LENITION PROCESSES AND 'GLOBAL PROGRAMMING PRINCIPLE'

T. Szende

Linguistics Institute, Budapest, Hungary.

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-phonemic) 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:ja/
b. //#/la:t/=v-/#j#/-/#s#-/#j(a e)#/p
c. ///#atVback#=//#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:ffə/ for lässa, 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:ffə/ \(\rightarrow\) la:ə (where \(\rightarrow\) 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-implementation, intermediate phonological representation into the corresponding next-to-phonemic phonetic representation by removing the morpheme boundary feature from between /t/+\(/j//\) and replacing /ff/ by f: 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 lässa \(\rightarrow\) la:ə will also undergo further operations, including the relativization of the [+long] component of /aː/. 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 /aː/ \(\rightarrow\) [a] or [a], in fact, cannot be interpreted in terms of isolated segments if we wish to maintain the criterion of bin uniqueness. The motivation for a derivation /aː/ \(\rightarrow\) [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 f: 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 [gasp], queen as [gim], 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 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 autonomy of gestalt theories exactly in "the realm of perceptual organization" (see e.g. [7], [14]). In Wernicke's model, the levels wedged between segmentation and cognition on 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 [4], [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 panorama of phenomena occurring in spontaneous speech production. On the basis of a collection of data taken from Hungarian, a larger-scale phonology may be established when also lenition processes are 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-SP2 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, consisting of a set of essentially identical changes, may equally embody rules of diverse categories. 'Reduction', for instance, may be phonological in cases of truncation and phonetic rule may be established when also lenition processes are manifesting themselves in sequence size portions of speech are taken into consideration, cf. [15].

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