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IN DEFENSE OF CONCRETE EXPLANATIONS

Mehmet Yavaş

Abstract: In recent years we have witnessed conflicting
proposals in the field of phonology with regard to descrip-
tive and explanatory power of various theories. Especially
significant is the controversy involving abstract versus
concrete representations. This paper is an attempt to view
the abstractness controversy in the light of examples from
linguistic borrowing. Examining certain Arabic loans into
Turkish it is shown that phonetic explanations are overrid-
ingly more credible than abstract accounts that rely on the
theory of markedness.

> Linguists are a marvellously clever bunch of scholars:
> there is really no limit to the imaginative, elegant,
> and intellectually satisfying hypotheses they can
> dream up to account for observed linguistic behavior.
> Unfortunately, the systems they seek to understand,
> human language and speech, which have a physical and
> psychological reality, are limited.
>
> John Ohala

In recent years we have witnessed conflict in the field of phonology
with regard to the descriptive and explanatory power of various theories.
Especially significant is the controversy involving abstract versus
concrete representations. It is widely accepted in all schools of phono-
logy that linguistic change is one of the most important sources of data
for the verification of hypotheses, and within linguistic change,
borrowing has been recognized as one of the most significant testing-
grounds for proposed theories.

This paper is an attempt to view the abstractness controversy in
phonology in the light of examples from linguistic borrowing. It should
be pointed out, however, that the following is not intended to be a
comprehensive theory of borrowing, for I strongly believe that any theory
of borrowing relying only on linguistic explanations would be but a
partial account of what the speakers of a language actually do. Thus, for
a thorough understanding of borrowing, sociological factors are indispen-
sible; however, this does not preclude the study of borrowing in purely
linguistic terms in order to evaluate alternative views of explanations
in phonology.

In the pre-structuralist as well as in the structuralist era, the
explanation given for borrowings was that of 'phonetic approximation'.
In such an analysis the nativization of foreign sounds could and should
be explained in terms of physical phonetics, i.e., speakers of a language
LI replace the sounds of a second language L2 with those sounds closest

to them in LI. Phonetic approximation is refuted by the fact that speakers of different languages A, B make their substitution differently when they encounter the same new sound from another language C. This can be exemplified with the different substitution of English$[\theta]$ and $[\delta]$ in French and Turkish. While the speakers of French would employ $[s]$ and $[z]$ for these English sounds, speakers of Turkish tend to substitute $[t]$ and $[d]$ respectively, despite the fact that both languages have $[s][z]$ and $[t][d]$.

Later, 'phonemic approximation' became the explanation for the replacement of foreign sounds. That is, a language first finds the closest phoneme that encompasses the phonetic quality of the foreign sound, and then this foreign sound is appropriately phonemicized.

With the advent of Generative phonology phonetic explanations have become rather unimportant. The very sophisticated descriptive apparatus of Generative phonology has enjoyed widespread popularity. Involvement with formalism has been so preoccupying that phonologists have not even concentrated on the distinction between description and explanation. Extreme concern to find an adequate description led linguists to very abstract analyses, and this abstractness has resulted in less than credible claims about the nature of language. As Foley has put it succinctly, Chomsky and Halle have been concerned with rigorous formalism and accurate description, and once the description is over, the problem is considered as solved. In other words, the investigation stops precisely at the point where it should start. Although I do not agree with Foley's view of phonology totally, I do share his criticism of SPE for its overconcern with descriptivism.[1]

The first and probably the most comprehensive treatment of borrowing within Generative phonology is that of Hyman(1971). Presenting evidence from Nupe he proposes that loans are subject to the morpheme structure conditions and relevant phonological rules of the borrowing language. He claims that phonetic and phonemic approximation is invalid and we must refer to the borrowing language's phonological properties, not to its speakers' phonetic habits, in order to tell what the lexicalized form will be. His hypothesis is based on the belief that phonetic structure can tell us very little about loan-word adaptation. It is only by recognizing a deeper level(systematic phonemic) than the autonomous phonemic level and by conceptualizing the phonological component as a system of rules relating abstract underlying forms to surface phonetic realizations that borrowing can be coherently handled. His basic principle is 'foreign sounds are perceived in terms of underlying forms'. There are three different cases where his analysis is claimed to be successful: a) the phonetic form of the incoming word corresponds to a well-formed underlying representation, but not to a well-formed surface representation. The solution proposed is that speakers perceive the form as an underlying representation, then derive the correct surface form via the native phonological rules. E.g., Yaqui renders Spanish _estufa_ as $[ehtupa]$ because it has a rule

$$s \longrightarrow h \ / \underline{\quad} \begin{Bmatrix} t \\ k \end{Bmatrix}$$

b) the foreign segments correspond to derived native segments, but not to underlying ones. Here the lexicalization process involves perception and

storage in terms of the underlying segments which would allow the derivation of the appropriate surface derived segments. E.g., Hausa wúrí: > Nupe wūrī. There is no underlying /w/ in Nupe, but only the glide /h/, from which [w] and [y] are derived before back rounded and front rounded vowels respectively.

