The Geography of Dorsal Consonants in Syrian Arabic

This study examines patterns of dorsal consonant shifts in the spoken Arabic of Syria, using data from the *Sprachatlas von Syrien* of Behnstedt (1997). The system of dorsal obstruents in Arabic exhibits a variety of structural asymmetries, which sound changes in a variety of dialects function to correct. The most famous example is the *ǧ* < *g* < *q* chain shift in Bedouin dialects (Cantineau 1960), which involves the loss and restoration of a voicing contrast among velar stops. Here, we are concerned with several other sound changes in Syrian Arabic dialects which transform the dorsal consonant system, considering their limits of distribution and patterns of dissemination as well as their participation in structural processes. Our main focus will be on processes typical of the Bedouin dialect group: the 'uvular chain shift' *g* < *q* < *ġ* and the palatalization of *k* as it relates to the borrowability of /tʃ/ in Turkish loanwords. I will also consider implications of the devoicing of *ǧ* in the dialects of Palmyra and Soukhne.

The phonetic transcription used throughout this study is adapted from Behnstedt's Arabist notation. The only notable differences from the IPA are *š* for [ʃ], *č* for [tʃ], *ǧ* for [dʒ], *ž* for [ʒ], *x* for [χ], and *ġ* for [ʁ]. Emphasis is marked with a dot below the letter, and consists of secondary pharyngealization.

1. Phonological and Historical Background

The general phoneme inventory of Arabic consists of 8 vowels (*a*, *i*, and *u* with contrastive length and diphthongs *ai*, *au*) and 28 consonants. The complete consonant inventory is given in Table 1. In many dialects of Syrian Arabic, *ḍ* and *ḏ* have merged to *ḍ* or *ẓ*, mid vowels have variably emerged from metaphony and monophthongization, and there are additional emphatic variants of labial consonants and approximants which are sometimes considered to have phonemic status (Cowell 1964). The present study will be concerned only with structural developments within a subsystem of the consonant inventory, composed of the dorsal obstruents *ǧ, š, k, q, x,* and *ġ*.

	labial	dental	alveolar	postalv.	palatal	velar	uvular	phar.	glottal
stops	b		t d ṭ ḍ			k	q		ʔ
affricates				ǧ					
fricatives	f	θ ð ð̣	s z ṣ	š			x ġ	ḥ ʕ	h
nasals	m		n						
liquids			l r						
glides					j	w			

Table 1. Consonant inventory of (Standard) Arabic

The system of dorsal obstruents in Standard Arabic is as presented below.[1] It is composed of the voiceless post-alveolar fricative *š*, voiced and voiceless uvular fricatives *x* and *ġ*, voiceless velar and uvular stops *k* and *q*, and the voiced post-alveolar affricate *ǧ*, which derives historically from the proto-Semitic voiced velar stop **g* and patterns as a stop[2]:

	ǧ	*k*	*q*
š		*x*	*ġ*

The highly marked voiced uvular stop [G] is judged to be articulatorily difficult and unavailable in Arabic phonetics, following the principle that contrastive voicing becomes more difficult as the point of closure moves further back in the mouth (cf. Ohala 1983 pp. 194-200). We will not consider its absence to constitute a structural gap in the discussion that follows.[3]

Keeping this point in mind, three major dimensions of asymmetry appear in the consonantal configuration: (1) a voicing asymmetry among stops, (2) a voicing asymmetry among fricatives, and (3) an asymmetry in place contrast between stops and fricatives. (1) The stops include a voiced post-alveolar and voiceless velar and uvular, with no distinctive voicing contrasts, even through contrastive voicing obtains among obstruents for most other featural specifications in the language (alveolar stops, emphatic alveolar stops, alveolar fricatives, interdental fricatives, uvular fricatives, and pharyngeal fricatives). (2) The fricatives include a voiceless post-alveolar and a voiced-voiceless uvular pair, with no voiced post-alveolar fricative. Note also the asymmetrical arrangement of the post-alveolar segments, with voiced affricate (stop) and voiceless fricative. (3) There is a three-way place distinction for stops between post-alveolar, velar, and uvular, but only a two-way distinction (post-alveolar vs. uvular) for fricatives.

The evolution of this structure can be better understood in light of the *ǧ* < *g* < *q* shift mentioned above. The pre-Arabic consonant system, with **g* for modern *ǧ*, exhibited only voicing asymmetry among fricatives. For stops, a voicing contrast existed among velars, and the lack of a voiced uvular stop may be explained by phonetic constraints. There is a two-way place distinction among both stops and fricatives, and while *š* (palatal in Old Arabic) and *k/g* are not at precisely the same place of articulation, the phonetic distinction between palatal and velar is not phonologically contrastive. After the shift of **g* to *ǧ*, the system acquired the asymmetries present in Standard Arabic. The Bedouin shift of **q* > *g* is construed as the second stage of a 'pull shift' begun by **g* > *ǧ*, restoring structural relationships present in the pre-Arabic system. In the Bedouin system,

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[1] The inclusion of postalveolars in this set implies a broader notion of dorsality than that used by Watson (2002); however, from a historical perspective, the post-alveolars arose from palatal segments (Al-Nassir 1993), and so exhibit common patterning with true dorsals as a phonological subsystem.

[2] There is no post-alveolar stop with which *dzh* may contrast, and it is the only affricate in the language, so it may be considered to pattern as a stop. Only for the rare dialects with *ts* or *dz* must affrication be considered contrastive. Martinet groups stops and affricates together as 'occlusif' when no oppositional contrast exists.

[3] cf. Martinet (p. 81): "ce qui a l'air d'une case vide sur un schéma ne correspond pas nécessairement à une combinaison d'articulations linguistiquement favorable."

a symmetrical two-way place contrast exists between post-alveolar and velar/uvular; however, *č* and *ž* still exist as gaps in the inventory after **q* > *g*.

