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# THE SOUNDS OF EUROPE: Velar and Post-velar Fricatives in Areal Perspective

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This article is meant to demonstrate not only that it is possible technically but that it also makes sense linguistically to study phonological phenomena in a pan-European perspective. To prove our point, we employ the current comparative methodology associated with the framework of typologically-inspired areal linguistics. The data are evaluated quantitatively. We focus on the classes of velar and post-velar fricatives with phoneme status. Our investigation is based empirically on data drawn from a sample of 157 contemporary varieties spoken in Europe. Our results are indicative of a non-random distribution of the above classes of phonemes. Genetic, typological and areal factors are discussed as potential explanations of the observed geo-linguistic distribution of velar and post-velar fricatives on European soil. The general conclusion we draw is that it is high time to develop a research program which is dedicated to the continent-wide in-depth study of the phonological make-up of Europe.

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## 1. INTRODUCTION

The areal linguistics of Europe has made enormous progress largely because of the success-story of the large-scale project EUROTYP. Apart from the eight bulky volumes (BOSSONG et al. 1998–2006) which document the various sub-projects of EUROTYP, there is a multitude of other pertinent publications which have resulted (and continue to result) directly or indirectly from this huge international undertaking. In these books and papers, many interesting issues are raised, solutions for old and new problems are put forward and an impressive number of topics especially from the realm of morphosyntax are scrutinised closely. Aspects of the theory and methodology of areal linguistics of Europe and beyond are dutifully discussed.

Clearly, thanks to EUROTYP and its spin-offs, our knowledge of the linguistic landscape of Europe has grown immensely.[1] However, the wealth of new insights notwithstanding, it strikes the eye that one of the basic components of human language(s) has attracted

[1] For a critical review of the approach of EUROTYP, we refer the reader to VAN POTTELBERGHE (2001) who blames the proponents of EUROTYP for their (inadvertent) ideological "Occidentalism" which manifests itself in the importance the European West is given as the potential centre of diffusion of certain structural traits.

hardly any attention among the propagators of EUROTYP, viz. phonology. With the exception of the volume dedicated to word prosodic systems edited by VAN DER HULST (1999), phonology – both the segmental and the suprasegmental variety – is passed over tacitly within the framework of EUROTYP.

In this contribution, we take issue with this neglect of phonology and argue that the inclusion of phonology in the research program of the areal linguistics of Europe will lead to many valuable new insights into the geo-linguistic profile of the continent. To this end, we critically assess the extant literature on areal-linguistic matters of Europe provided there are substantial statements as to the areal phonology of the languages of Europe (cf. section 2). In section 3, we introduce our project which aims at a comprehensive description and evaluation of the phonological properties of European languages. Section 4 is a case study of the categories of velar and post-velar fricatives. The conclusions are presented in section 5.

## 2. THE STATE-OF-THE-ART OF THE AREAL PHONOLOGY OF EUROPE

According to HASPELMATH (2001: 1493), the absence of phonology from the agenda of EUROTYP is easily explained because he is "not aware of any phonological properties characteristic of the core European languages". To support his point of view, he quotes three sources:

1. JAKOBSON (1931: 182) who states that no phonological feature shared by all languages of Europe has been found yet,
2. TERNES (1998) who claims that in global perspective, the European languages display only unremarkable phonological properties, and
3. the articles in VAN DER HULST (1999) which suggest that there is no phonological evidence proving the existence of Standard Average European.

Cautiously, HASPELMATH (2001: 1493) ponders the idea that "[p]erhaps phonologists have not looked hard enough". We concur with HASPELMATH on this point. To our mind, Europe appears to be phonologically uninteresting because, on the one hand, linguists have tended to look at the areal phonology of Europe only from one particular angle and, on the other hand, they have not deemed it worthwhile digging deep enough, in a manner of speaking. To prove our point, we review competing approaches to the phonology of the languages of Europe.

Prior to EUROTYP, HAARMANN (1976a: 108–116) identifies a set of 16 so-called Europemes i.e. typical properties of European languages.[2] A more modern rendering of this term is Euroversal (KORTMANN 1996: 271–276). The first four of HAARMANN's Europemes can be considered phonological. Three of these Europemes are of a quantitative nature:

- Europeme 1 states that the size of European phoneme inventories ranges from minimally 10 to maximally 110 units,
- Europeme 2 assumes that, in the languages of Europe, there are always more consonants than vowels, and

[2] The scientific value of the concept of the Europeme and its empirical correctness are critically evaluated in STOLZ (2006a).

• Europeme 3 claims that the logically possible phonotactic combinations of segments in a chain are exploited only to 33%.

The only qualitative statement in the realm of phonology can be found in Europeme 4 which declares the basic syllable structure of European languages to be (C) V (C) (C), i.e. each European language is assumed to allow for naked-open syllables with covered and closed syllables being possible to a limited extent. There is no need to go into the details to realise that the four Europemes are not very informative as they recapitulate general cross-linguistic preferences which can hardly be considered distinctive traits of Europe.

Independently of both Haarmann and EUROTYP, Décsy (2000b: 342–343) identifies five vowels and ten consonantal phonemes which he assumes to be pan-European, namely

– for vowels, the high vowels (front) /i/ and (back) /u/, the mid-high vowels (front) /e/ and (back) /o/ and the low vowel /a/,

– for consonants, the voiceless plosives /p/, /t/, /k/, the fricatives /s/, /v/, the nasals /m/, /n/, the liquids /l/, /r/, and the palatal approximant /j/.[3]

Apart from the fact that some of these supposedly pan-European phonemes are not attested in each and every European language[4], this relatively small set of phonemes, too, is hardly unique cross-linguistically. Nevertheless, Décsy's common European phoneme chart is among the most concrete one can get in the realm of pan-European phonology.

On a much higher level of scientific quality, Ternes (1998: 150) concludes his survey of the phono-typology of the languages of Europe with the statement that there is nothing remarkable about their phonological properties. To his mind, the range of variation of phonological phenomena in Europe is extremely limited (only aboriginal Australia seems to display even less variation). This lack of diversity, says Ternes (1998: 150), is "ein Ausdruck von Mittelmäßigkeit und Durchschnittlichkeit".

What all these approaches have in common is their preoccupation with Euroversals. The above authors are searching for phonological properties which are common to all European languages. What they find is either trivially because the identified traits are in no way distinctive or it is claimed that there are no pan-European features at all.[5] However, the areal linguistics of Europe is not confined to the identification of continent-wide isoglosses. An equally important task of this discipline consists in determining the internal geo-linguistic make-up of Europe and potential ties to regions located beyond the boundaries of the European continent. Neither is it sufficient to pinpoint the one phonological isogloss which embraces Europe in its entirety nor does the inventory of Euroversals exhaust the catalogue

[3] Whether or not Décsy's European phoneme chart corresponds to the empirical facts is not at issue here. Suffice it to say that the supposed ubiquity of the palatal approximant /j/ in the European languages is a rather doubtful case.

[4] In Latvian, for instance, the mid-high back vowel /o/ occurs only in loan-words (orthographic <o> represents the diphthong /uo/) (Muižniece 2002: 47–48). The voiced labio-dental fricative /v/ is absent from Castilian Spanish (Spanish has /b/ with the two allophonic realisations [b] and [β], Occitan, Basque. In the majority of the Romance languages, a phonemic palatal approximant /j/ does not exist (where phonetic [j] shows up, it usually functions as consonantal allophone of /i/) (Haarmann 1976a: 115–116).

