Some Thoughts on Turkish Voicing Assimilation

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In this sketch, I shall be working within a framework of assumptions about phonology that includes the existence of statements about phonetic and phonological facts about language which I shall call general constraints. As a working hypothesis, I hold that general constraints can be stated for both the phonological and phonetic level of representation. In employing general constraints as a descriptive phonological device, I am in effect claiming that the phonologically relevant statements we can make about language are not merely the sum of the list of phonological rules of the language that relate underlying forms to surface phonetics. I view the general constraint as a statement of theoretically relevant (phonetic/phonological) facts about languages, while phonological rules are the statements of implementation of these facts, statements which may be diverse and various in their manner of achieving implementation.[1]

Any discussion of Turkish phonology will have to come to grips with the issue of the representation of voiced-voiceless consonant alternations. For the most part, these are straightforward types which parallel the often quoted bunt-bunde example of German; final devoicing exists, and results in the surface convergence of certain forms which will be represented as underlyingly distinct. Thus

(1)	a.	[tat]	'taste'	[tadɨ]	'its taste'
	b.	[tat]	'wretch'	[tatɨ]	'his wretch, slave'

Uncontroversially, in a generative/monomorphemic theory of phonology, forms like (1a) would be considered underlying final voiced and thus constrastive with the underlying voiceless final forms like (1b). A rule of medial consonant voicing would clearly be incorrect, as it would result in the medial voicing of stem-final consonants in forms like (1b) unless such forms were considered exceptional. But such a formulation would be unnecessarily complex, since there exists in Turkish a general (surface phonetic) constraint against voiced final noncontinuant obstruents (with the exception of a few words). Final noncontinuant obstruents regularly devoice as follows:

'final devoicing'

$$(2)\quad \begin{bmatrix}-\text{son}\\-\text{cont}\end{bmatrix} \rightarrow [-\text{vce}] \;/\; \_\_\_\_ \left\{\begin{matrix}\#\\ +[-\text{voc}]\end{matrix}\right\}$$

i.e., in absolute word final position or when the following morpheme

begins with a [-voc] segment. Assuming that boundary symbols are fully specified feature matrices, this environment could be (perhaps spuriously) abbreviated as [-voc]. Notice that it is not simply a [-voice] environment; the plural of underlying /ǰeb/ 'pocket' is not *[ǰebler], but [ǰepler], so an alpha rule is an inappropriate formulation.

As noted above, /ǰeb/ 'pocket , will then show the following alternations (phonetic brackets dispensed with unless necessary for disambiguation):

(3) a. ǰep 'pocket'

b. ǰebi 'his pocket'

c. ǰepte 'in the pocket', ǰepten 'from the pocket'

d. ǰepler 'pockets'

e. ǰeplerde 'in the pockets'

Note here the suffix initial stops in (3c). The initial obstruent non-continuants of suffixes can be demonstrated to show voicing assimilation to the preceding segment. (Compare c and e above for the locative case suffix). After glide or vowel final stems, the obstruent initial cases also show up voiced:

(4) a. köyde 'in the village'

b. adada 'on the island' (vowel harmony indicated

c. evde 'in the house' orthographically)

d. kanda 'in the blood' etc...

The question then arises as to the best underlying form of these non-continuant obstruent initial case endings. An elsewhere solution suggests they are voiced and assimilate to voiceless stem-finals. Thus the derivation of a form like ǰepte 'in the pocket' would require two rules and would proceed as follows:

(5) UF ǰeb+de

final devoicing: ǰep+de

voice assimilation: ǰep+te

This solution presents a feeding order, which is tantamount to saying the rules may be presented in unordered form with unrestricted application, i.e., the rules apply whenever their structural descriptions are met (KSN hypothesis, part 1, cf. Koutsoudas, Sanders and Noll).