	**k* **g*	**q*		*ǧ*	*k g*
**š*		**x* **ġ*	*š*		*x ġ*
	pre-Arabic			general Bedouin	

Table 2. Dorsal consonant systems arising from the *ǧ* < *g* < *q* chain shift.

In the spoken Arabic of Syria, a major distinction exists between sedentary Levantine dialects, which develop from an MSA-like system of dorsal obstruents as their starting point, and Bedouin dialects with **q* > *g*. Among the sedentary dialects, two shifts occur which simplify the inventory, but are not related in chain shifts. The lenition of *ǧ* to *zh* provides the voiced counterpart to *sh*, removes affrication from the phonology, and restores the symmetrical two-way place distinction discussed for pre-Arabic. The glottalization of **q* to *ʔ*, typical of urban as opposed to rural dialects (Al-Wer 1999), eliminates uvular stops from the phonology and so creates the symmetrical two-way place distinction also seen in the Bedouin dialects. Neither of these shifts, however, resolves the lack of contrastive voicing for velar stops.

In Syrian Bedouin dialects, the gap of *č* visible in the Bedouin system above is filled by palatalization of *k.* This palatalization is in most cases a conditioned allophone, rather than phonemic, occurring in the neighborhood of front vowels, but also may extend beyond this environment in specific lexemes (Johnstone 1967, p. 21). Many dialects with *k* > [č] also exhibit parallel palatalization of *g* > [ǧ], thus leading to a neutralization between **q* and **g* in certain contexts. The Bedouin dialects of the Horan region exhibit palatalization of *k* but not of *g*. Palatalization is considered below as it interacts with the realization of Turkish *č* (spelled *ç*) in loanwords. Dialects without *k* > *č* have no [č] in the native phonology, and so we might expect these varieties to use [š] or [ǧ] instead in borrowings with the Turkish phoneme.

In a small number of locales in northern Syria, the affricate allophones are further fronted, and pronounced as [ts] and [dz] respectively. This process is highly unusual among Arabic dialects, but there is no reason to consider it to be more than an internal phonetic change, not affecting the structure of the phonological system. If it were tending towards phonologization, we would expect it to be unstable, since it adds an extra dimension of contrast to the already complex set of alveolar obstruent phonemes *t, d, ṭ*, *ḍ*, *s*, *z*, and *ṣ*.

In Bedouin-type dialects of the upper Euphrates, a shift of **ġ* > *q* takes place. This process may be thought of as a third stage of the *ǧ* < *g* < *q* pull shift, filling the uvular stop position left vacant by the fronting of **q*. This process undermines the economical place contrasts described above for other Bedouin dialects, in which the velar/uvular place distinction need no longer be distinctive, but it partially resolves the asymmetrical distribution of dorsal fricatives by removing voiced fricatives entirely,[4] and also has the result that the two remaining uvular segments agree in voicing specification.

[4] Keep in mind, however, that in other consonantal subsets a variety of voiced fricatives exist, including the voiced pharyngeal *ʕ*.

The dialects of Soukhne and Palmyra belongs to a third 'Palmyran' group distinct from Eastern Bedouin and sedentary Levantine, less widely distributed but notable for its phonology. In the Palmyran dialect, **q* is retained and *ǧ* is devoiced to *č*, resulting in a system lacking voiced dorsal stops (thus partially resolving the voicing asymmetry for stops). The dialect of Soukhne is characterized by a further shift of **q* > *k*, **k* > *č*, and *č* (pSem **g*) > *ts*. As discussed in section 3 below, we suggest that this chain shift was triggered by the borrowing of palatalized **k* from neighboring Bedouin dialects, rather than by **q* > *k* as proposed by Behnstedt (1994).

Table 3 provides a schematic diagram summarizing the structural relationships between shifts in the three dialect groups. Note that *q* patterns with the voiced stop series in Bedouin dialects, with the voiceless stop series in Palmyran dialects, and not clearly with either in sedentary Levantine. This is consistent with our proposal above that the uvular stop may be inherently underspecified with respect to voicing.

