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EÖTVÖS LORÁND UNIVERSITY

Doctoral (PhD) Dissertation
Abstracts

Péter Óri

The representation of voicing

A unified analysis of languages with two obstruent series
as “aspirating” systems

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English Linguistics Doctoral Program
Head: Prof. Dr. Miklós Törkenczy, DSc

Doctoral School of Linguistics
Head: Prof. Dr. Gábor Tolcsvai Nagy, MHAS

Supervisor: Dr. Péter Szigetvári, PhD

Members of the Assessment Committee:

Chair: Prof. Dr. Ádám Nádasy, CSc
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External opponent: Dr. Katalin Balogné Bérces, PhD
Secretary: Dr. Krisztina Polgárdi, PhD
Member: Prof. Dr. Miklós Törkenczy, DSc
Subsidiary member 1: Prof. Dr. Péter Siptár, DSc
Subsidiary member 2: Dr. Péter Rebrus, PhD

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1 Objective

The dissertation examines the laryngeal properties of speech sounds. It aims to propose a model which analyzes uniformly the phonological processes operating in languages with two obstruent series, by assuming the same markedness relations in aspirating and voicing languages (taking the obstruents with the higher VOT values as the laryngeally marked series). Furthermore, along the phonological processes definable in this way, it establishes a laryngeal typology.

2 Background

Nearly half of the world's languages distinguish two series of obstruents which differ only in this respect. In the phonological literature, this binary opposition is traditionally represented by the distinctive feature [voice]. Nevertheless, in most phonological analyses nowadays, two features, namely [voice] and [spread glottis], or their equivalents in Element Theory, |L| and |H|, are available for this purpose. While, for instance, in Romance and Slavic languages, |L| is assumed in voiced/lenis obstruents, in most Germanic languages, it is the fortis-marking |H| that encodes the laryngeal opposition, typologically setting these languages apart. Whether a language belongs to one group or the other can be read off the phonetic realizations of its obstruent series: for example, in French and Russian, we find voiceless and voiced obstruents (characterized by long lag and positive VOT); in German, on the other hand, a word-initial plosive is regularly voiceless unaspirated or aspirated (i.e., characterized by short lag or positive VOT). Therefore, the members of the former group are generally referred to as voicing languages, while those of the latter are called aspirating languages. Furthermore, besides the physical characteristics, the behaviors of obstruents also reflect which type of system a given language is. In a voicing language, regressive voice assimilation is observable, which can be described as the spreading of |L|. This process is missing from aspirating languages, but they display sonorant devoicing after fortis, which supports the absence of |L| and the presence and spreading of |H|.

3 Theoretical frameworks

I carried out my analyses within the framework of Strict CV Phonology, applying the melodic element of Element Theory, and taking the assumptions of substance free phonology and Laryngeal Relativism as a basis.

4 Proposal

As opposed to the view described above, the current proposal is that only one element, namely |H|, should mark the laryngeal contrast in both aspirating and voicing languages. In this model, in a phonological sense, languages that have two series of obstruents can differ solely in the processes targeting the |H| in their fortis, in the following parameters: the |H| can be licensed in

any environment or only before sonorants; it can spread or not; if it does, it can happen in one or two directions:

The licensing of H	The spreading of H	Example
independent of position	none	English, Russian
	unidirectional (regressive)	Meccan Arabic
	bidirectional	Swedish
in presonorant position	none	German, Ukrainian
	unidirectional (regressive)	Hungarian
	bidirectional	not possible

4.1 Basis of the proposed analysis

Again, in binary-opposition systems, it is uniformly |H| that encodes laryngeal contrast, so phonologically, the fortis will be the laryngeally marked obstruents. The obstruent series of these languages might have different physical properties, which, however, only means the disparate phonetic realizations of laryngeal markedness and unmarkedness in the present model and should be considered to fall out of the scope of phonology. The typology which can be established in the present analysis also reflects well the stronger phonological basis of the model: for example, English and Italian belong to the same language type, and so do German and Ukrainian as their fortis behave in the same way; the fact that the respective obstruents of languages within the same category might differ on the surface is irrelevant from a phonological point of view.

The proposed model thus makes the phonological analysis of binary systems more uniform. At the same time, this simplification does not lead to a rise in complexity in other fields. Although it has been generally observed that regressive voice assimilation occurs in L-languages (e.g., in Hungarian) while the spreading of aspiration to obstruents is not characteristic of H-languages (e.g., in English), there also exist systems that deviate from these. For example, active voicing can be observed in Italian or Swedish, but it does not spread; in Yorkshire English and Swedish, fortisness displays backward and bidirectional spreading, respectively. Thus, if we take into account laryngeal systems which are different from the prototypical voicing and aspirating languages, we can find instances of all of the above-mentioned parameter settings in the case of both |L| and |H|; therefore, in the present model, we do not have to assume any phonological processes which have not been inevitable even in traditional analyses. Furthermore, as the processes which can be associated with the two elements are tendencies only, and basically, the same processes can be observed to target both elements, abandoning |L| does not lead to the amalgamation of two different rule systems.

As for the phonetic realization of |L|, |H| as well as laryngeal unmarkedness, we have to appreciate considerable variation within the same

language type even in traditional analyses. For example, in Meccan Arabic, we have to assume |H| based on the behavior of its obstruents, but it is not accompanied by aspiration. In certain dialects of Southern American English, in Swedish or in Italian, lenis obstruents pronounced with prevoicing are phonologically inactive, which is why these systems cannot be necessarily regarded as L-languages.

All in all, in a model assuming only |H|, we are not forced to introduce new rules either in the field of the assignment of phonetic values or in that of phonological processes.