[5] In the study of linguistic areas situated outside of Europe, phonological issues are prominently discussed for the Cape Province (Güldemann 2006: 106–109), for the Sri Lanka *Sprachbund* (Bakker 2006: 144–145), for the Turkish-Caucasian contact zone (Johanson 2006: 169–170), the Siberian linguistic area (Anderson 2006: 268–272)), etc.

of problems to be faced by the areal phonology of Europe. What need to be looked at more closely are those phonological properties which fail to qualify as fully-blown Euroversals. The potential linguistic value of geographically restricted isoglosses within Europe is recognised already in Haarmann (1976a).[6]

As to particular phonemes, Haarmann (1976a: 115–116) observes that some consonants have a wide distribution across the continent without qualifying for the status of Europemes. Accordingly, he states that otherwise widely attested consonants are missing from the phonological systems of individual languages such as /b/ in Chuvash, /d/ in Mari, /g/ in Mari and Finnish, /f/ in Basque, /v/ in Spanish and Occitan. More generally, Haarmann (1976a: 116) claims that, normally, neither frequently attested phonemes nor their less frequent counterparts[7] seem to yield a genetically or areally determined pattern. Similarly, a variety of further phonological and morpho-phonological issues (phonotactics, sandhi, prosody, etc.) are claimed to behave randomly (Haarmann 1976a: 117–125). Thus, also in Haarmann's interpretation, Europe looks phonologically uninteresting because there seems to be no pattern according to which the phonemes are distributed geographically. However, Haarmann (1976a: 116) modifies his own statement when he claims that

> [b]ei einer Anzahl von Phonemen kann man eine areale Beschränkung ihres Vorkommens feststellen. Zumeist lassen sich diese Beobachtungen nur als negative Aussage über ihre Verbreitung (bzw. Aussage über eine fehlende Verbreitung) formulieren, selten in Form einer positiven Aussage über eine Verbreitungsdichte.

Unfortunately, he makes do with only a small number of examples among which we find the glottal fricative /h/. The areal distribution of this phoneme is looked at more closely in section 4 below.

The laudable collection of articles dedicated to sandhi phenomena in the languages of Europe, edited by Andersen (1986), skips any attempt at putting the results into an areal-linguistic perspective. As a by-product of Ternes's (1998) discussion of potential pan-European properties, one also learns about a variety of isoglosses of smaller range. His observations as to the distribution of affricates and sibilants in Europe (Ternes 1998: 145) have inspired Stolz (forthcoming) to study thoroughly the geo-linguistics of these phonological classes in a European perspective (cf. section 3 below).

The idea notwithstanding that there are no geo-linguistically relevant phonological isoglosses below the continental level in Europe, there are a number of studies which suggest the contrary. Wagner (1964) suggests an area of partial phonological convergence in the European North and Northwest which includes varieties of Saami, continental and insular North Germanic, Scots-Gaelic and sundry languages. The similarities Wagner describes under the heading of "phonesis" are mostly of a suprasegmental nature. Another areal-linguistically inspired look at the languages in the North of Europe is provided by Eliasson (2000). Koptjevskaja-Tamm/Wälchli (2001: 756–757) summarise all the phonology-related statements about possible areal features or evidence of contact-borne phenomena in the Circum-Baltic region. Stadnik (2002) studies the geo-linguistics of palatalisation which

[6] The founding father of the areal linguistics of Europe, Lewy (1964) integrates unsystematic statements about individual phonological issues in the grammatical sketches of his sample languages. However, he does not elaborate upon these aspects and thus we skip presenting his observations in a detailed fashion.

[7] Haarmann (1976a: 147–152) additionally discusses "Europäische Isolationismen" i.e. phenomena which are attested only very rarely in individual languages such that they cannot be explained by areal factors or genetic inheritance.

is shown to follow a relatively clear areal pattern with isoglosses which cut across genetic phyla (Slavic, Uralic, and Turkic languages of Eurasia display palatalisation whereas their more westerly/southerly next-of-kin lack the feature). Moreover, for most of the *Sprachbünde* which have been proposed to exist on European soil, some phonological features have been claimed to be typical (albeit rarely distinctive). However, our general knowledge of the areal phonology of the languages of Europe is still fragmentary and the quality of the geolinguistically-minded statements in the realm of the phonology of European languages is often seriously impaired by shortcomings as to the methodology, sample and sources employed, the phonological theory adhered to and the correctness of the analysis of the empirical data.

The lamentable state of the areal phonology of Europe can be demonstrated best by way of reviewing a relatively recent (and rather doubtful) proposal which provides sketches of each of the supposed sub-areas of Europe.[8] These sketches usually contain some bits and pieces connected to phonological issues[9] which we quote *in extenso* below (following the order in which the phenomena are listed in Décsy 2000a). There is no need to spell out exactly which languages make up the various "zones"[10] our source postulates.[11] In the footnotes, we comment on some of the features without any attempt at exhausting the list of problematic issues.[12]

1 What characterises SAE-languages (Décsy 2000a: 54) phonologically is a) "vowel reduction in unstressed syllables"[13]; b) initial stress[14];

[8] For a criticism of Décsy's attempt at subdividing Europe (exhaustively) in distinct areas, we refer the reader to Haarmann (1976b) whose rebuttal of Décsy (1973) – the precursor of Décsy (2000a, b) – is also valid for the revised English version published at the beginning of the new millennium.

[9] How doubtful many of Décsy's statements are (also outside phonology) is the leitmotif of Stolz (2004).

[10] There are three groups of languages for which Décsy (2000a) provides no lists of shared features, namely the languages of the so-called Littoral Zone (Frisian, Dutch, Basque, Spanish, Portuguese, Maltese), the "Language Isolates" (Luxembourgish, Romansh, Sorbian, Gagauz) and the "Diaspora Languages" (Yiddish, Ladino, Karaim, Romani, Armenian). That several of these languages have phonological features in common with languages allocated in other of Decsy's "zones" need not be elaborated upon. From the point of view of areal linguistics, the above three groupings of languages are nonsensical (Haarmann 1976b: 71–74, Bechert 1998: 14). More generally, Décsy's approach is a failure on the grand scale because of his tendency to mix unsystematically (sometimes only imagined) sociological, historical, cultural and linguistic criteria such that there is no methodological consistency to speak of.

[11] It must be mentioned though that English is the only language which is admitted to two different "zones": the Anglo-Saxon component goes with the Viking Zone whereas English – either the "international" remainder or the entire language (re-integrating the Anglo-Saxon component) – forms part of the SAE-languages (Décsy 2000a: 64-8 and 77).

[12] Occasionally, our source provides additional sketches including phonological information on individual languages or smaller "zones within the zones" such as on Irish (Décsy 2000a: 90) or the so-called Sura Zone (comprising varieties of Chuvash and Mari) as part of the larger Kama Zone (Décsy 2000a: 218). For obvious reasons, we cannot discuss these sketches in this contribution.

[13] This is certainly incorrect with reference to (standard) Italian.

[14] Décsy (2000a: 54) admits that Russian – a member of SAE only because its speech-community happens to exceed the 50 million speaker mark(!) – does not fulfil this purely demographic criterion. Furthermore, he overlooks that French (with its phrase-final accent) and Italian (with its preference for penultimate accent) do neither. Word-initial stress site may be statistically dominant both in German and English. However, in neither of the two is it the only option. In Germany, stress tends to be on the lexical morpheme which often but by no means always occupies the leftmost morphological slot of a word. In English, stress-site alternations are contrastive and even serve derivational purposes.