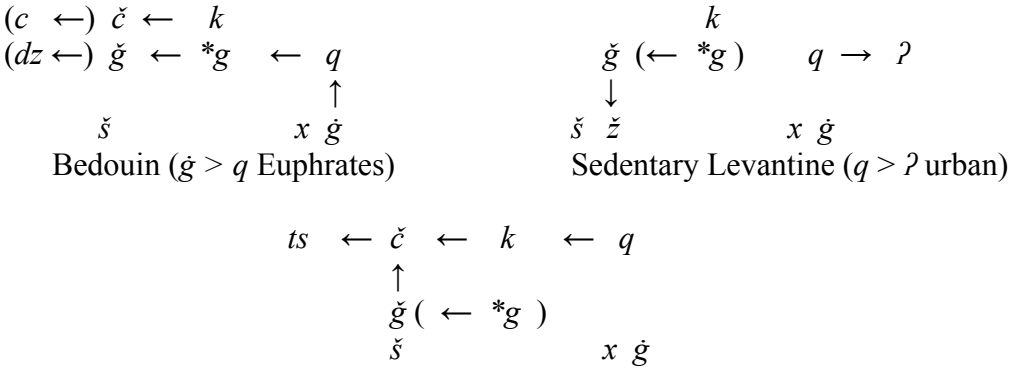
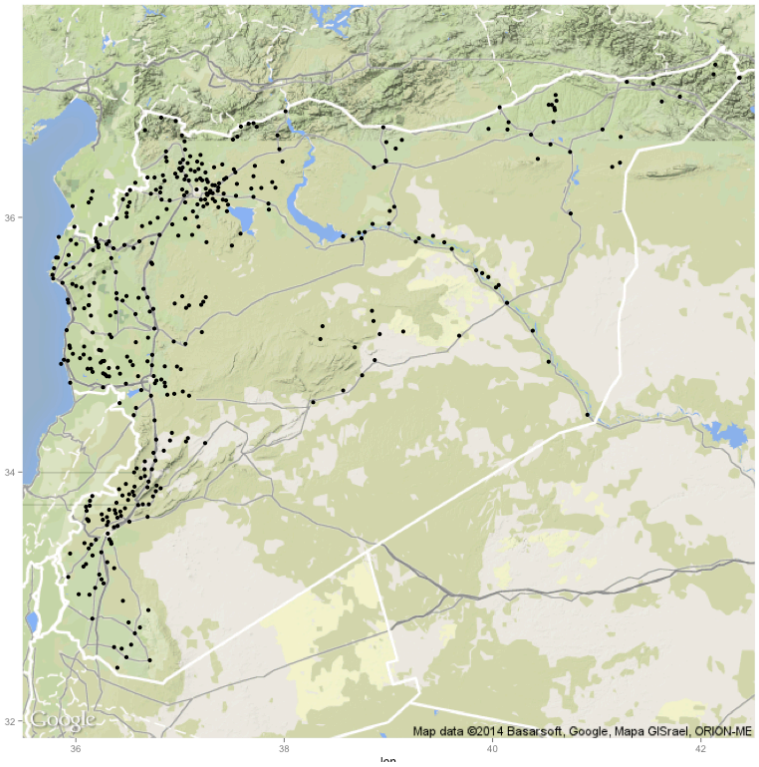


Table 3. The structure of dorsal consonant shifts in Syrian dialects.

2. Methodology and Source Material

The *Sprachatlas von Syrien* of Peter Behnstedt (1997) is the result of nearly two decades of fieldwork beginning in 1985, with fieldworkers travelling to 444 locales across Syria as well as some in Lebanon. The atlas also includes a number of locations (particularly in the Horan region and in Lebanon) which were not visited by fieldworkers, and for which data are extracted from much older dialect surveys. These points, as well as points in Lebanon, are excluded from consideration here. Map 1 gives general orientation and the location of places referenced in the discussion, and Map 2 shows the location of all geographical datapoints. Note the much higher concentration of data in the coastal Levantine part of the country, in comparison with the sparsely population eastern half, in which most of the Bedouin dialects we will be considering are located.

Map 1. Location map.



Map 2. Distribution of datapoints.

The number of informants for each locale and specific elicitation questions are not indicated in the atlas, but it is clear from the presentation both that enough informants were consulted for interpersonal variation within some locales to be noted, and also that not all variables were recorded for all locales. As a consequence of these gaps in the data, when considering two or more variables here, the analysis is restricted to locales for which all variables under consideration are recorded, in some cases significantly lessening the size of the dataset.

The maps in the atlas consulted for this study are numbers 3, 7, 9, 15, 18, 19, and 23. The first four give reflexes of the phonemes *g, ġ, q*, and *k* respectively, and the last three map the phonetic form of individual Turkish loanwords having *č*: *çanta* 'bag', *çay* 'tea', and *firçe* 'brush'. Other Turkish loans with *č* are mapped in the *Sprachatlas*, but only these three are present across every mapped locale; other words exhibit lexical as well as phonological variation, and so are excluded from our dataset.

In preparing maps for this study, I first located and geocoded all 444 localities from the *Sprachatlas*. This was done using a variety of online databases and digitally available maps, including Google Maps, the user-edited wikimapia.com, and government-issued road maps of Syria.[5] In some cases, the relative position of locales was found to differ slightly from the positions given by Behnstedt, and the revised positions were adopted so long as the sources were judged to be sufficiently reliable and consistent. In a small number of cases, a locale was not identifiable at all from the online sources; here, approximate coordinates were used based on position in Behnstedt's maps.

Since locales are identified by number or name in each map of the atlas, no difficulties arose with data entry after geocoding. As mentioned above, locales in Lebanon and locales without current field data had already been excluded from consideration. The only further refinement of the dataset was exclusion of data from languages other than Arabic, such as Greek and Aramaic, which sporadically appear in the *Sprachatlas*. All distinctions made by Behnstedt were retained in the raw data, but some simplificatory groupings were later made for purposes of analysis. For instance, Behnstedt's three levels of lexical *k/č* variation were grouped into a single level when preparing the **k* map (Map 7).

