

Thesis booklet of doctoral (PhD) dissertation

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**HOW CAN ITALIAN PHONOLOGY LACK
VOICE ASSIMILATION?**

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1. Background

The *laryngeal phonology* of Italian is surprisingly underrepresented in the phonological literature, although it presents a unique panorama. In languages which exhibit a binary laryngeal distinction between voiced and voiceless obstruents, *regressive voice assimilation* (RVA) also takes place, a postlexical phonological process which identifies adjacent obstruents by [voice] (van Rooy & Wissing 2001; Petrova *et al.* 2006; etc.). Such languages are known in the literature of *Laryngeal Realism* as *voice languages*, whose most cited examples are Slavic, Romance and Hungarian (Honeybone 2002; Balogné Bérces 2017; etc.). However, Italian cannot be straightforwardly identified as a member of this group.

Italian has a prevoiced series of initial lenis stops and a mildly aspirated series of initial fortis stops. The two sets are in phonological opposition upon the [voice] feature, still, we cannot identify postlexical RVA in obstruent clusters. In the terms of Laryngeal Realism, Italian seems to be an exceptional voice language without voice assimilation.

In the native vocabulary of Italian /sC/ is the only kind of obstruent cluster, while others were diachronically eliminated for phonotactic reasons (Rohlf's 1966; Loporcaro 2009; etc.). /sC/ undergoes an interesting voicing process, labelled here *preconsonantal s-voicing*, i.e., /s/ gets voiced before voiced consonants (both obstruents and sonorants), e.g. [sp] *ugna* ‘sponge’ ~ [zb] *attere* ‘to beat’, [zl] *ancio* ‘jump’ (Bertinetto & Loporcaro 2005; Krämer 2009; etc.). This process is called “lexical” voice assimilation in the literature, however – as it is argued in the dissertation – it is not in compliance with RVA known from classical voice languages, instead, it seems to be an optional lenition process which spreads by analogy in synchrony.

Clusters of /s/ plus voiced consonant are rather infrequent in Italian, since they were formed at the edge of s-final derivational prefixes (e.g. *bis-*, *dis-*, *s-*) and consonant-initial words (Rohlf's 1966); that is, at the boundary of phonological words. At the same time, in the synchronic phonology of Italian /s/ does not get voiced at word boundaries, e.g. *autobu[s b]ianco* 'white bus', *rebu[s d]ifficilissimo* 'a very hard riddle', *ga[sd]otto* 'pipeline' (Nespor 1993; Bertinetto 1999, 2004). Consequently, s-voicing most probably emerged as RVA, but its phonological status has changed in synchrony, and it does not apply anymore as a postlexical assimilatory process, that is, synchronically it does not equal RVA.

Nevertheless, the most powerful argument in favour of the thesis that Italian phonology lacks RVA is that the process is not detectable in obstruent clusters other than /sC/. Italians, indeed, do not apply RVA in recent loanwords, or when speaking foreign languages (i.e., in their foreign accent). In the vocabulary of Italian plenty of loanwords, proper names or technical terms appear which contain the cluster of a voiced and a voiceless obstruent, e.g. *abside* 'apse', *Sampdoria*, *afgano* 'Afghan', *vodka*, *football*, etc. In previous studies I discovered that in such words Italians tend to preserve the input voice values of the adjacent obstruents; that is, they fail to apply RVA (Huszthy 2013, 2014, 2015a, 2015b, 2016a, 2016b, 2016c, 2016d, 2017a, 2017b, 2018). In my dissertation I aimed to verify this observation, following the methodology explained in the next sections.

2. The structure of the dissertation and the research method

In order to prove the absence of RVA in Italian phonology, I followed Chomsky (1965)'s instructions concerning the three levels of scientific adequacy (*observational*, *descriptive* and *explanatory* adequacy).

Accordingly, beyond the simple observation of the phenomenon (which was referred to in the previous section), I intended to properly describe it (with the tools of phonetics and statistics) and to embed it in a theoretical phonological background.

The dissertation is comprised of four great chapters. The first chapter is dedicated to observational adequacy, where the data collection procedure and the research design are introduced. The corpus consists of speech recordings which come from a loanword experiment. The 18 sample texts used contain 108 target words, with the texts formulated in Standard Italian and the target words being for the most part loanwords, foreign proper names and technical terms. Various consonant clusters appear in the target words, ideally containing each possible consonantal concatenation, that is, stop plus consonant clusters, fricative plus consonant clusters, affricate plus consonant clusters and sonorant plus obstruent clusters. 15 Italian informants were recorded in two soundproof studios: at the Research Institute for Linguistics of the Hungarian Academy of Sciences in Budapest and at the Scuola Normale Superiore di Pisa. The informants came from several different dialectal territories of Italy, which was an important criterion of the data collection, since the aim was to compare different dialectal accents of Italian from the point of view of laryngeal activities. A control group of five Hungarian informants (fluent speakers of Italian as L2) also participated in the recordings. They pronounced the same sample texts in Italian, but with sharply different results (RVA was systematic in their pronunciation, unlike in the case of the Italian informants).