2 For the so-called Viking Zone, Décsy (2000a: 78–79) considers typical properties a) "the presence of" interdental and velar fricatives[15], b) employment of internal and external sandhi phenomena[16], c) umlaut[17], d) systematic (= morpho-phonological) variation of consonants[18], e) admission of /h/ in pre-consonantal position, f) absence of final devoicing[19], g) (preponderance of) initial stress;

3 The languages of the Peipus Zone (Décsy 2000a: 120–121) are said to display a) initial stress, b) a wealth of diphthongs[20], c) "presence of" /æ/, d) absence of palato-alveolar /ʃ/ and /ʒ/[21], e) vowel apocope, f) tone distinctions[22], g) quantity correlation[23], h) "predisposition towards" palatalisation[24];

[15] These features are not attested in all of the languages of this "zone". Danish and Icelandic are the only languages which display both classes of fricatives. However, in both languages, [ɣ] is but an intervocalic allophone of /g/. Danish lacks the voiceless /θ/ whereas, in Icelandic, voiced [ð] is a positional allophone of /θ/. Breton, Irish, Scots-Gaelic, Faroese, Norwegian (Bokmål), Swedish, Finnish and Veps all lack interdental fricatives (at least in their standard varieties), whereas Breton, English, Finnish, and Welsh have no velar fricatives. Incidentally, Castilian Spanish and Modern Greek have the full array with /θ/, /ð/ (~ [ð] as allophone of /d/), /ɣ/ (~ [ɣ] as allophone of /g/). Albanian has the phonemic interdental fricatives /θ/ and /ð/. Similarly, some Turkic languages of Europe such as Bashkir display phonemic /ð/ and /ɣ/. Meaning: there are languages outside the area under scrutiny which fulfil the criteria for inclusion much better than those languages which are admitted to the membership.

[16] It is not incidental that the term *liaison* (repeatedly used in Décsy 200a, b) stems from French originally. In Italian, the so-called *raddoppiamento sintattico* 'syntactic doubling' (i.e. initial consonant germination under external sandhi) is a pervasive phenomenon. The contributions to Andersen (1986) suggest that phenomena of this kind are far too widespread in Europe to be considered typical of a particular "zone". Note that at least external sandhi is also claimed to be a trademark of the Danube Zone (cf. below).

[17] *Umlaut* is also mentioned as a typical trait of the Balkan Zone (cf. below). That the phenomenon recurs also elsewhere in Europe such that SAE-languages, the Littoral Zone and others share the same property seems to escape the author's notice.

[18] A similar statement is made for the languages of the Rokytno Zone and those of the Balkan Zone (cf. below).

[19] This criterion is problematic as some languages of this "zone" allow only certain consonants in word-final position (Finnish). Moreover, Breton – one of the languages of the Viking Zone – is described normatively as a language with obligatory final devoicing (Hemon 1975: 91). Also two members of the group of SAE-languages – French and English – have no final devoicing (at least in RP and *bon usage*). Hungarian and Ukrainian are mentioned by Décsy (2000a: 152) as further languages which allow voiced consonants in word-final position. However, with Bosnian, Croatian, Serbian, Romanian (Ciobanu & Sfîrlea 1970: 124) and Albanian (Buchholz & Fiedler 1987: 42), there are at least five other languages the standards of which block final devoicing (in the case of Albanian, voiced consonants in word-final position are also typical of the spoken Gheg variety whereas spoken Tosk Albanian tends to neutralise voice contrasts word-finally).

[20] Diphthongs are also abundant in Finnish, the northerly neighbour of the languages of the Peipus Zone, and in various languages which belong to different zones. Ternes (1998: 144) mentions Scots-Gaelic with up to 80 diphthongs alongside other members of the Celtic phylum and various Germanic languages.

[21] Décsy (2000a: 121) mentions Latvian as an exception and claims that these sibilants "have a low frequency" in the language.

[22] Décsy (2000a: 121) correctly points to the connection to neighbouring Lithuanian. However, the similarities of the so-called accents of Swedish should not be forgotten either.

[23] Phonemic quantity counts also among the characteristics of the Danube Zone (cf. below). That the quantity correlation of vowels and consonants is also a prominent feature of the phonology of the majority of the members of his Viking Zone (and individual languages which belong to other "zones") is something the author chooses to omit.

[24] As a positive feature, palatalisation is also mentioned among the typical properties of the Rokytno Zone (cf. below). Russian carries this feature into the group of SAE languages. The importance of palatalisation in the Goidelic languages in the British Isles (Stadnik 2002: 102–110) which introduce the feature to the scene in the Viking Zone seems to escape the author's notice.

4 Décsy (2000a: 132) claims that the languages of the Rokytno Zone have a) no quantity correlation[25], b) mobile accent[26], c) no reduced vowels in unstressed syllables[27], d) no diphthongs[28], e) presence of /h/, f) fricatives are said to "play a considerable role in the consonantism"[29], g) systematic vowel alternations and consonant alternations[30], h) absence of /æ/, i) tendency to vocalise syllable-final (velar) laterals[31], j) palatalisation is an important feature[32];

5 The Danube Zone comprises languages for which Décsy (2000a: 152) assumes that a) initial stress predominates, b) there is a phonemic quantity correlation (with the proviso that there is also "a vast number of alternations in the area of degree of quantity")[33], c) diphthongs are unimportant, d) there is no vowel reduction[34] and "loss of vowels [applies] only in unprotected position", e) /h/ is a distinct phoneme, f) final devoicing applies[35], g) external sandhi is important[36];

6 To Décsy's mind (2000a: 181–182), the Balkan Zone displays a) mobile accent, b) no quantity correlation, c) small vowel inventories as opposed to an abundance of consonants, d) "absence of diphthongs"[37], e) "presence of umlaut"[38], f) "inclination toward consonantic alternation"[39], g) presence of a low central vowel /ɐ/;

7 As to the languages of the Kama Zone, Décsy (2000a: 215) mentions a) the presence of [ə][40], b) absence of the quantity correlation[41], c) final devoicing[42], d) /h/ is largely absent from the area, e) no palatalisation.[43]

[25] Décsy (2000a: 132) states that Lithuanian and Kashubian are exceptions.

[26] This does not hold for Polish and – according to Décsy (2000a: 132) – neither for Eastern Kashubian.

[27] Belarusian is Décsy's (2000a: 132) exception to the rule.

[28] However, Lithuanian does not conform to this requirement (Décsy 2000a: 132).

[29] It seems that Décsy (2000a: 132) mixes up fricatives and affricates since the majority of examples he gives are of denti-alveolar affricates.

[30] A similar statement is made for the languages of the Viking Zone (cf. above) and those of the Balkan Zone (cf. below).

[31] This tendency is not unique to the Rokytno Zone. It occurs elsewhere as well (e.g. in Portuguese).

[32] This feature is also explicitly mentioned for the members of the Peipus Zone (cf. above).

[33] This feature is also explicitly mentioned for the members of the Peipus Zone (cf. above).

[34] Décsy (2000a: 152) admits however, that there are instances of vowel reduction in Slovenian (probably induced by contact with German).

[35] Hungarian preserves voice contrasts word-finally and is thus areally exceptional (Décsy 2000a: 152). Moreover, Décsy (2000a: 152) claims that final devoicing is a intercontinental isogloss which connects German to Japanese. In Décsy (2000b: 347), the author speaks of a Eurasian "mega-area" of "sonant closure".

[36] This feature overlaps partly with its counterpart in the list of typical properties of the Viking Zone (cf. above).

[37] Romanian counts as an exception (Décsy 2000a: 181).

[38] The same feature is mentioned in connection to the Viking Zone (cf. above).

[39] A similar statement is made for the languages of the Viking Zone and those of the Rokytno Zone (cf. above).

[40] Décsy (2000a: 215) adds that the schwa occurs "mostly as a reduction product", meaning it instantiates processes of vowel reduction comparable to those postulated for the SAE-languages (cf. above).

[41] Quantities are distinctive in Yurak and Kalmyk, however (Décsy 2000a: 215).

[42] In connection to final devoicing, Décsy (2000a: 215) speaks of a link to the languages of Western Europe.

[43] Yurak and Mordvin are acknowledged as exceptions to this rule (Décsy 2000a: 215). According to Stadnik (2002: 47–79), palatalisation is also vital among other languages of the Kama-Volga region.