$$h \longrightarrow \begin{bmatrix} \propto \text{round} \\ \propto \text{back} \end{bmatrix} \Big/ \underline{\hspace{2cm}} \begin{bmatrix} \propto \text{round} \\ \propto \text{back} \\ V \end{bmatrix}$$

Thus the Hausa /w/ is perceived as derived via the above rule from underlying /h/. c) the foreign segment corresponds to a derived native segment, but is not found in the same phonological environment. Here the lexicalization takes place as above with the correct underlying representation which would allow the appropriate derivation, but the environment of the segment is changed to meet the structural description of the rule applying to it. E.g., Hausa šù:gàbá > Nupe šìgàbā . The rule for the derivation of strident palatals in Nupe is

$$\begin{bmatrix} s \\ z \\ ts \\ dz \end{bmatrix} \longrightarrow \begin{bmatrix} š \\ ž \\ č \\ ǰ \end{bmatrix} \Big/ \underline{\hspace{2cm}} \begin{Bmatrix} i \\ e \\ \varepsilon \end{Bmatrix}$$

Since the Hausa word would make this rule opaque, the [u] is changed to /i/ to allow the appropriate application of the rule to underlying /sigàbā/. The process of assimilation then, involves perception in terms of systematic phonemes, and the mapping of these sequences of elements into their surface phonetic shape via the ordered rules of the phonological component.[2]

The problem that I would like to discuss concerns a mass of Arabic words borrowed into Turkish. As has been noted in the literature, the history of Altaic languages shows a profound aversion to nasals and liquids in word initial position. The data examined here will tend toward words with #mUC[3] sequences, which are the result of Arabic borrowings. The main point is the nature of the vowel and the possible explanations for it. As the following list indicates, some sequences of #mUC have been preserved like their original Arabic counterparts while some have been altered.

Arabic	Turkish	
/muba:ya'a/	müba:ya	'purchase'
/muha:faða/	muha:faza	'protection'
/muha:rib/	muha:rip	'warrior'
/muqawama/	mukavemet	'resistance'
/musa:baqa/	müsa:baka	'competition'
/mula:haza/	müla:haza	'consideration'
/muna:qasa/	müna:kaša	'dispute'
/muda:fa'/	müda:fa	'defense'
/muša:hada/	müša:hede	'observation'
/mu'nis/	munis	'sociable'
/mu:tadil/	mu:tedil	'moderate'

In order to understand this change let us examine the environments that
are relevant. A closer look at the data would tell us that Turkish adopts
the sequence as #muC if a) the vowel is long in Arabic, b) the particular
syllable is stressed, c) the C after the vowel is back; under all other
conditions the rendition is [ü] in Turkish. 4

One way of accounting for these changes is to have the underlying
forms with /u/ , and then positing a rule which would give the observed
surface forms. In other words, for morphemes with initial mU sequence, the
vowel is /u/. This can be given as an underlying morpheme structure
condition. The reality of morpheme structure conditions has been seriously
questioned(Shibatani 1973), and refuted (Clayton 1976) with convincing
arguments. I will not repeat those arguments here. However, as long as
we can provide concrete evidence for the relevant explanations we can
contribute to the arguments against abstract morpheme structure conditions.
Let us now assume that, for these borrowings, we have the underlying
forms with /u/; then we need a rule

$$u \longrightarrow ü \ / \ \text{nasal} \underline{} \begin{bmatrix} -back \\ C \end{bmatrix}$$

The above is a descriptive device which can account for the change in
question. But what does it explain? Besides, we can describe the same
phenomenon by having the underlying vowel as /ü/, then positing a rule to
account for the changes to [u] . That is, as far as the formalism is
concerned, we can make either claim. Of course, no one would, without good
reason, do the latter, for we know that /u/, rather than /ü/, is favored
by markedness theory. In Generative phonology universal markedness is a
claim about general phonological theory. It is said to derive its support
from studies of universals in language acquisition, linguistic typologies
and linguistic change. Unmarked sounds are generally acquired earlier
than marked sounds by children. In linguistic change, sounds are seen as
changing from marked to unmarked.