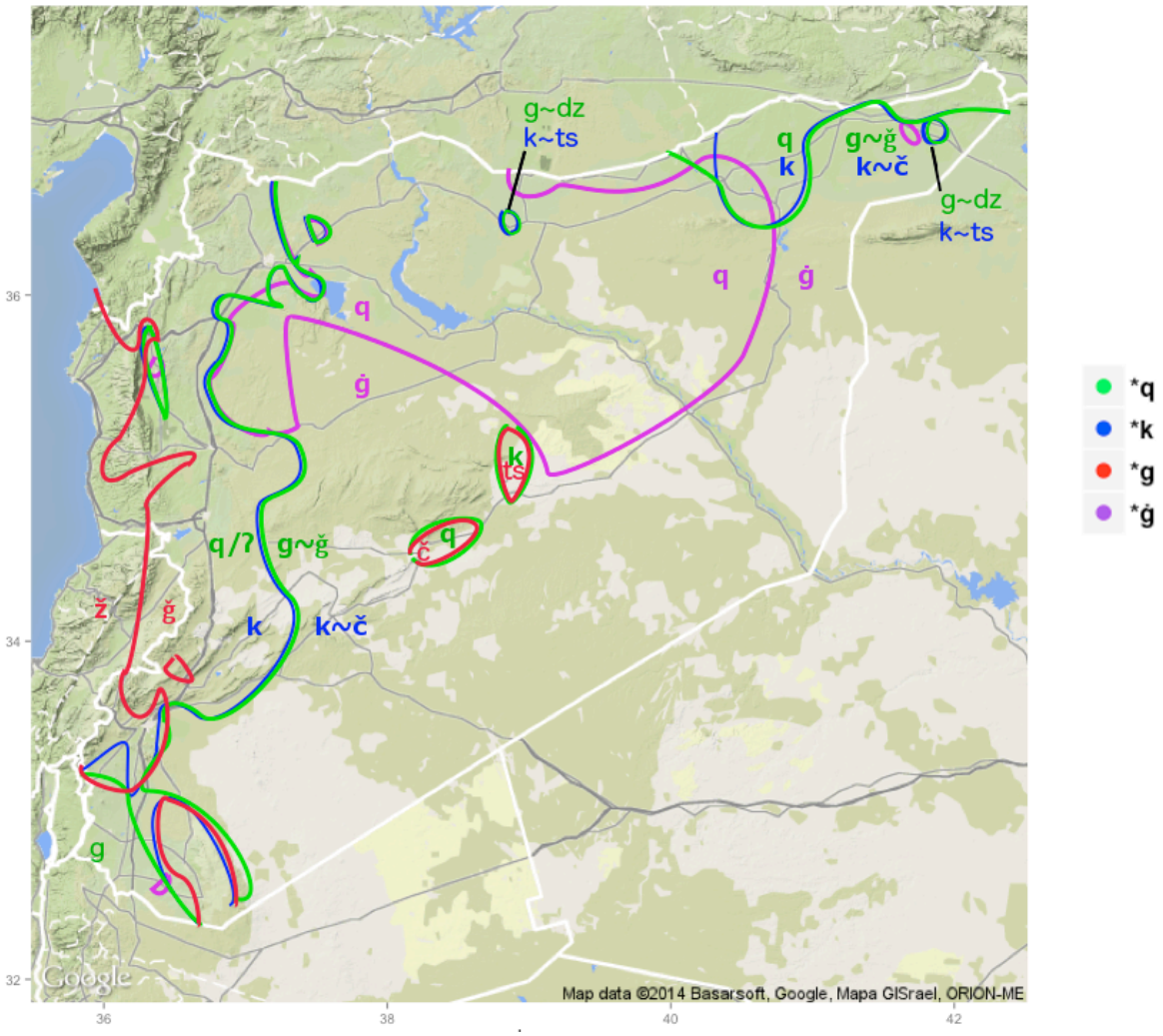
3. Results and Analysis

Map 3, based on Behnstedt's maps 3, 7, 9, and 15, shows the position of major Bedouin isoglosses in Syria. The geographical extent of all major variants is indicated with the exception of the glottal stop variant of **q*, which is grouped together with the uvular stop in the Levantine area. Maps 6-9 in the Appendix give more detailed point data for each phoneme.

The **q* > *g~ǧ* and **k* > *k~č* isoglosses bundle very tightly across the country, and are the clearest defining features of the Bedouin dialect, while *ǧ* > *ž* is restricted to a smaller region towards the coast (as well as sedentary dialects of the Horan). There are

[5] Wikimapia was found to be particularly reliable for smaller locales in light of the current civil war, since it is being used to identify sites of military activity throughout the country. By contrast, Google Maps has patchy and inconsistent data, and many of the scanned road maps do not mark small villages. Transliteration errors and misidentifications were persistent problems throughout the geocoding process.

three locales near Damascus with both *ž* < *ǧ* and *č,ǧ* < *k,q*, all of which lie at the intersection of the three isoglosses.