By and large, the above inventory of supposedly distinctive properties of the individual "zones" is unsatisfactory linguistically.[44] Décsy's approach suffers severely from a number of flaws. Sometimes, diachronic and synchronic perspectives are not clearly distinguished.[45] The composition of his sample gives us reason to complain, too. Languages have been admitted to the sample if they fulfil the largely undefined criterion of "social relevance" (Décsy 2000a: 13) such that the author feels entitled to deny languages like Catalan the right to be part of the sample whereas, for instance, Livonian is counted in. The sources from which he draws the necessary empirical information are never identified. Data from standard varieties and non-standard varieties, written and spoken registers are used without discernible patterns of a system. No attempt is made at exposing the convictions of the author in terms of phonological theory and models. It is often even unclear whether he is referring to phonemes or to (allo-)phones. More than just once the phonological facts are simply misunderstood and thus analysed erroneously. His own assumptions are often at variance with those of Haarmann (1976a) and Ternes (1998) which are usually sound in terms of linguistic accuracy. Apart from the largely impressionistic nature and/or vagueness of some of the above criteria, our comments in the footnotes clearly indicate that the number of exceptions is remarkably high for a considerable number of the supposedly distinctive traits of Décsy's "zones". These "zones", thus, are revealed as relatively inhomogeneous constructs. The recurrence of identical or similar properties in several of the phonological sketches suggests that the boundaries of Decsy's "zones" often cut across or are cut across by phonological isoglosses. This is the case with the criterion "initial stress" which is considered characteristic of four "zones" (SAE-languages, Viking Zone, Peipus Zone and Danube Zone) which are all geographical neighbours of each other. Similarly, the presence of the phoneme /h/ is mentioned as a typical feature of three "zones", namely the Viking Zone, the Rokytno Zone and the Danube Zone. The tenability of Décsy's hypothesis in connection to the glottal fricative /h/ will occupy us again in section 4 below.

For the time being, it suffices to observe that working with a predetermined set of non-linguistically (i.e. historically, culturally, ethnically, politically, economically, etc.) "defined" sub-areas with fixed boundaries is detrimental to the endeavour of areal linguistics because they dissociate largely the identification of linguistic areas from the linguistic facts. If the area "is there already" prior to the stock-taking of linguistic phenomena, the empirically findings can only function as secondary corroboration of a pre-established "fact". However, we side with Bechert (originally published 1981, quoted from the re-edition 1998: 14) who, inspired by the seminal work of Masica (1976), claims that

> [e]s sollte selbstverständlich sein, daß ein Areal (ein Sprachbund) nur dadurch nachgewiesen werden kann, daß jedes vermutete Charakteristikum des Areals (des Sprachbundes) in seiner gesamten geographischen Ausdehnung verfolgt wird, und nicht nur bis zu irgendwelchen im voraus durch Vermutung oder aufgrund außerlinguistischer Kriterien festegesetzten Arealgrenzen. Die Existenz und die Ausdehnung des Areals werden durch das Vorhandensein und die Verbreitung seiner Charakteristika bestimmt.

[44] Since single features are not normally considered decisive when it comes to defining a linguistic area (pace Haspelmath 2001: 1492; cf. Stolz 2006b), one could try to safe Décsy's division of Europe into "zones" by way of claiming that it is the combination of features which needs to be unique, not the individual features themselves. However, we doubt that it is worth the while re-reading the sketches along the lines of feature combinations.

[45] In the chapter on the Peipus Zone, for instance, Décsy (2000a: 121) mentions the "loss (apocope) of vowels in final position (it took place late)" and the change /m/ > /n/ in final position.

This is something that has not been achieved yet for the linguistic landscape of Europe. With our own project (to be described in the section 3), we accept the challenge and set out to describe and evaluate comprehensively the areal phonology of the languages or Europe in order to overcome the unjustified negligence of phonological issues within the framework of the areal linguistics of Europe.

## 3. EUROPHONOLOGY – PROJECT OUTLINE

### 3.1. CLARIFICATIONS

Voicing one's discontent with the work of the predecessors is one thing, providing a better solution for the problems at hand is a completely different cup of cake. We aim at developing a full-blown research program whose goal it is to describe and evaluate the European linguistic landscape exhaustively – starting with determining the synchronic constellation of facts which will be complemented in a second phase by the integration of the diachronic perspective and the comparison with languages spoken outside our primary area of interest. At this moment, we are still on the hunter-and-gatherer stage of our project for which we have baptised *Europhonology*[46] provisionally. This contribution is meant to mark a step forward in the preparatory phase (further preparatory steps are the topic of section 3.2. below). We acknowledge that doing *Europhonology* is not as easy as it might seem because there are a number of problems to be solved before we can get started – and this means that we have to start from scratch in several of the domains involved in the project.

We assume that one of the reasons why the areal phonology of Europe still needs to be developed is to be sought in current theories of language contact. Among specialists of language contact, it is commonly believed that phonology is the last structural level in which contact-induced language change manifests itself. Accordingly, phonological phenomena come late in practically all extant borrowing hierarchies (e.g. Thomason 2001). One way or another, areal linguistics is tightly connected to questions of language contact. If the distribution patterns of linguistic phenomena in space cross language boundaries, the first explanation that comes to mind is diffusion via language contact. Since phonology is considered less prone to yield to pressure in language-contact situations, linguists simply might not expect to find anything worth the while studying in the realm of areal phonology. More categorically, one could also doubt principally that an areal perspective on phonology makes sense at all outside traditional dialectology. We argue that it is indeed possible and also necessary to investigate phonological matters within the framework of areal linguistics – not only with special focus on Europe.

To tackle our subject matter in the most appropriate way, a number of obstacles have to be overcome. Almost ironically, the easiest task is the definition of Europe as the geo-linguistic region which we intend to research thoroughly.[47] Since there is no generally accepted

[46] *Europhonology* is the provisional working title of our project. Superficially, it is reminiscent of the various branches of the approach which goes by the German name of *Eurolinguistik* (Hinrichs et al. 2009). We emphasise however that we do not consider our project to belong to this network no matter how suggestive the resemblance of the projects titles might be. Since our basic convictions of what linguistics is about differ considerably from those held by the proponents of *Eurolinguistik*, we do not want our project to be taken for an offspring of the latter.

[47] We acknowledge that defining a geographical region beforehand seems to violate Bechert's principal quoted at the end of section 2. However, the violation is only a minor one, if at all because by defining the limits of Europe, we do not presuppose that the identified geographical region coincides with a linguistic area qua

definition of Europe, anyway, we opt for the most extended interpretation of the notion of Europe which is that of the EUROTYP project. In our definition of Europe, the Caucasian region including the Trans-Caucasus, the entire national territory of contemporary Turkey and all islands of the Mediterranean belong to the continent (according to the principles stipulated in Stolz/Stroh/Urdze 2003) whereas the vision of Europe implied by the approaches of Haarmann (1976a), Ternes (1998) and Décsy (2000a, b) excludes the above "extensions" of Europe. Within the boundaries of our project-borne notion of Europe, we have in mind to study synchronically[48] as many varieties as possibly. In the work of Haarmann (1976a) and Décsy (2000a, b), standard varieties (with special focus on the written register and normative-prescriptive grammar) are prominently featured in their samples of European languages although their data-bases do not seem to be restricted to written standards. In the light of the findings of the contributions to Kortmann (2004), however, it makes more sense to discontinue this venerable practice as the internal diatopic variation of languages can often be shown to result in substantial differences between a given standard varieties and its associated nonstandards. Thus, we admit as many so-called non-standard varieties as possible to our sample provided there is linguistically sound information available.[49] Presently, our European sample comprises 157 varieties covering all genetic phyla and regions of the continent. The questions of sample size and sample composition lead us directly to the most serious problem we have to face in the preparation of *Europhonology*, namely the quality of the sources.

