. by transposition of the bilabial component (cf. also [17], 411). (ii/b) The units undergoing *gestalt* rules may be of various sizes. They may involve single morphemes, but also several, semantically connected word forms (the latter case is observable primarily in sequence size truncation). (ii/c) In lenition processes, *gestalt* rules may exhibit varying effectiveness in modifying individual articulatory elements within a global articulatory program. For instance, of several units within a single word form, all of which are underlyingly specified as the same phoneme, e.g. /k/$_{1-3}$ in *gyerekeknek* 'children+Dat.', some will, and others will not, lose the element involved in the lenition process, in this case the stop component. This depends on the phonotactic position of the unit in question, the genre and the tempo of speech, the degree of lenition, the phonetic makeup of the segment, and so forth. In addition, it also depends on the component itself; in vowel substitution errors, according to Shattuck-Hufnagel's data [9], esp. 124), the standard deviation of the feature [+tense] in erroneously substituted items exceeds the expected probability values several times more than that of [+back].

GP is made up by the totality of *gestalt* rules. The question of what sort of a cortical equivalent might be ascribed to GP is difficult to answer. Anyway, linguistic signs and processes are still considered to be best described, in terms of the functional hierarchy of the operation of language, by the

model first proposed by Wernicke [16]. In essence, psycholinguistics also traditionally accepts this three-step mediation model as one that confirms the authenticity of *gestalt* theories exactly "in the realm of perceptual organization" (see e.g. [7], 146). In Wernicke's model, the levels wedged in between sensorium and cognitive representation are a bilaterally-connected "representation of specific 'gestalt' elements" and, on the speech production side, a "representation of motor commands (concepts of movements)" (cf. Creutzfeldt [1], 5).

(iii) The domain of application of GP including *gestalt* rules is, obviously, phonetic implementation, especially that of lenition processes. (Remark: the concept of 'lenition' as exposed in its classical form in Natural Phonology, cf. [12], [2], etc. does in fact not cover the whole typology of phenomena occurring in spontaneous speech production. On the basis of a collection of data taken from Hungarian a larger-scale typology may be established when also lenition processes manifesting themselves in sequence size portions of speech are taken into consideration, cf. [15].)

In the rest of this paper my main concern will be the way *gestalt* rules fit into the rule hierarchy (P-rules, MP-rules, MS-rules, etc.) that is amply discussed in post-*SPE* phonologies (cf., e.g. [11], [3] [6]). In terms of a typology of lenition processes observable in Hungarian, *gestalt* rules fit into this traditional classificatory pattern rather badly. The facts are as follows. (iii/a) One particular lenition type, covering a set of essentially identical changes, may equally embody rules of diverse categories. 'Reduction', for instance, may simply be a change that we normally classify as a phonetic rule: the slight delabialization of *a* in *változása* 'its change' calls for that label. In other cases, reduction results in a change that can be characterized as a rule of phonological nature in that, by deleting a phonologically relevant feature, it alters the phonological status (e.g., class membership) of a segment as in m $\longrightarrow$ w̃ (*mondták* 'say' Past3PPl). By eliminating a major classificatory feature, the realization may turn into the phonological base form of another lexemic alternant: by devoicing *u* in *azután* 'then' we get a result like *az*V*tán* which appears to be the 'fortis' version of *aztán* 'idem' (cf. [13]). (iii/b) There is not a complete and mutual overlap in that all types of lenition permit the occurrence of all possible rule categories. 'Truncation', for instance, is by definition a phonological category, not a phonetic one; indeed, there are clear examples (e.g. *szóval* 'in other words' — [so]) to show that truncated forms may fail to exhibit any further phonetic change (the omission of suffix being obviously not an instance of reduction). In other cases, it must be admitted, truncation and phonetic change may simultaneously occur within a single sequence, e.g. *valami ilyesmi* 'something like that' — [vɔ̃mĩjeʃmĩ] where final *i* undergoes reduction by centralization and changes in height and degree of illabiality. Consequently, the notions of truncation and phonetic rule are mutually exclusive. As for 'deletion' and 'loss', both lenition process types destroy a complete segment at the actual point in PR. The rules effecting these processes are undoubtedly of a non-phonetic character; but they may either be phonological like in cases of *t*-elision, e.g. in *ezt* 'this+Acc.', or result in morpholexemic switch as in the various versions of *miért* 'why' (cf. [13], 182). (iii/c) Scope properties are also non-relevant for the classification of lenition rules. Larger-scope processes, i.e. those involving a sequence of adjacent segments, can be realised by phonetic rules (such as sequence reduction) as well as by morphophonemic or morpholexemic ones (as detailed above for cases of truncation). On the other hand, lenition phenomena involving single segments can also qualify as instances of any of these three rule types. (iii/d) Finally, it is appropriate to point out that rules responsible for lenition processes may also lead to results that do not lend themselves to a neat interpretation in terms of a linguistic system-oriented classification. Whenever sequence size truncation yields a realization that further undergoes elimination of backness contrast in a vowel – as in *ôtkor* $\longrightarrow$ *ôtkôr* '5 o'clock' with o $\longrightarrow$ *ɸ* – the speaker in fact (over)applies vowel harmony in a way that, in terms of various lines of reasoning, can be taken to be of a phonetic, or morphophonemic, or (potentially) morpholexemic character.

The lack of correspondence between phonetic, morphophonemic and morpholexemic rules on the one hand and the set of *gestalt* rules on the other is conspicuous enough to make one wonder if those two systems of rules actually occupy different levels within the total system. However, the source of such mismatch is not that their structural descriptions reveal rule-governed phenomena of different depth: it is not the case that the former set of rules refer to phenomena restricted to underlying form and the latter account for events at some level intermediate between underlying and surface representation. (Aphasiacs' errors, in particular cases of syllable elision as in *catholicize* – /kæθəlāyz/, *solidification* – /saləfəkēyšən/, demonstrate that syncope applies to underlying form, not (some level of) surface representation, cf. [8], 24–29.). Rather, the difference actually lies in the fact that the rules categorized as above and *gestalt* rules can be stated for (a typologically diverse range of) allegro phenomena, whereas rules of the former type cover lento forms only. All that this distinction entails in itself, however, is that the number of *gestalt* rules is larger. But the *punctum saliens* of the comparison is that *gestalt* rules refer to sequences (utterance units) as wholes, whereas traditional types of rules refer to segments or concatenations of segments appearing between boundary features, even if their structural descriptions involve boundary features themselves as well. So, *gestalt* rules represent an independent category of rules; cover a set of phenomena exhibiting higher variability; and, consequently, phonetic, phonological and morpholexemic rules can, to a significant extent, be logically subordinated to them.

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