The second chapter of the dissertation represents the level of descriptive adequacy: acoustic and statistical evidence is offered in order to demonstrate that Italians tend to retain underlying voice values in obstruent clusters. In a first approach, spectrograms and wave forms show the perfect adjacency of

completely voiced and completely voiceless obstruents in the pronunciation of different Italian informants. Apparently, Italians are able to preserve the underlying voice values even when the obstruents of the clusters are perfectly coarticulated; a few examples from the dataset (with the IPA transcription of the relevant consonants): *vo*[dk]a ‘vodka’, *su*[bk]ultura ‘subculture’, *Sü*[dt]irol ‘South Tyrol’, *M*[ekd]onald’s ‘McDonald’s’, *so*[ftb]all ‘softball’, *ou*[td]oor ‘outdoor’, *a*[fq]ana ‘Afghan, fem.’, *sur*[fb]oat ‘sufirboat’, *so*[vk]oz ‘sovchoz’, *e*[kdz̄]ema ‘eczema’, *a*[dzt]eca ‘Aztec, fem.’, [ajsb]erg ‘iceberg’, *b*[ekzl]ash ‘backslash’, etc.

Statistical analyses demonstrate that the lack of RVA is not accidental in the Italian data. On the whole, 65% of the total occurrences of non-/sC/ obstruent clusters surface in the pronunciation of the informants with opposite voice values. In 15% of the cases RVA appears, while 9% of the relevant data exhibit *progressive devoicing* (PD), and the remaining 11% are composed of deletions, mispronunciations and other alternative realisations. If we specifically focus on the occurrences of RVA, we see a rather asymmetric distribution of the phenomenon – in fact, in 72% of the cases devoicing happens. If we confront only the 28% of voicing by RVA with PD, we find PD in 17% of the cases, and RVA only in 8%. These results suggest that speakers prefer the strategy of PD over voicing by RVA; while in the great majority of the cases (65%) the clusters still surface with oppositely voiced obstruents. If we confront the Italians’ results with those of the Hungarian control informants, we find that Hungarians used RVA in 81% of the Italian target words. This comparison helps us to conclude that the laryngeal behaviour of these two groups of speakers differs in fundamental ways: Hungarians prefer to apply RVA when they encounter differently voiced obstruents in clusters, while Italians prefer to retain the underlying voice values of the obstruents.

/sC/ clusters are treated separately from non-/sC/, since – according to the literature – in the former we expect s-voicing before voiced consonants. On the other hand, as it turns out from the data, s-voicing is often absent in /s/ plus voiced obstruent clusters. On the whole, /s/ undergoes voicing in 56% of the occurrences (e.g. *iceberg* ['ajzbergə]), it remains voiceless in 30% (e.g. *iceberg* ['ajsbergə]), while it results in PD in 14% (e.g. *iceberg* ['ajspərgə]). Sonorants can also trigger s-voicing in Italian, even if it is phonologically problematic, since sonorants are generally considered as unspecified for [voice]. In /s/ plus sonorant clusters s-voicing occurs in 37% of the occurrences, while in 63% /s/ remains voiceless. Further statistical analyses are presented in relation to sociolinguistic factors, to the places and manners of articulation of the obstruents, to word frequency in language use; finally, a dialectal comparison of the informants is provided.

In the third chapter of the dissertation various phonological approaches are applied to the data, so as to structurally explain the observations in light of explanatory adequacy; proceeding towards more and more theoretical interpretations. Firstly, a *Laboratory Phonology*-approach is developed, which still remains on the practical ground of the dataset. In this part “phonetic repair strategies” are analysed, which help the informants to avoid or replace RVA in the obstruent clusters. The massive appearance of these strategies suggests that the lack of RVA is phonetically problematic for the speakers, who need to somehow repair the clusters, e.g., through the aspiration of voiceless stops before voiced ones, through partial voicing, through the reordering of the obstruents by metathesis (e.g. *rö/ntg/en* > *rö[nt]e[ŋg]* ‘röntgen’, *ca/tg/ut* > *ca[t:]u[g]* ‘catgut’, etc.).

In the next section of the third chapter an attempt is made to reconcile the laryngeal phonology of Italian with Laryngeal Realism (Iverson & Salmons 1995; Honeybone 2002). On the basis of the phonetic characteristics

of Italian initial stops, Italian seems to belong to voice languages (similarly to the other Romance languages, cf. Recasens 2014), since the lenis series of stops is prevoiced. However, in the fortis series of stops a small amount of aspiration is found in the data. Therefore, the laryngeal system of Italian is somewhat similar to that of Swedish, an aspiration language where a prevoiced lenis set is in contrast with an aspirated fortis set (cf. Ringen & Helgason 2004). Even though the voicing contrast between the Italian obstruents and the history of Italian preconsonantal s-voicing suggest that Italian is an exceptional voice language, rather than an exceptional aspiration language, the aspiration in the fortis series and the frequent cases of progressive devoicing lead us to examine the other possibility, too.