In point of fact, the descriptive phonology of the languages of Europe is in a messy state if one looks at it from the point of view of language comparison and areal linguistics. The extant grammars and the specialised literature on the phonology of individual languages reflect a plethora of (structural, generative, functional, etc.) theories and approaches such that even the competing analyses of one and the same phonological system yield contradictory and sometimes even mutually incompatible results. More practically oriented descriptions seldom specify whether the units they focus upon are phonemic or allophonic. In technologically advanced approaches, the classic notion of phoneme tends to be deconstructed, etc. This means that we have the additional task to make head and tail out of the above heterogeneity. Before this can be done, however, it is necessary to collect as comprehensibly as possible and independently of theory-induced preferences all the analyses which have been suggested so far as to the phonology of European languages – be they standard or nonstandard varieties. This is exactly the stage we have reached by now.

### 3.2. PRO DOMO

Prior and parallel to this study, phonological issues of the *Europhonology*-to-be have been addressed in a number of papers.[50] In Stolz (2006a: 285–288), the distribution of pho-

*Sprachbund*. What we are aiming at is the stocktaking of all phonological phenomena in Europe independent of their areality.

[48] Our interpretation of synchrony spans over (slightly more than the conventional) three generations such that we accept data from 1900 up until the time of writing. This extended synchrony is called for because the only available descriptions of some of the varieties we include in our sample date back about a century.

[49] To avoid unwonted biases and skewing, we have laid down a rule of thumb according to which each diasystem should be represented by minimally three varieties (including the standard, if there is any) and maximally five varieties.

[50] For the early study by Stolz (2004), cf. our explanations in section 4 below.

nemic rounded front vowels (= /y/, /ʏ/, /ø/, /œ/) and the presence/absence of the phonemic quantity correlation (i.e. distinctive vowel length and/or germination of consonants) is determined for a sample of 50 languages which is coextensive with our smallish starter-kit. It is shown that both phenomena yield areally relevant geolinguistic patterns with a northwesterly area where rounded front vowels and vowel length are phonemic. Stolz (2007) looks at the phonological structure of monosyllables again in 50 languages of Europe. On the basis of their frequency in the long Swadesh-list, the monosyllables turn out to be more important in the European Northwest whereas their share of the lexicon diminishes considerably the further away one moves from this hotbed of monosyllabicity. The isoglosses cut across several of Décsy's "zones" as well as Haspelmath's SAE languages and van der Auwera's *Charlemagne-Sprachbund* (quoted after Haspelmath 2001: 1493). In Stolz et al. (forthcoming a-b), we focus on the areal linguistics of liquids (= rhotics and laterals) and study those phonemes which are only marginally represented in Europe.

Apart from the paper on syllable structure and the discussion of quantity with vowels and consonants, our previous work is oriented towards segmental phonology. Admittedly, segmental issues do by no means exhaust the phenomenology of phonology. We consider an inventory of the phonemic segments of European languages to be only the necessary very first step towards a fully-fledged phonological treatment in areal perspective. Therefore, this study too scrutinises a well-defined subset of the segmental phonemes of the languages of Europe in order to determine whether or not these units behave in an areally remarkable way. The data we present in the subsequent section 4 are based on a still unsophisticated accumulation of phonological information in the 157 sample languages. As far as we can rely on the information provided by our sources, we make an effort to exclude all segmental units which belong to the realm of loan phonology (i.e. those phonemes which occur exclusively in loanwords from other languages). Discounting a rather small number of inevitable re-interpretations of ours[51], the analyses our sources offer are taken at face value such that a later theory-supported check of the data might call for a reformulation of some of our hypotheses. In contrast to the discussion in sub-section 4.1 which takes account of what is said in a rather small selection of titles from the linguistic literature specialised on phonological matters, in sub-section 4.2., reference is made exclusively to the extant descriptive grammars of the languages of Europe i.e. our empirical basis stems from sources the main goal of which is not the sophisticated in-depth study of the phonological system of a given language. With a view to facilitating easy access to our presentation, we employ a basically non-technical meta-language such that we describe the phonological facts in the widely familiar terms of (received) structuralist-minded phonology. Only for the time being, we also refrain from identifying any implications which connect the presence/absence of (certain of) the phonemes under scrutiny with phonological phenomena located outside this class of phonemes.

[51] For instances in those cases in which the descriptive linguist opts for using phonetic symbols in variance to the established usage of the IPA. Another problem is the exact phonological status of the units identified in the phoneme charts. Sometimes not all of the elements are full-blown phonemes -, they are allophones of other phonemes which, alas, are not always identified properly in our sources.

## 4. VELAR AND POSTVELAR FRICATIVES

### 4.1. GLIMPSES OF THE RECENT PAST

In his review of Décsy (2000a, b), Stolz (2004) discusses a putative "phonological law" which Décsy (2000b: 346) postulates. According to this author, the voiceless glottal fricative /h/ and the voiceless velar fricative /x/ are mutually exclusive i.e. a language can have only one of the two. Décsy (2000b: 346) characterises this implication as "more or less regular" which boils down to admitting that there are also exceptions albeit only marginal ones (if one believes Décsy). Stolz (2004: 315–316) checks this implication against the 62 languages of Décsy's sample. Of these 62 languages, only six lack both of the fricatives (e.g. French). 33 languages (= 53%) behave in the way Décsy predicts i.e. they have only one of the two fricatives (either only /h/ like Finnish or only /x/ like Polish)[52] whereas 23 languages (= 37%) attest the "peaceful" co-existence of phonemic /h/ and /x/ (for instance, German). The share of languages which do not conform to the supposed implication clearly shows that there is no mutual incompatibility of the two fricatives. The "rule" is not even a strong tendency.

Nevertheless, the basic idea of Décsy's to look at velar and postvelar fricatives remains interesting, especially because Haarmann (1976a: 116) mentions the velar fricative /x/ as an example of a phoneme whose geo-linguistic distribution in Europe does not obey any "erkennbare genetisch und/oder areal bedingte Einschränkungen". In contrast to the velar fricative, /h/ counts as an example of a phoneme with "einer arealen Beschränkung [seines] Vorkommens" (Haarmann 1976a: 116). Ternes (1998: 145) makes a similar observation as to the distribution of /h/. In addition, he excludes uvular and pharyngeal places of articulation (with the exception of Maltese for which he postulates the voiceless pharyngeal fricative /ħ/[53]). The exclusion of uvular and pharyngeal places of articulation holds for all manners of articulation. It is mainly caused by Ternes's decision to consider the languages of the Caucasus to be non-European languages. Ternes (1998: 145) concedes that the articulation of the Swiss German velars /k/ and /x/ may sometimes come close to postvelar/uvular without however gaining phonemic status. However, the conclusion drawn by Ternes is not entirely unproblematic because other sources classify various phonemes as uvular. This is the case for Dutch (with the voiceless uvular fricative /χ/) as well as (European) Portuguese, German and French (with their voiced uvular fricative /ʁ/[54]) in the *Handbook of the International Association* (International Phonetic Association 1999: 74, 78, 86 and 126).[55] Danish is shown by Basbøll (2005: 62) to possess the uvular fricative phoneme /ʁ/.[56] Varieties of the two

[52] For languages which display only one of the two fricatives among their phonemes, it is variously reported that the phonetic realisation stretches over a considerable area connecting velar and glottal places of articulation.

[53] According to Borg et al. (1997: 301), the phoneme is /h/ with a wide range of realisations reaching from post-palatal via velar and glottal to pharyngeal.

[54] This interpretation is not uncontested in French phonetics. Klein (1968: 150–151) talks of a range of realisations which cover the area from velar to pharyngeal.

[55] Strangely, the same *Handbook* assumes a voiceless uvular fricative /χ/ too where we perceive a velar /x/ (International Phonetic Association 1999: 86). Maddieson (2005b), who recognises the uvular fricative French and German (but not for Portuguese) claims that the voiceless uvular fricative /χ/ is typical of certain varieties of German whereas elsewhere the voiceless velar /x/ predominates.