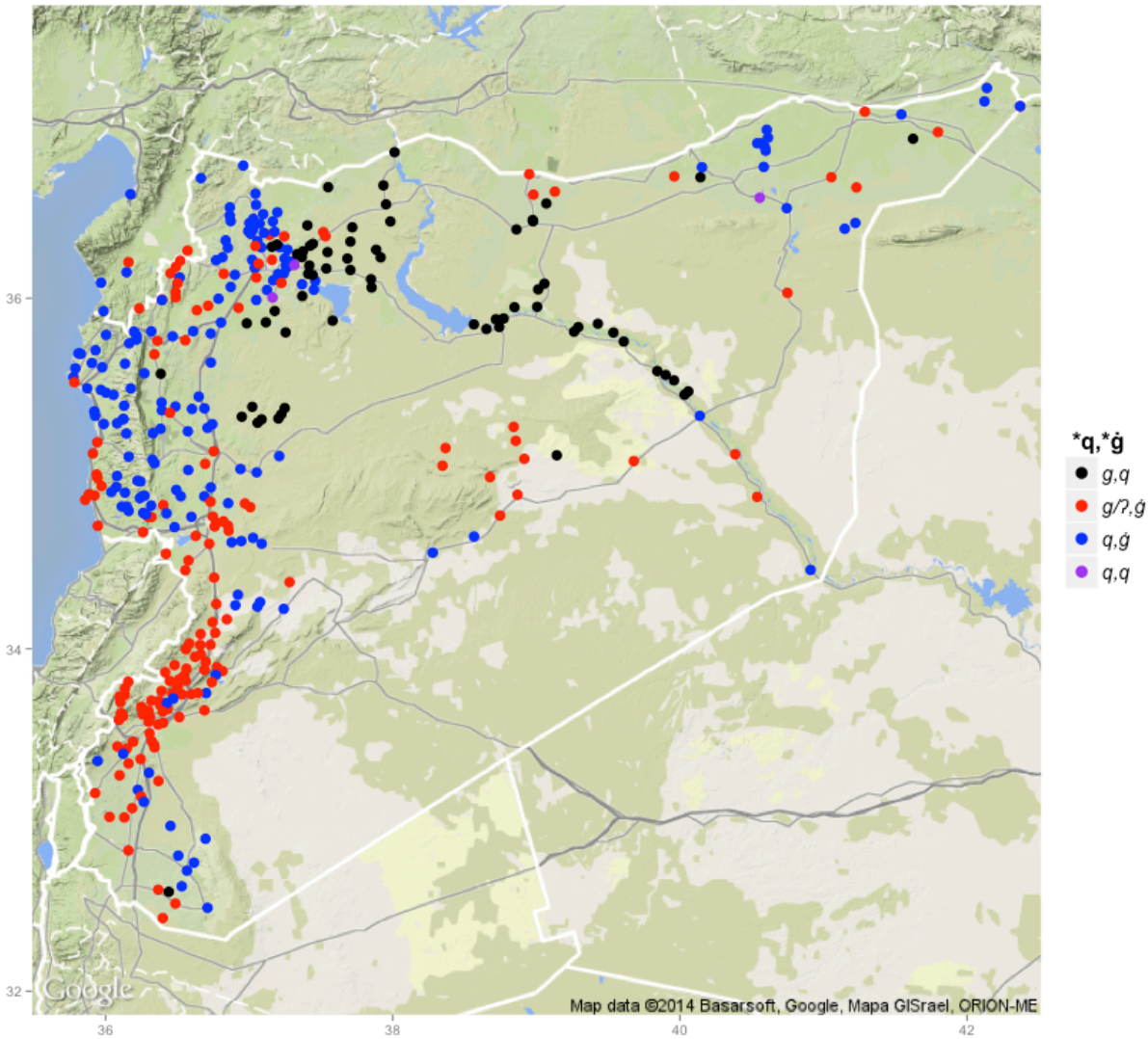
Map 3. Dorsal consonant isoglosses.

Note that only two locales exhibit apicalization of the affricate allophones of *k* and *q*, having *ts* and *dz* respectively; these are the towns of Ain Issa and Tell Alu, located near the Turkish border. Although the towns are not adjacent, it is unlikely that the pattern developed independently in both locales, and they may both be exemplars of a single variety. Regardless of the historical relationship, the phonetic development of postalveolar affircates moving forward is distinctive to the two locales, so we will consider them together as a "Northern affricate-fronting" dialect of Syrian Bedouin Arabic.

A second, unrelated, appearance of apical affricates is in the dialect of Soukhne, where *ǧ* appears as *ts*. Given that the neighboring dialect of Palmyra has devoiced *ǧ* to *č*, this may be seen as a secondary development fronting the already voiceless variant, perhaps to prevent confusion with *č* < *k*. Both dialects exhibit lexical variation between *k* and *č*, but Palmyra has mainly *k* with *č* only 'in einzelnen Lexemen', while for Soukhne there is lexical variation between the two, with *č* 'in allen Positionen eines Paradigmas'

rather than being allophonically conditioned as in the Bedouin dialects. This general phonemicization of *č* in Soukhne would provide the necessary pressure to force disambiguation of *č* < *k* from *č* < *ǧ*, while in Palmyra *č* < *k* has lower functional load.

A further unusual aspect of the dialect of Soukhne is the presence of *k* < *q*, with fronting but no voicing, a feature seen elsewhere only in some areas near Damascus having Aramaic influence. This results in a merger between *k* and *q* wherever *k* has not palatalized to *č*, but as mentioned above, *k* > *č* is general in Soukhne. Behnstedt (1994, p.8) sees this as the operation of a chain shift which should be interpreted as a 'push shift', with *q* > *k* triggering *k* > *č*, in turn triggering *č* > *ts*. In terms of the phonemicization and generalization of *č* < *k*, this may indeed be plausible, but it is unlikely that the palatalized [č] allophone did not previously exist in this oasis surrounded by Bedouin dialects.[6]