Consequently, in the last two sections of the third chapter two opposite theoretical treatments are offered to the synchronic laryngeal phonology of Italian. In the Optimality Theoretic account Italian is seen as an exceptional voice language which lacks voice assimilation, unlike “regular” voice languages. In this approach the synchronic conservatism of Italian phonology is seen as an input-preserving attitude, that is, speakers prefer to extend the input forms to avoid their being subject to deletion or assimilation (that is, RVA in our case). The constraint ranking established for Italian laryngeal phonology is more similar to that of classical voice languages, with the main difference that the markedness constraints which are responsible for voice agreement are lower ranked. On the other hand, faithfulness constraints, which preserve the elements in the input, are very high ranked: this explains the “asymmetric conservatism” of Italian phonology, which allows insertion but punishes deletion or assimilation. Preconsonantal s-voicing is expressed in OT through the high ranked sibilant-specific subconstraints of the IDENT(VOICE) faithfulness constraint family. Accordingly, preconsonantal /s/ is exceptional in Italian even as far as its phonological conservatism is

concerned; that is, /s/ readily changes its voice value, unlike any other obstruent. Furthermore, presonorant s-voicing can also be motivated by another constraint, s-[son], which requires /s/ to behave as a sonorant in presonorant position. Another possibility to capture preconsonantal s-voicing in OT is through syllable structure. If we suppose that /sC/ clusters can also be parsed as tautosyllabic in Italian phonology (cf. Bertinetto 1999; Huszthy 2016a, 2016b), we are able to explain preconsonantal s-voicing through the AGREETAUTO(VOI) constraint, which requires tautosyllabic obstruent sequences to have the same specification for [voice]. However, this explanation is problematic, given that the syllabification of /sC/ clusters is apparently unpredictable in Italian (Bertinetto 2004).

The Element Theory-based *Laryngeal Relativism*-account is an abstract, theoretical explanation of the lack of RVA in Italian phonology. In this approach Italian is seen as an unusual type of aspiration language, more precisely, an *h-language* in the ternary typology of languages with a bidirectional laryngeal opposition (Balogné Bérces 2017; Balogné Bérces & Huszthy to appear). The mild aspiration found in the fortis series of stops and the frequent cases of “progressive devoicing” (which stems here from the lack of the voiced source element) also support this idea. If we analyse the laryngeal system of Italian as that of an h-language, these phonetic manifestations are not surprising. The voicing opposition is built upon a prevoiced lenis set (whose occasional voicing is passive) and a slightly aspirated fortis set. Consequently, RVA is not even expected in Italian under this approach, since it cannot exhibit true laryngeal activity.

3. Results

The present study serves the literature of Italian phonetics and phonology as well as that of laryngeal phonology with various results both on the practical and the theoretical ground. The dataset of the corpus, as far as its dimensions are concerned, can be used in further research for additional objectives beyond the aims of the present dissertation. The recordings are characterised by a very high sound quality, for the most part they are completely noiseless, so they are adequate for any further phonetic measurements. The sample texts are of considerable length, and only 51 out of the 108 target words have been used for testing RVA, the rest contain other laryngeal variables which can be used for further purposes. If we take only the elaborated part of the corpus (segmented and annotated sounds, spectrograms and statistics), it may offer a sufficient amount of data for several new studies, while the greater part of the recordings have not even been processed experimentally.

The method I developed for gaining ideas (as part of the observational adequacy) is quite new in theoretical phonology. *Foreign Accent Analysis* (Huszthy 2013, 2014, 2016b, to appear a) attempts to take advantage of the pronunciation of foreign languages, so as to analyse the speakers' mother tongue. In fact, one of the main constituents of foreign accent is the interference between L2 and the productive phonology of L1.

Essentially, the basic concept of the dissertation – i.e., Italian phonology lacks voice assimilation – is a novel proposal, and as such, it is a major scientific result. I aimed to prove that Italian preconsonantal s-voicing is a phenomenon fundamentally different from RVA, contrary to the claims of the literature. The two phenomena differ in their inputs (RVA targets any obstruent cluster, while s-voicing targets only sibilants), they differ in their domain (RVA is postlexical, while s-voicing is lexical), and they also differ

in their phonetic environment (RVA is triggered only by elements specified for [voice], while s-voicing is also triggered by sonorants and glides).

The theoretical analyses also offer a number of insights. The OT account draws attention to the fact that the phonology of Italian is conservative in synchrony, i.e., Italians tend to preserve the input elements in the outputs. On the other hand, the analysis of Italian in the combined frameworks of Element Theory and Laryngeal Realism shows that we cannot straightforwardly treat Italian as a voice language (which is common practice in previous work), since the same data may receive the opposite phonological interpretation, i.e., Italian can also be approached as an h-language.

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