

SONORITY AND THE H-SERIES IN GEORGIAN

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ABSTRACT

Georgian, a language in the Kartvelian or South Caucasian family of languages, possesses a complex verbal system. A feature of the Georgian verb is that it marks the subject, object, and indirect object of the sentence. There are two sets of indirect object markers; the set that occurs less frequently is referred to as the h-series [1]. This paper examines the positive correlation between acoustic features, sonority and the rules that govern the H-series.

INTRODUCTION

Georgian, a language in the Kartvelian or South Caucasian family of languages, possesses a complex verbal system. A feature of the Georgian verb is that it marks the subject, object, and indirect object of the sentence. Marking is by prefixes which occur before the root of the verb (or preradical vowel should there be one). There are two sets of indirect object markers; the set that occurs less frequently is referred to as the h-series in Aronson's Georgian: A Reading Grammar (1982) [1]. This name is derived from the third person marker of this series which is {h}. As I am interested in the third person markers in particular, this name becomes all the more descriptive. The reason for extracting these markers from their own overtly morphological sphere is that the h-series exhibits two interesting phenomena -- 1) the distribution of the h-series allomorphs illustrate an interesting parallel to a major division in acoustic theory; and 2) as the use of this prefix in Georgian is decreasing, the fact that course of its loss manifests a marked sonority hierarchy.

The H-series in the title is being used here as a cover term as the name provides a convenient designation for this prefix in its manifestations diachronically as well as synchronically. Thus I am not interested in the h-series per se, but in a

particular set of prefixes that occur both in the h-series and to a much lesser extent (or only diachronically) as subject markers.

This paper will be divided into three sections. First I will give an account of the H-series as currently prescribed in grammars (Vogt 1939) [9], then, from data in Shanidze (1980) [7], a brief diachronic perspective, with examples taken from other environments where these prefixes appear. Second, I will discuss some relevant elements of acoustic phonological theory as presented in Preliminaries to Speech Analysis (Jakobson, Fant, and Halle 1951) [4] and different views on sonority (Clements 1990) [2] as they relate to Georgian. Third, I will integrate the two sections and investigate what this does for the h markers and Georgian phonology. Third, I will integrate the two sections and investigate what this does for the {h} markers and Georgian phonology. This in turn may suggest some phonological priorities in Georgian. This paper looks at the h-series from the perspective of acoustic phonetics and examines the positive correlation between acoustic features, sonority and the rules that govern the H-series.

CURRENT USAGE

The h-series is the lesser used series of indirect object markers in Georgian. In grammars of current usage (Aronson [1], Dirr [3], Marr and Briere [5], Rudenko [6], Tschenkeli [8], Vogt [9]) the prefixes for the h-series are:

Indirect Object Markers in Modern Georgian

m -- first person
g -- second person
h/s/0 -- third person

The use of h, s, or zero is dependent on the following sound.

Distribution of h-series makers

h -- p, g, k, k', q'
s -- d, t, t', j, c, c', j', c', c'
0 -- elsewhere (all other consonants and vowels)

e.g. mo-m-cer-a S/he wrote me
mo-g-cer-a S/he wrote you
mi-s-cer-a S/he wrote him/her/them

Written slightly differently the distribution for the third person markers might be:

H-series Marker Rule

h > h / __ p, g, k, k', q'
h > s / __ d, t, t', j, c, c', j', c, c'
h > 0 / __ elsewhere

At this point it becomes useful to examine this prefix diachronically to see its former full range of environments and to understand its current more limited ones.

The h prefixes/infixes also used to represent the second person subject marker. According to Shanidze [9] and others the h was derived from x. This can still be seen in two verbs in Georgian:

Remnants in the Second Person

x-ar second person, pres., 'to be'
mo-x-val second person, fut., 'to go/come'

Otherwise, the second person subject markers were h/s(s)/0. The distribution was as follows:

Distribution of {h} as Second Person Subject Marker

h > 0 / __ vowels
h > s / __ d, t, t', j, c, c'
(s > s' / __ j, c, c', c')
h / __ elsewhere

This distribution of the h markers is considerably expanded. It includes all of the synchronic rule plus the remaining labials, liquids and nasals -- all of which

are preceded by the marker h. Now it is possible to re-write the original rule thusly:

H-series Rule Re-written

h > 0 / __ vowels
h > s / __ T, C (T-dentals, C-palatals)
h / elsewhere (P-labials, K-velars, N-nasals, L-liquids)

This more expanded distribution was the same for the indirect object markers as well, that is what is called the h-series.

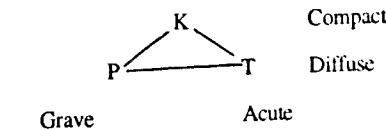
The result is a distribution that is uncomfortable in simple articulatory terms; P and K pattern together with h, and T and C pattern together with s. I will leave this problem for the moment and discuss some relevant acoustic features from Jakobson, Fant, and Halle [4].

RESONANCE FEATURES

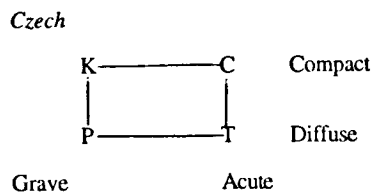
In Preliminaries to Speech Analysis [4], Resonance Features are introduced as a system that uses the acoustic signal to characterize divisions in the sound inventory. Resonance Features are then divided into I. basic resonator features: 1) compactness; 2) tonality features; and 3) tenseness and II. nasalization, using a supplementary resonator.