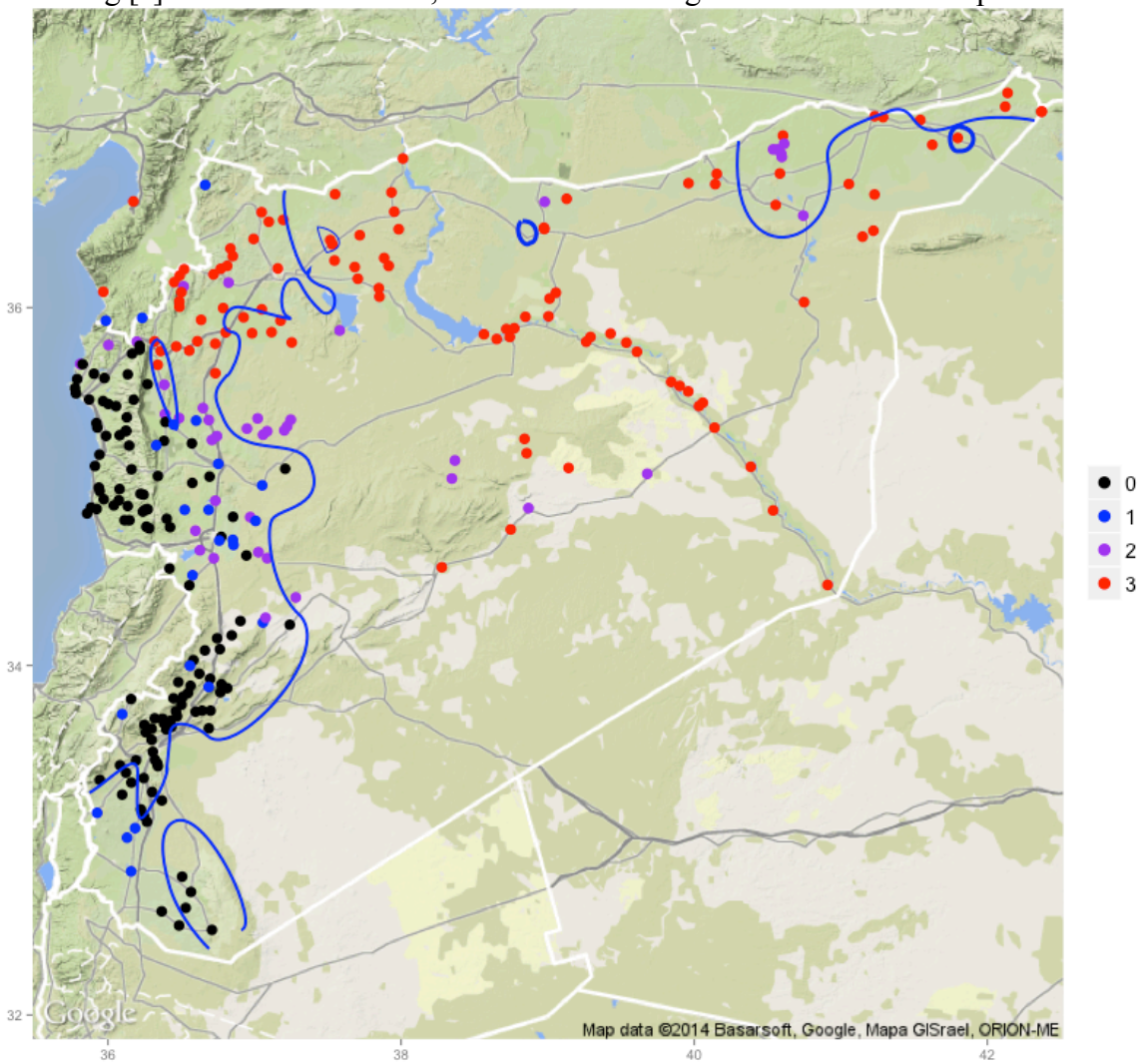


Map 4. Reflexes of **q* and **ġ*.

[6] Interestingly, two of the locales south of Damscus with *ž* < *ǧ* and palatalized *k* have phonemic *č* at the same level as Soukhne, and also exhibit **q* > *k*. Perhaps the fronting of **q*, by threatening merger with **k*, facilitates the interpretation of *č* < **k* as phonemic rather than allophonic.

The relationship between *q* and *ġ* is outlined in Map 4. Note that almost universally, the shift of *ġ* > *q* has preserved the distinction between the two phonemes, by operating only in areas for which *q* > *g*. The three exceptions to this rule lie at the border of the Bedouin region, two villages southeast of Aleppo and another in the Khabour valley of the northeast. The merger has not spread beyond these isolated transitional areas, and it is generally true that *ġ* > *q* is contingent on *q* moving forward to *g*. This indicates the operation of a "pull shift", and the geographic distribution seen here, whereby the geographical extent of one process is subsumed by the extent of another, may be generalizable as typical of pull shifts.

Finally, we consider the distribution of three Turkish loanwords with [č] in the source language: *çanta* 'bag', *çay* 'tea', and *fırçe* 'brush'. These appeared variably in forms with *č*, *š* or more rarely *ǧ*, with some locales having variable pronunciation. The dataset of locales with all three words recorded is considerably smaller than the full dataset, having 282 datapoints. Locales were coded as to whether a form of each word with *ǧ* was attested, without differentiating between *š* and *ǧ* (both native Arabic phonemes) or between variable and categorical *č*. Map 5 shows the number of words exhibiting [č] forms in each locale, with the **k* > *č* isogloss included for comparison.



Map 5. Number of Turkish loanwords (out of 3) retaining *č*.

The patterns visible in Map 5 are interpretable as a combination of two effects: proximity to Turkish-speaking areas and presence or absence of *č* in the native lexicon. As a general rule, areas in which all three words appear with [č] exhibit the *č* allophone of **k*, and areas in which no words appear with [č] do not have this feature. The three exceptions are: (1) the northwestern area around Aleppo, in which all three words have [č] but **k* does not palatalize; (2) the northeastern sedentary area, also with [č] in loanwords but not as an allophone of **k*; and (3) five villages in the Horan region of the southwest, in which **k* > *č* but all Turkish loans have [š]. Areas (1) and (2) are adjacent to Turkey, and area (3) is the furthest from Turkey within Syria, hence our invocation of proximity to the source language as a factor in the presence of [č] in the loanwords.

The situation in the Horan, however, bears further consideration. This area differs from Syrian Bedouin dialects in several ways; for instance, *k* palatalizes but **q* > *g* does not. In this respect it belongs to the Palestinian/Jordanian dialect group, rather than the Levantine and Eastern Bedouin dialects present across the rest of the country (Fischer & Jastrow, p.174). Furthermore, it is geographically isolated from Bedouin dialects having *č* in Turkish loanwords by an uninhabited stretch of desert, and the words were likely borrowed into the Horan dialects by way of coastal Levantine varieties with [š]. Thus *çay*, originally [čaj], arrived in the Horan after being altered to [šaj] by speakers of a dialect with no affricates, even though the Horani speakers had [č] available in their inventory. So, distance from Turkey in and of itself is not the underlying cause of the shift to [š], but rather a break in the chain of transmission of the form in [č]. In Eastern Syria, there is no increased adoption of the forms in [š] as one travels further south, since there is no proximity to dialects without [č] as potential sources of borrowing. Southern Iraqi Arabic, which is even more distant from Turkey than the Horan, retains *č* in these words for this reason.