[56] Alternatively, this phoneme can be described as "uvular […] non-lateral approximant" (Basbøll 2005: 62).

Norwegian languages Nynorsk and Bokmål attest the same phoneme as well (Braunmüller 1991). Similarly, in the Welsh grammar by Thomas (1996: ***), there are no velar fricatives – in their stead we find the uvular /χ/ again. In several of these and similar cases, the articulation as voiced uvular fricative competes with the articulation as uvular trill (= rhotic) as e.g. French and German for which /ʀ/ is postulated sometimes in lieu of /ʁ/ (Meisenburg & Selig 2004; Hall 1993)[57]. No matter which of the two competing manners of articulation is preferred, the place of articulation remains the same, namely uvular. In Ternes's terms, all these potential uvulars are treated as velars. We assume that this discrepancy is caused partly by the mechanisms Ternes (1999: 45–46) employs when it comes to interpret phonologically the phonetic facts. It remains to be seen whether the dichotomy of concrete phonetic realism and abstract phonological constructs has a detrimental effect upon the feasibility of our *Europhonological* project.

All these remarks focus on the uvular fricatives. From the above sketches of the "zones" in Décsy (2000a), we know however that the voiced velar fricative /ɣ/ is considered typical of some "zones" only and is thus treated as a unit which displays an areally skewed distribution. Another problem manifests itself in the choice of and reference to different varieties of a diasystem. The differences in the interpretation of phonological phenomena in our sources reflect at least indirectly the internal variation of the diasystems. RP English is a language with the phonemic glottal fricative /h/ whereas a number of its non-standard varieties are characterised by the phenomenon of h-dropping which omits the fricative from the word-initial position and thus jeopardises its phonemic status. This and similar phenomena require that the sample be as large and densely populated as possible (including regional and non-standard varieties). As far as we know, there has been no attempt yet to look at the entire ensemble of the phonological classes of velar and postvelar fricatives. With sub-section 4.2, we initiate the in-depth study of this hitherto only partially described topic. Owing to the many open questions which still need to be answered in follow-up studies, we address only quantitative issues in this contribution.

### 4.2. TOWARDS A EUROPHONOLOGICAL INVESTIGATION

Going by the set of cardinal signs the IPA provides for velars and postvelars, we distinguish eight basic units of potential phonemes in these phonological classes. These phonemes come in pairs of voiceless and voiced elements in four places of articulation, viz. velar, uvular, pharyngeal and glottal.[58] Table 1 indicates in how many of our 157 sample languages the various fricatives are attested.[59] For the purpose of this study, we do not look at addi-

[57] Note that Hall's valuable contribution also has a strong focus on the phonetic variation in the Rhineland.

[58] For the world-wide geolinguistics of voice contrasts with fricatives, cf. Maddieson (2005a).

[59] To avoid lengthy discussions as to the qualities involved, we adhere to the following principle: if there are competing descriptions of the phenomena at hand, we opt for the one which is provided by the source which we have consulted first. By employing this simple practice, we are forced to pass over a huge number of problems tacitly the most serious of which is the supposed absence (or presence) of certain phonemes. This purely pragmatic principle is especially designed for this pilot-study. It has to be replaced by a more sophisticated qualitative criterion in order to allow us the creation of a reliable and comparable *Europhonological* data-base. For the time being, the first quantitative evaluation is meant to provide a kind of provisional orientation for the "real work".

tional phonemic co-articulations.[60] We exclusively treat of the cardinal phonemic units. Only twelve (= 7.6%) of the languages and varieties in our sample lack any kind of fricatives with velar or postvelar places of articulation.[61] This means that it can be predicted with a very high degree of probability that a European language will have at least one phoneme with fricative manner of articulation and velar or postvelar place of articulation.

Table 1. Occurrences of velar and postvelar fricatives in the languages of Europe

| | Velar | | postvelar | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | uvular | | pharyngeal | | glottal | |
| | ¬voice | +voice | ¬voice | +voice | ¬voice | +voice | ¬voice | +voice |
| | **/x/** | **/ɣ/** | **/χ/** | **/ʁ/** | **/ħ/** | **/ʕ/** | **/h/** | **/ɦ/** |
| total | 105 | 48 | 19 | 23 | 15 | 11 | 87 | 6 |
| share | 69% | 32% | 13% | 15% | 10% | 7% | 55% | 4% |

Statistically, /x/ and /h/ stand out as they represent majority solutions with shares of more than 50% of our sample languages.[62] The voiced velar fricative /ɣ/ is attested in slightly less than a third of the languages whereas the remaining five fricatives reach only relatively low percentages with the voiced pharyngeal /ʕ/ and the voiced glottal /ɦ/ on the ranks at the bottom. The voiced uvular /ʁ/ is special inasmuch as its status as fricative competes with – mostly outdated – classifications as rhotic (and thus as member of the class of liquids).

There are altogether 314 tokens of velar and postvelar fricatives in our sample. Diagram I informs about the shares the individual phonemes have of this total.

With about 34%, the voiceless velar fricative /x/ has the biggest share: slightly more than one third of all tokens go to its credit. The voiceless glottal fricative /h/ is second best with almost 28% or slightly more than one quarter of all instances. The only other type which exceeds the 10%-mark is the voiced velar fricative /ɣ/ with 15%. These three top-ranking fricatives account for more than three quarters of all tokens (more precisely, they cover 77%). Each of the remaining fricatives yields a percentage which ranges far below these values (once again, the voiced pharyngeal /ʕ/ with 3.5% and the voiced glottal /ɦ/ with but 1.9% wind up on the lowest ranks of the scale). The quantitative evidence suggests that /x/ and /h/ are the unmarked cases among the velar and postvelar fricatives. This interpretation is supported by the presence of /x/ and /h/ in all macrophyla (and the isolate) of our sample whereas the remaining phonemes are genetically less variable (cf. table 3, below). For a European language, it is normal to have phonemic /x/. With a lower degree of probability, one can also expect European languages to include /h/ in their phoneme chart. All other fricatives of the velar and postvelar kind are marked (though to different degrees).

[60] Such as labialisation in Lak (cf. /xʷ/, /χʷ/, /ʁʷ/) or palatalisation in Kildin Saami (cf. /xʲ/ and /hʲ/).

[61] This dozen of languages which are supposedly devoid of velar and postvelar fricatives comprises several cases for which it is possible to assume alternatively the presence of at least one phoneme of this class (for instance French which, in our source, is depicted to have the uvular trill /ʀ/ in lieu of the uvular fricative /ʁ/). This discrepancy notwithstanding, we accept the interpretation of our primary source in order to remain faithful to our above methodological principle of taking the information of only one source at face value.

[62] The statistically prominent position of these fricatives corroborates Haarmann's (1976a: 116) idea that at least /x/ is a "majoritärer Europäismus".

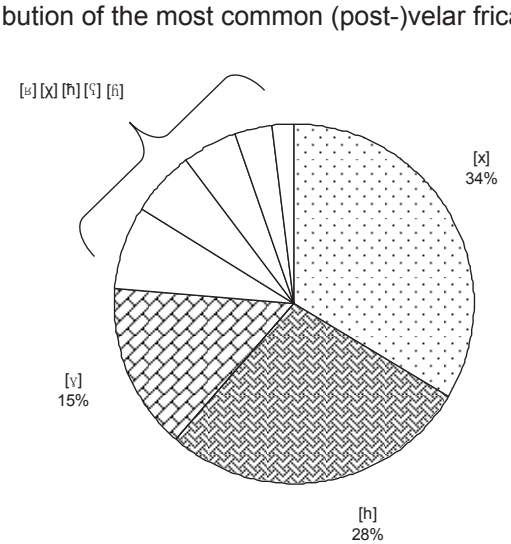


Diagram 1. Distribution of velar and postvelar fricatives across the sample

In table 2, we calculate how many languages have how many phonemic velar and postvelar fricatives. The average (314 tokens divided by 157 languages) is exactly 2 phonemes per language. However, only slightly more than a quarter of our sample languages display exactly this number of phonemes. The biggest group of languages (above 40%) is constituted by those which employ only a single phoneme in the velar-postvelar region. From four phonemic distinctions upwards, the number of languages diminishes considerably. The languages with 4 to 7 velar and postvelar consonants taken together are still less numerous than those which are characterised by a ternary distinction.