If we consider the UF of these suffixes to be initially voiceless, another, less satisfactory solution results. For forms like jepte noted above, only the 'final' devoicing rule would need to apply, but the voiced forms of the suffixes would have to be arrived at by a rule of suffix initial voicing. Such a rule would interact poorly with the UFs independently required for words like /ǰeb/. An extrinsic order would have to be imposed to avoid derivations like

(6) UF ǰeb+te

voice assimilation: ǰeb+de

'final' devoicing: ǰep+de *[jɛpdɛ]

unless we wished to have both a suffix initial voicing and a suffix initial devoicing rule in the grammar, a situation for which there is no apparent motivation.[2]

Consider also the alternations found with continuant obstruents and liquids. These consonants show (in the Ankara dialect I am describing)devoicing which is quite different phonetically from that of the noncontinuant obstruents; these segments are clearly voiced during the initial phase of articulation and devoiced only towards the end of their articulation. Thus, saz is phonetically not *[sas] but [saz̥] kar 'snow' is not *[kar̥] but [kar̬].[3]

One might be tempted to dismiss such phonetic niceties as phonologically irrelevant, suggest that phonologically, devoicing is devoicing, and note that the continuants simply devoice differently on the phonetic level than do the noncontinuant obstruents. But these phonetic details do show parallels on the phonological level. The obstruent continuants and liquids do not show devoicing when followed by consonant initial suffixes, nor are the alternating suffix initial obstruent noncontinuants voiceless when preceeded by this class. Thus we do not find *[sastaɨ] 'on the saz', *[kar̥ta] 'on the snow', or *[kiɨte] 'on the clay', but rather, [sazda], [karda], and [kilde]. We may say here, then, that the phonetic detail of obstruent and liquid devoicing functionally reflects a phonological difference between the [-continuant] obstruents and the [+continuant] obstruents and liquids: in implementation, they do not undergo both parts of the 'final' devoicing rule (which, incidentally, attests to the spuriousness of the environment collapsed as /[-voc]).

These facts lead us to consider again the alternating obstruent noncontinuants. It is possible to capture the relevant generalizations about voicing in terms of a general constraint on sequences of segments, namely:

(7) A sequence of two obstruent noncontinuants will always be voiceless.[4]

Thus, whether we encounter an underlying stem form like /at/ or one like /ʃeb/ we can always assume that when either of them is followed by a noncontinuant obstruent initial suffix, the sequence of consonants will be voiceless. Note that this general constraint exists apart from the two statements of implementation necessary to bring it to phonetic realization; it is thus not simply isomorphic with a rule (although in some cases constraint and implementation may prove to be isomorphic).

Another implication of the view I am presenting here is that the segments in question, which are all classic instances of neutralization, are best represented archiphonemically in a grammar of Turkish; their surface forms are accounted for by general constraints on the phonetic shape of consonant segments in the grammar, and rules which implement these constraints. Our grammar is thus saying as much as possible about the phonological situation: neutralizing segments are overtly represented as such, and statements about surface phonetics are expressed with maximum generality.

What then is the status of the traditional phonological rule? We are now led to thinking of process rules as part of another component of the grammar, one in which the implementation of general constraints is carried out. This is the proper place, in my view, for processes to be located, as they can here be best related to matters of performance, phonetic scalar values, questions of neurological timing, etc., i.e., everything that relates to the performance of language by individuals.

The voicing constraint proposed in (7) above is best viewed as another, more abstract component of the grammar. Such a view is necessary, since there are also sequences of voiceless obstruent noncontinuants in the language which cannot reasonably be thought of as derived from an underlying sequence of noncontinuant obstruents, one of which is voiced and one of which isn't. These lexicon based sequences are the inherent linguistic material which demonstrates the existence of the voiceless-obstruent constraint in the language. The lower-level devoicing implementation processes—'final' devoicing and assimilation, are not the 'explanation' for the existence of the constraint; rather the existence of the constraint is the explanation for the necessity of the implementation processes.

NOTES

[1]Thus, the notion of general constraints incorporates the traditional morpheme structure condition, and also accepts the existence in a grammar of abstract constraints on the phonological level (such as those discussed by Kaye and Nykiel) and something like the surface phonetic constraints of Shibatani, though the distinction between constraint and implementation is not made in either of these papers.

[2]Lees in fact chooses to represent the suffix initials as voiceless. They then undergo voicing assimilation to preceeding voiced consonants. His rules are thus (unnecessarily, it seems to me) extrinsically ordered.

[3]Foster claims that in the Istanbul dialect he investigated the palatal l was also devoiced. I have not heard this, but Lees (op. cit.) notes for Ankara speakers that some have weak l devoicing. In any case, both ignore the phonetic differences I am dealing with here with respect to final [z]. The result, in Foster's case, is an extraordinarily complex devoicing rule.

[4]Lees in fact does include a similar statement in his phonology (rule 29) but he does not see it as substantively different from any other phonological rule.

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