One final peculiarity should be noted with regards to the Turkish loans: one of the locales with *k** > *ts*, Tell Alu, has [č] (not [ts]) in all three borrowed words considered. Thus, the loanwords were somehow exempted from the apicalization of affricates, either because they were borrowed after the change went to completion or because they are not fully integrated into native phonology. The other locale with apicalized affricates, Ain Issa (not labeled on the map because it has no data for *çanta*), pronounces *çay* with [č] but *firçe* with [ts], so Turkish [č] is at least potentially susceptible to fronting in this dialect.

4. Conclusions

Let us now return to the structural configurations in Table 3 in light of the geographical analysis. For the most part, the divergent strategies for structural economisation are stable within each dialect group and do not undergo significant interactions. We see this in the low borrowability of *ġ* > *q* into sedentary dialects and of *ǧ* > *ž* into Bedouin dialects. The glaring exception is in Soukhne, where the borrowing of *č* < *k* from Bedouin speech destabilized the Palmyran system and triggered *č* > *ts*. Nonetheless, a handful of hybrid systems are attested at isogloss bundles, most notably in the case of *ġ* > *q* resulting in a merger of **ġ* and **q*. Structure preservation may be the rule, but there are exceptions.

It should also be noted that the place dimension of symmetry considered above becomes somewhat problematic on closer consideration. From a purely oppositional perspective, conflating prepalatals and velars, or velars and uvulars, is entirely admissible, but purely phonetic features should also be taken account. Martinet makes this point forcibly in his original exposition of structural economy in phonology: "on ne peut pas dire que /š/ soit la contrepartie fricative de /k/, car nul ne saurait soutenir qu'une fricative vélaire tende automatiquement vers une articulation chuintante comme conséquence de sa nature fricative" (p. 76). The development of *ġ* into *q* as part of a pull shift certainly supports the idea that removing uvular obstruents in a system retaining uvular fricatives and velar stops does not simply banish the uvular/velar distinction from the phonology, and *š* undeniably patterns with coronals in the phonology (cf. Watson 2002). Even so, the dialects exhibit an undeniable tendency to eliminate the uvular stop, which has the effect of restoring the symmetry between stop and fricative place contrasts created by the fronting of **g*. No dialect, on the other hand, has developed a velar fricative.

The issues addressed by the Turkish loanword data are more concerned with the borrowability of marginal phonemes than with the internal structure of the consonant system itself. The data indicate that *č* is easily borrowed, but not as easily transmitted except through dialects with native [č]. Thus, dialects near the Turkish border, in areas with a large Turkish-speaking minority, all exhibit *č* in loanwords even when it does not exist in the native phonology. The segment is only present further south in Bedouin regions, since it is quickly replaced by *š* in areas without *k*-palatalization. By the time one reaches the Jordanian border, loanwords are transmitted only through sedentary dialects which have replaced *č* with *š*, so the affricate does not appear even in dialects with palatalization.

All of these tendencies instantiate the general fact that the geographical limits of diffusion of a dialect variant are subject to structural constraints and pressures. The tight bundling of the **k*- and **q*-palatalization isoglosses is certainly related to the social divide between Bedouin and sedentary populations, but it is also due to the fact that the two phenomena are closely related phonologically, and could even be construed as separate instantiations of a unitary process. Similarly, other shifts occur in response to voicing asymmetries in the obstruent system, and trigger chain shifts which are restricted to the area exhibiting the initial stage. Finally, we see that the realization of loanwords is directly, but not absolutely, related to the status of its phonemes in the phonological system of the recipient language.