T a b l e 2. How many velar and postvelar phonemes are distinguished in how many languages?

| Number of phonemic velar and postvelar fricatives | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 12 | 63 | 41 | 22 | 4 | 6 | 6 | 3 | 0 |
| 7.6% | 40.1% | 26.1% | 14% | 2.5% | 3.8% | 3.8% | 1.9% | 0% |
| number and share of sample languages | | | | | | | | |

On the basis of the statistic data in table 2, it is possible to state that it is normal for a European language to employ one to three phonemic velar and postvelar fricatives since this is the solution opted for by slightly more than 80% of the sample languages. Neither the complete absence of phonemic fricatives with velar or postvelar places of articulation nor the phonological over-differentiation of this region in the articulatory apparatus yield statistically relevant results.

There is also no language which has the full array of phonemic velar and postvelar fricatives. With seven fricatives each, three languages come rather close to this unattested differentiation, namely Kabardian (Northwest Caucasian), Khinalug and Kryz (both Northeast

Caucasian) which employ /x/, /ɣ/, /χ/, /ʁ/, /ħ/, /ʕ/ and /h/ i.e. only the voiced glottal fricative /ɦ/ is missing. Another purely Caucasian phenomenon is the presence of phonemic pharyngeal fricatives[63]: /ʕ/ is attested in eleven of our sample languages. These eleven languages belong either to the Northwest Caucasian phylum or to the Northeast Caucasian phylum. Similarly, the voiceless counterpart /ħ/ occurs in 15 languages all of which are located in the Caucasus. This geographic distribution corroborates Ternes's above assumption that the pharyngeal place of articulation is ruled out for the European languages outside of the Caucasian region. In connection with this characteristic trait of (most of) the sample languages from the Caucasian, we identify an implication according to which the presence of a phonemic pharyngeal fricative implies the presence of other phonemic postvelar fricatives with either a uvular or a glottal place of articulation. Since the putative phoneme /ħ/ in Maltese (cf. above) violates this implication, we take it that the unit under scrutiny is not pharyngeal (as Ternes has it) but glottal phonologically.

Similar implications hold for the voiceless uvular fricative /χ/ as implicans because its presence seems to require the presence of at least one other distinctive fricative with velar or postvelar place of articulation. For the voiced velar fricative /ɣ/, the implication is not as strict as the previous one. There is the strong tendency that phonemic /ɣ/ calls for further phonemic distinctions of fricatives in the places of articulation under scrutiny. Furthermore, it is possible to work with combined implicantia as e.g. the co-presence of the voiceless velar fricative /x/ and the voiced uvular fricative /ʁ/. This combination of two phonemes at different places of articulation is always accompanied by the co-presence of at least one other phonemic fricative in the velar/postvelar region. Negative implications are associated with the voiced glottal fricative /ɦ/. It never occurs in a phonemic opposition with its voiceless counterpart /h/. Moreover, it is also excluded from systems in which the voiceless pharyngeal fricative /ħ/ has phonemic status. With the exception of Dargwa (Northeast Caucasian), the languages which employ phonemic /ɦ/ tend to have rather small sets of velar fricatives as combinations with uvular fricatives are restricted to this language. Dargwa is also the only language in our sample which allows for both /ɦ/ and /ɣ/ to be phonemic.

In terms of genetic affiliation, our sample languages yield the following picture. With 91 languages, the Indo-European macrophylum covers 58% of our sample. For practicality, we lump together all (Northwest/Northeast/South) Caucasian phyla such that we count 26 Caucasian languages which amount to 16% of the sample. The Uralic languages are a group of 22 which is equivalent of 14% of the sample. Mongolian languages and Turkic languages form our Altaic macro phylum which is represented by 14 languages (= 9% of the sample). To these larger genetic units we have to add the isolate Basque (= 0.6% of the sample). These shares serve as the yardstick for our check of how typical of a macrophylum a given velar or postvelar fricative phoneme is. To this end, we break down the statistical details in table III. In this table, we indicate how many languages of a macrophylum attest a given phoneme. The percentages specify the share the macrophylum has of the total of tokens of a given phoneme in the entire sample. Grey shading marks zero frequency. Monopolies are identified by boldface.

[63] Our findings are in line with Maddieson's (2005c) treatment of the distribution of "uncommon consonants" in global perspectives: pharyngeals are shown to occur most often in languages of the Caucasus while this place of articulation is hardly attested elsewhere.

T a b l e 3. Genetic affiliation and number of attested velar and postvelar fricatives

| phoneme | Indo-European | | Caucasian | | Uralic | | Altaic | | Isolate | |
|---|---|---|---|---|---|---|---|---|---|---|
| | tokens | share [%] | tokens | share [%] | tokens | share [%] | tokens | share [%] | tokens | share [%] |
| /x/ | 55 | 52 | 24 | 23 | 15 | 14 | 11 | 10 | 1 | 1 |
| /ɣ/ | 25 | 52 | 15 | 31 | 2 | 4 | 6 | 12 | 0 | 0 |
| /χ/ | 2 | 10 | 17 | 90 | 0 | 0 | 0 | 0 | 0 | 0 |
| /ʁ/ | 4 | 17 | 18 | 78 | 0 | 0 | 1 | 4 | 0 | 0 |
| /ħ/ | 0 | 0 | **15** | **100** | 0 | 0 | 0 | 0 | 0 | 0 |
| /ʕ/ | 0 | 0 | **11** | **100** | 0 | 0 | 0 | 0 | 0 | 0 |
| /h/ | 43 | 49 | 21 | 24 | 12 | 14 | 9 | 10 | 2 | 2 |
| /ɦ/ | 4 | 66 | 1 | 16 | 0 | 0 | 0 | 0 | 1 | 16 |
| total | 133 | 42 | 122 | 39 | 29 | 9 | 27 | 8 | 4 | 1 |

Comments: Except for the two thirds of all attestations of the voiced glottal fricative /ɦ/, Indo-European languages never exceed ɣnor reach the expected share of 58%. With 52% each, the statistical gap is smallest with the two velar fricatives /x/ and /ɣ/. In contrast to the Indo-European macrophylum, the artificial Caucasian macrophylum displays a rather strong predilection for the phonological classes under scrutiny such that percentages are usually much higher than the expected 16%. 39% of all tokens attested in the sample go to the credit of the Caucasian languages. In one case (= /ɦ/), the predicted share and the attested share coincide perfectly. Caucasian languages are also the only ones which have the privilege of phonemes which are not attested elsewhere in the sample, viz. the pharyngeals. All other phonemes are attested in at least two macrophyla. Caucasian languages constitute the only macrophylum which attests each of the phonemes at least once. Uralic languages lack evidence of five out of eight phonemes. For the two European majority solutions /x/ and /h/, the Uralic share is exactly that which one would predict on the basis of the share this macrophylum has of the sample, namely 14%. With only 4%, however, the voiced velar fricative /ɣ/ is clearly underrepresented with Uralic languages. Altaic languages have an expected share of 9% for each of the phonemes. This constructed macrophylum is an overachiever with the three phonemes /x/, /ɣ/ and /h/ for which shares of 10–12% are reported. The voiced uvular fricative /ʁ/, on the other hand, is attested relatively seldom such that it reaches only the value of 4%. Since Basque is the only isolate in our sample, its absolute numbers and percentages are not as informative as those mentioned above. In sum, the Caucasian languages stand out because of their propensity to employ velar and postvelar fricatives phonemically. For all other macrophyla and the isolate, we observe underachievement: their overall shares of all tokens of the phonemes under debate fail to reach the predicted values.