4.2 Further characteristics and assumptions

The issue of the relationship between phonology and phonetics plays an important role in the present approach. The fact that virtually all of the processes assumed in Strict CV phonology can operate on a laryngeal element seems to support the basic idea of substance-free phonology. According to this view, phonology as a branch of cognitive science studies the phonological competence of the speaker, which consists of a finite set of elements and a finite set of functions, which manipulate the elements. As for the elements, they as mental representations are necessarily free of substance. Thus, the computational system of the phonological module of the human brain treats them independently of their physical realizations. Tendencies regarding phonological patterns do not have to be accounted for by a phonological model since they are generally explicable with reference to physical, physiological and other extralinguistic factors.

Furthermore, we can observe considerable phonetic variations within the same language types established in analyses applying both |H| and |L|. Therefore, I took as a point of departure for my analysis Cyran's Laryngeal Relativism view, whose main assumptions are that the relation between phonological representations and the phonetic correlates belonging to them is arbitrary and that it belongs to the field of phonetics. A requirement to be met regarding the arbitrary assignment of phonetic values is that sufficient phonetic distance should be kept between two categories for the maintenance of the contrast.

Cyran explains the different behaviors of obstruents in the two dialects of Polish with the help of Laryngeal Relativism. Both the Warsaw and the Cracow variety contrast voiced and voiceless plosives, and we find voice assimilation as well as word-final laryngeal neutralization in them. The difference is that as opposed to Warsaw Polish, in Cracow Polish, the laryngeally unmarked final obstruents undergo voicing if the word following them begins with a sonorant. If we take the Cracow dialect to be an H-language, and the Warsaw dialect to be an L-language, and we assume the same phonological processes in both, then the disparate behaviors will follow from the difference between the two systems, instead of the use of SPE-type arbitrary rules. In the Cracow dialect as an H-language, the voicing of unmarked, i.e., lenis, obstruents is the result of the phonological environment: it happens before sonorants, i.e., in a voicing environment, which includes its occurrence across word boundaries too. In Warsaw Polish, on the other hand, voicing is related to the presence of |L|, while unmarked obstruents remain

voiceless including the ones in word-final position—passive voicing is not characteristic of L-languages, otherwise the phonetic distance necessary for the maintenance of contrast would disappear.

Contrary to this, I argue that Warsaw Polish, along with other laryngeal systems traditionally categorized as voicing languages, can also be analyzed as an H-language. This means that the two dialects are phonologically identical systems, which only differ in the physical realizations of their laryngeally unmarked obstruents occurring in neutralizing contexts. This phonetic variance can be motivated by factors like paradigm uniformity, which can be assumed to have similar effects in languages like German.

The present model thus argues for a more abstract phonological component and a phonetic module having a wider range of roles, where the details of the physical realizations of obstruents should be explained in the field of phonetics.

5 Further phenomena

5.1 Dissimilation

We can find phenomena which further support the idea that it is disadvantageous or simply unnecessary to posit |L| in the case of languages with two obstruent series. One of them is laryngeal dissimilation. In general, dissimilation can be understood as a phonological process involving the loss of an element, as a result of which one of two segments marked for a certain property will become more different from the other via the delinking of the relevant element. In the case of laryngeal dissimilation, we can see that in most languages, when two voiceless obstruents interact, one of them will become voiced (e.g., /ék-/ + /etám/ → [ég-ətám] ‘in (the) neck’ in Moro). It is worth, therefore, analyzing this process as the loss of |H| (and the given system as an H-language), rather than as the addition of a sourceless |L|. We can also observe phenomena in the remaining languages displaying laryngeal dissimilation which suggest the phonological unmarkedness of voicing.

5.2 Voicing and nasality

Another relevant phenomenon is connected to the relationship between voicing and nasality. In a number of languages, the two properties interact with each other phonologically: as a result of nasal harmony, voiced obstruents may become nasal (e.g., [-suk-idi] ‘wash-PERF’ but [-nik-ini] ‘grind-PERF’ in Kikongo); obstruent voicing can be observed after nasal consonants (e.g., /min + tam/ → [mindamʌ] ‘come-IMP-2PL’ in Zoque). This relation can be traditionally captured by applying the same element to mark both nasality and voicing—in one case, as the head of the melodic elements constituting the segment, and in the other, as a dependent. Thus, nasal harmony can be thought of as a switch between the head/dependent position of the |L| occurring in a voiced obstruent, i.e., as the nasalization of the segment; postnasal voicing, on the other hand, can be analyzed as the spreading of |L| from a nasal segment to a laryngeally unmarked (voiceless) obstruent. Nevertheless, the phonological relation

between the two properties can be explained with the incompatibility of |L| and |H|, where |L| marks solely nasality, and only |H| is available as a laryngeal element: nasal harmony can be reanalyzed as the spreading of |L| to a (voiced) obstruent not containing |H|; in the case of postnasal voicing, the |H| marking a voiceless obstruent will be delinked due to the |L| in the segment preceding it, which will be realized as voicing on the surface. Finally, the (pre)nasalization of voiced obstruents is often brought up to support the relationship between the two properties. In these cases, however, no phonologically active nasality can be detected, so it can be regarded as the intensification of voicing.

5.2 Headedness and nonheadedness

During the examination of the roles and capacities of |L| and |H|, the question has been raised whether the given element has a head or dependent status in a phonological expression representing a segment, which contains melodic elements contacting asymmetrical relations with each other. In the proposed model, |L| as a nasal element and |H| as a laryngeal element, i.e. in their basic function, are heads in a phonological expression representing a consonant. In a dependent position, they basically play a secondary role. In this way, |L| as a laryngeal element can be available for languages like Thai and Hindi, which contrast more than two series of obstruents in the VOT scale and need more elements for encoding the opposition. In a language which displays word-final laryngeal neutralization, but only partially, the process can be described as the |H| in head position being demoted instead of delinked.