Consonants and vowels are divided into acoustic features as indicated by the patterning of their respective formants -- compact and diffuse. The features compact and diffuse are considered to be a primary split within the system. A secondary split, dividing consonants and vowels are the features grave and acute.

For languages such as French the consonants and vowels can each be set up on a triangle with for consonants a /v/ at the top and /p/ and /k/ at the bottom two points.

French

For a language such as Czech, the consonants (and vowels) are best divided on a square -- with the top corners being /t/ and /c/, form left to right, and the bottom corners /p/ and /k/.



In French, represented by a triangle, the secondary division of grave vs. acute cannot be manifested in both compact and diffuse consonants. However, in Czech, represented by a square, this is possible. Georgian patterns itself like Czech and uses a square representation of its consonants in this system.

Grave and acute, known as primary tonality features, pattern P, K together and T, C together. The second and third formants for P, K show similarities as do F2 and F3 of T and C. The formants in transition from vowel to consonant for the former are seen to be consistently upward moving, whereas those for the latter move downward into the consonant. Thus looking at acoustic features as opposed to articulatory ones, it is possible to find a natural patterning of P and K, which would be difficult in articulatory terms.

Going back to the rules for the distribution of the 3rd person markers of the h-series, it would seem that there is a positive correlation between the patterning of the features grave and acute, and the patterning of the h-series. Thus a single set of features seems to present itself as a possible explanation for the uncomfortable split if one opts for a solution in acoustic terms. As one can see, the features grave and acute comprise the linking of labials with velars, and dentals with palatals.

SONORITY

As a feature expressing sonority explains the distribution of the h-series, I will continue with the notion of sonority to explain as well the gradual loss of this prefix over time. Looking

back in the second section, note the differences between the Old Georgian rule vs. the Modern Georgian rule.

Old Georgian	Modern Georgian
h>0 / __V	h>0 / __V
h>h / __L, N	h>0 / __L, N
h>h / __P, K	h>h / __P, K
h>s / __T, C	h > s / __T, C
s>ʃ / __C	

Sonority hierarchies are usually set up by the degrees of sonority, that is resonance. For Georgian, sonority becomes relevant for both the h-series morpheme and that of the following consonant. Clements [2] proposes a sonority hierarchy set up in such a manner.

+Sonority -Sonority

V > G > L > N > O

(V-vowel, G-glide, L-liquid, N-nasal, O-obstruent)

We assume principles of sonority operate in both the h-series and the followings consonant. The {h} becomes the target and the following consonant or vowel the trigger.

The sonority of [h] is closes to that of vowels, that is it is next in the sonority hierarchy after vowels. The first environment to lose {h} is pre-vocalic, vowels being the most sonorous. We therefore have two sonority hierarchies operating simultaneously -- that of the h-series where /h/ is more sonorous than /s/ and that of the following element. The friction of the laryngeal spirant [h] is produced when the air passes through the half-closed glottis. The noise then receives coloring from surrounding vowels. This may account for its earlier disappearance before vowels.

Next is {h} before L,N (Liquids and Nasals), most likely in that order:

+ Sonority -

L > N

We now come to the remaining environments of the h-series --

obstruents. Because there has already been the change from h > s, we know that the next environment is most likely to have been that of the feature grave and finally the feature acute, with /s/ as its marker.

Both of these hierarchies of sonority, working simultaneously explain the loss of the h-series and the ordering of its loss.

CONCLUSION

In conclusion, the distribution of the h-series in Georgian (Old, Middle, and Modern) can be defined in acoustic terms using the feature grave/acute. Further the gradual loss follows a clear hierarchy of + sonority > - sonority .

As a final note, it is not clear how much the h-series is used in Standard Modern Georgian or if it is even present all the time in either Literary Georgian or Dialects.

- [1] Aronson, Howard I. (1982), *Georgian: A Reference Grammar*, Columbus, Ohio: Slavica Publishers.
- [2] Clements, G. N. (1990), "The role of the sonority cycle in core syllabification", in *Between the grammar and physics of speech*, ed. by John Kingston and Mary E. Beckman. Papers in Laboratory Phonology 1. Cambridge [England] ; New York : Cambridge University Press, 1990.
- [3] Dirr, A. (1928), *Einfuehrung in das Studium der kaukasischen Sprachen*, Leipzig.
- [4] Jakobson, R., G. Fant, and M. Halle (1951), *Preliminaries to Speech Analysis: the Distinctive Features and their Correlates*, Cambridge, Mass.: M.I.T. Press.
- [5] Marr, R. and Brière (1931), "La langue Georgienne", Paris.
- [6] Rudenko, B. (1940), *Grammatika gruzinskogo jazyka*, Moscow, Leningrad.
- [7] Shanidze, Akaki (1980), *Txulebani tormet tomad*, v.3, Tbilisi : Tbilisis saxelnicipo universiteti
- [8] Tschenkeli, K. (1958), *Einfuehrung in die georgische Sprache*, Bd. 1, Zurich.
- [9] Vogt, H. (1939), *Grammaire de la langue Georgienne*, Oslo.