To approach the subject of areality, we plot the numerical data of table II onto a stylised map of Europe (cf. map I in the appendix). On this map, the locations of our sample languages are not indicated individually unless they do not join their neighbours on an isogloss. These isoglosses are based on how many phonemic distinctions a given language makes in the realm of velar and postvelar fricatives. We distinguish three major areas by colours with different nuances of grey in the case of the largest area. In this way we keep languages whose number of fricative phonemes in the velar and/or postvelar region do not exceed the average of 2 from those which have three phonemes and those which have larger sets of

phonemes of this kind. Within the area occupied by the languages with maximally two fricatives, three sub-areas are identified (according to the number of 0, 1 and 2 phonemes). In spite of being still rather coarse-grained, the map is suggestive nevertheless of a geolinguistically significant distribution. Languages with a number of velar and postvelar fricatives exceeding the average of two phonemes cumulate in the Caucasian region where languages with three to seven phonemic distinctions abound. More specifically, languages with more than three phonemes are a Caucasian prerogative (a variety of Breton being the only exception to this rule). Languages with three phonemes are situated largely outside the core of the continent. Apart from a cluster of these languages on the borderline of East Anatolia and the Caucasian region, we find small clusters in the West of The British Isles, on the western rim of the Balkans and in isolated spots in Denmark, Lithuania and Tartarstan. The bulk of the European continent, however, is occupied by languages with a comparatively low turnout as to phonemic velar and postvelar fricatives. Languages without any phoneme[64] of this series are concentrated in the Southwest with two outlier islands in Bulgaria and Lithuania. This zero-frequency area borders on the huge area of those languages which make do with exactly one phoneme. This area reaches from the Iberian Peninsula in the South to the North Cape and from Iceland in the West to the Black Sea. There is another more easterly area of languages with just one velar or postvelar fricative close to the Ural Mountains. Sandwiched in between these two one-fricative areas is one of two sizable territories of languages which employ two fricatives. Both of these areas with two phonemic distinctions have the shape of longish North-South corridors.

What is important is the repeated transgression of genetically defined boundaries by the above isoglosses (based on the number of phonemic distinctions). This violation of putative genetic incompatibilities is obvious in the case of the large isoglosses. We acknowledge that there is a genetic bias in the case of those languages which lack any evidence of velar or postvelar fricatives. Those (and only those) of them which are spoken in the Southwest of Europe are exclusively members of the Romance phylum. Discounting the small number of non-Romance languages outside this area which also lack the phonemes under scrutiny, one recognises immediately that the equation ROMANCE LANGUAGE = NO VELAR/POSTVELAR FRICATIVES is wrong since Asturian, Spanish, various Rhaeto-Romance varieties and Romanian, too behave differently inasmuch as they attest one phonemic unit. On the one hand, they deviate from the pattern of their more southerly next-of-kin. On the other hand, however, they converge with their genetically unrelated or only remotely related next-door neighbours which are likewise characterised by the presence of one phonemic velar or postvelar fricative. The property of having one phoneme of this series unites languages from various phyla (Germanic, Romance, Celtic, Slavic, Baltic, Albanian, Uralic, Turkic) in two huge areas to which outside islands like Afro-Asiatic Maltese have to be added. Similarly, the two large areas formed by languages with two phonemes comprise Germanic, Slavic, Baltic, Iranian languages, Greek, Uralic and Turkic languages – and the Ibero-Romance diaspora language Sephardic on the Balkans/in Turkey. The languages which display comparable patterns of behaviour are in a neighbourhood relation among each other. The various phyla are distrib-

[64] Note that the size of this area depends crucially upon the interpretation of certain phonological units. If Portuguese and French are understood as counting the voiced velar/uvular fricative /ɣ/ ~ /ʁ/ among their phonemes, the zero-frequency area is bound to shrink.

uted over several of the isoglosses. This is tantamount to dissociating the structural property (number of phonemic distinctions in the realm of velar and postvelar fricatives) from the genetic background of the individual language.

Clearly, these neighbourhood relations of languages with similar behaviour invite an interpretation along the lines of contact-induced change or convergence. This is the obvious explanation for the contemporary state of affairs in Maltese. This neo-Arabic variety has lost its former wealth of velar and postvelar fricatives (most probably /x/ ~ /χ/, /ɣ/ ~ /ʁ/, /ħ/, /ʕ/, and /h/) in the course of the age-long contact to socially dominant varieties of Romance (Brincat 2000) which display either just one fricative of this class or none at all. With one remaining postvelar fricative /h/, Maltese has become more like the languages of its predominantly Romance surroundings. Similar arguments can be put forward in connection with the un-Romance behaviour of Romanian and Sephardic. The introduction of the voiceless glottal fricative /h/ into various varieties of Rhaeto-Romance can be explained by contact-influence exerted by (Swiss-)German (such that these Rhaeto-Romance varieties fail to join the sub-area of languages without any velar and postvelar fricatives). Similar constellations can be postulated for other zones of contact – especially for the Caucasian region. Thus, it is very likely that even relatively abstract properties – in this case: the number of phonemic distinctions in a given region of our articulatory apparatus – can be subject to transferral via language contact. Whether or not one may talk of borrowing or copying in these cases is an issue we do not want to go into at this early point in our research program.

More importantly, the geolinguistic patterns which emerge from the cartographic representation of the above facts suggest that phonological issues hold something in store for EUROTYP-inspired studies. Haspelmath's (2001) SAE-languages are fully included in the area occupied by those languages which display a number of velar and postvelar fricatives which does not exceed the average of two phonemic distinctions. This large area contains the core of the SAE-languages as well as its various layers of extensions. Those languages which are marginally associated with the SAE-languages (such as the members of the Celtic phylum in the West or the languages in easterly regions such as Anatolia) are characterised by a tendency to exceeding the average of phonemic distinctions. The further away one gets from the area of maximally two distinctions, the higher the number of phonemes becomes. In the Caucasian region, the phoneme chart trebles in contrast to the average. These statistical differences yield patterns which cannot be interpreted but in an areal-linguistically significant way, i.e. the quantitative properties of the languages of Europe cluster such that we can identify areas and sub-areas.

## 5. CONCLUSIONS

The preliminary character of our study notwithstanding, we consider the above findings enough proof of the susceptibility of phonological properties to areality. Admittedly, some of the data have to be checked thoroughly because of the peculiarities of the individual approaches to the phonology of certain languages. Nevertheless, the evidence gathered so far is already telling. In the realm of phonemic velar and postvelar fricatives, the languages of Europe do not show random behaviour, nor is there a very strong genetic determination. The presence and absence of certain phonemes as well as the number of phonemic distinctions

in the velar and postvelar region yield isoglosses which dissect the continent into clearly separated areas. Rich inventories are typical of the Caucasian region whereas the complete absence of any phonemes of the series under scrutiny is a matter of the languages in the European Southwest. Relatively high turnouts of velar and postvelar fricatives are typical of languages on the periphery (both in the West and in the East). The bulk of the languages of Europe form a huge area where we count maximally two phonemes. This area occupies the best part of the European North, Centre and East. There cannot by any doubt that phonology, too, is a subject to be studied by specialists of the areal linguistic make-up of Europe.

What our study shows in addition is the high degree of heterogeneity of the extant descriptive material. This heterogeneity has a seriously detrimental effect on the comparability of the data. In preparation of this paper, we could not help feeling uneasy about the quality of a number of the phoneme charts and other related sources of information. To overcome this lamentable state, there is only one scientifically justifiable solution. We have to develop a unitary format for phonetic and phonological data collection and start building up a database of our own which is informed by but largely independent of the description provided by others.

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