If we look at our data we observe that both #muC, and #müC occur in
Turkish, whereas for Arabic, #müC is an impossible sequence, for the
language does not have /ü/. According to SPE markedness values /u/ costs 1,
and /ü/, costs 2. Why, then, would we expect to find a change from a less
costly /u/ to a more costly /ü/? Once we ask this question, the most
likely answer is that the underlying vowel in Turkish is /u/, that is, no
counter evidence is involved for markedness, and that [ü] is merely the
surface form. This amounts to the claim that speakers of Turkish, upon
hearing the Arabic sequence, perceive it to be the vowel /u/ and then
produce the sequences with [ü] by applying the phonological rule which
changes the underlying /u/ to the surface [ü]. However, I claim that such
a position is untenable. The vowels in the original Arabic #m_C sequences
which come out as [ü] in Turkish, are phonetically more similar to [ü] .
This is probably due to the surrounding consonants; and it is only natural
for Turkish to have such vowels as [ü] . Thus, surface phonetic shapes are
fundamental in the assimilation. The phonetic sphere of Turkish high rounded
vowels is divided into two, and the perception is accomplished according to

the phonetic quality of the incoming vowel. I have demonstrated elsewhere (Yavas 1978) that this type of concrete, phonetic explanation is the only possible account of the character of the Turkish epenthetic vowels employed for French and Arabic words with #CC and CC# sequences. Thus, it is my contention that phonetic explanations have great value in the determination of sound replacements. If one adheres to the view that the vowels in question are perceived and accordingly reproduced as [ü], the problem would have a much more realistic and easy solution. Besides, an explanation based on observable evidence should have much more credibility than an explanation supported merely by assumptions. In other words, before making any claim about what the native speakers do, one should look for concrete evidence rather than resorting to abstract accounts. Such an explanation would not be very popular in Generative phonology despite the fact that simplicity is a highly regarded criterion. What makes this explanation unpopular is the idea that the native speaker perception is based on phonetic cues regulated by phonemic reality.

As for the French and Turkish replacement of English [θ] and [ð] Hyman's conclusion is that it is far from being resolvable. He claims that it is more realistic to say that a language adopts that sound that is <u>felt</u> to be closest to the prototype, and this proves that <u>foreign sound adaptation is mental in nature</u>. However, I would like to add that the motivation is almost always auditory and acoustic. I also would like to point out that the rejection of 'phonetic approximation' is rather unjustified. If one wants to see 'phonetic closeness' in terms of distinctive features, then it is quite easy to show that it will not work. Neither French nor Turkish have [θ] and [ð] yet both have [t], [d] and [s], [z]. In most distinctive feature frameworks of these languages both [t] and [s] would be feature-wise equidistant from [θ], just as [d] and [z] would be equidistant from [ð]. But Turkish consistently renders [θ] and [ð] as [t] and [d] respectively, while French renders them as [s] and [z]. The questionable assumption being made by those who reject phonetic approximation is that a universally defined distinctive feature is the minimal phonetic unit of perception and reproduction. No room is allowed for the possibility that the phonetic limits for individual features are defined differently for separate languages, or that phonetic cues for various features might come from elsewhere(i.e., other segments in the signal), and that it is these cues that are crucial in the replacement process. Clearly, the shared distinctive feature theory is not strong enough to account for all of the facts.

In this paper, I have tried to show that phonetics is one of the most valuable sources of phonological explanations. It yields the major part of the answer to the questions of directionality of sound change, replacement of foreign sounds, and much more. Although Generative phonology has provided us with a very powerful descriptive device, it has contributed very little to our understanding of the nature of language and its dynamics.

Footnotes

1 Foley also criticizes SPE on the grounds of reductionism. By reductionism he means the use of phonetic elements in a phonological theory. According to Foley, a scientific linguistic theory would be based not on physical properties of elements, but on abstract relations. However, I hold the contrary view. That is, for a theory to have explanatory power, the use of phonetic elements is indispensible, for otherwise we would need a tremendous number of interpretation rules.

2 Ohso(1973) has shown very clearly that there is a contradiction between the first and second cases. If a language has phonetic sequence yz which is derived from the underlying xz by a rule $x \rightarrow y/\_\_z$, and it also has an underlying sequence yz, does the language lexicalize the borrowed sequence yz as xz or yz? When the opposition of underlying x and y completely neutralizes in the environment $\_\_z$, the sequence will be lexicalized as yz according to the first principle, but as xz according to his second principle.

3 U is [u] or [ü].

4 One might think of the vowel harmony constraint to account for these vowel changes. However, as the data indicate, a vowel harmony constraint is irrelevant, for a harmonic Arabic word becomes non-harmonic in Turkish. For a more detailed account of the vowel harmony see Yavaş(1978).

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