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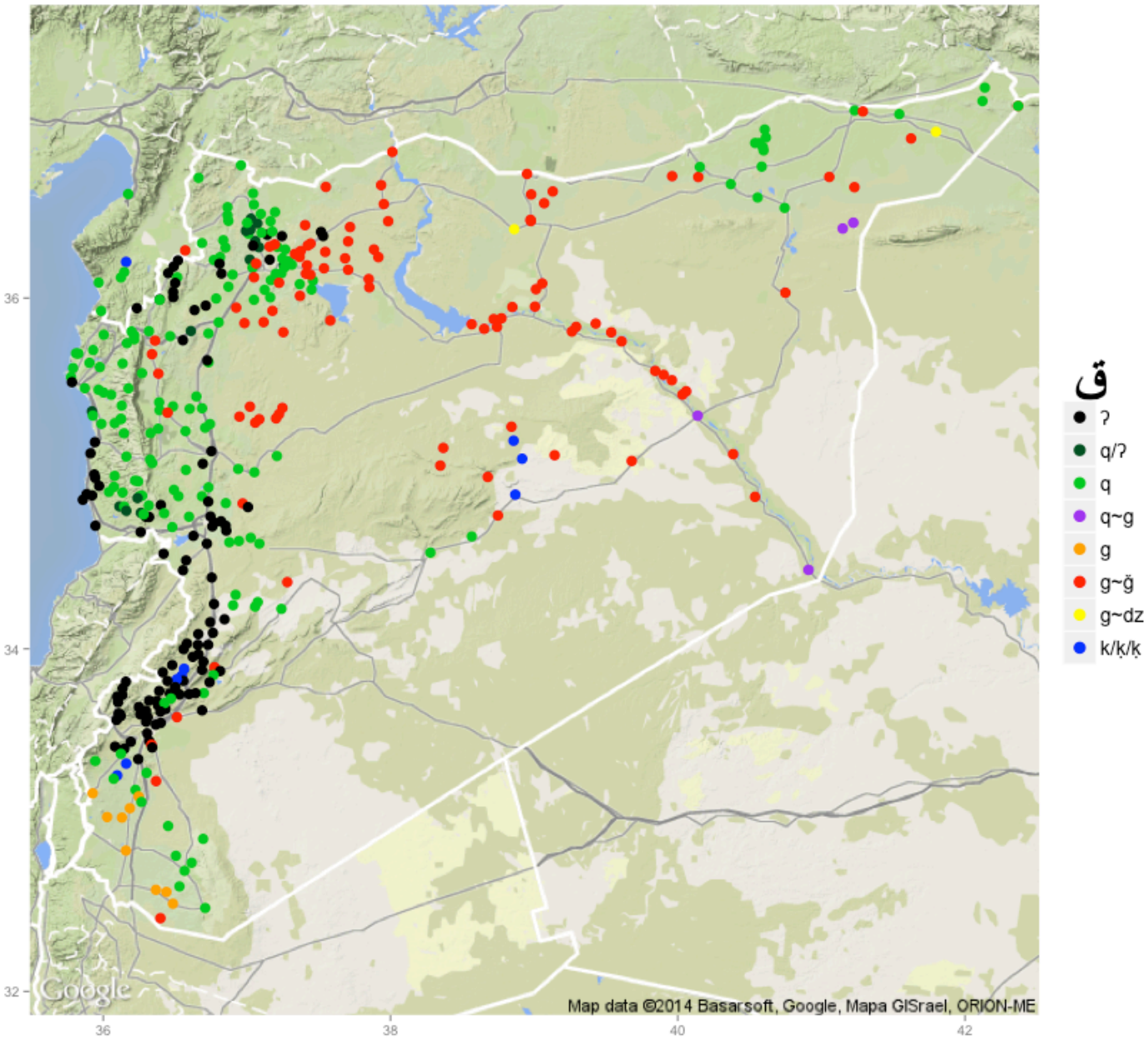
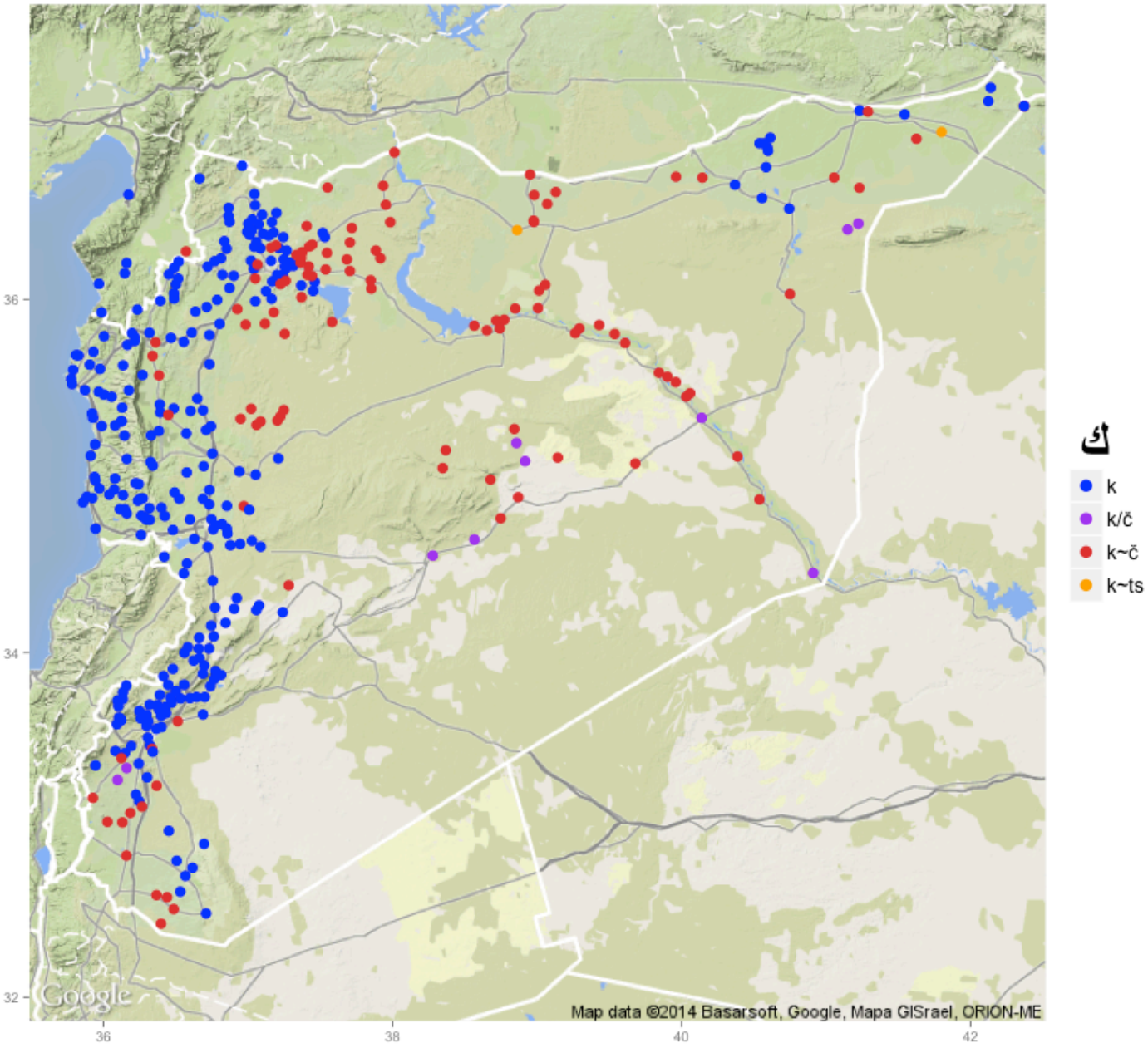
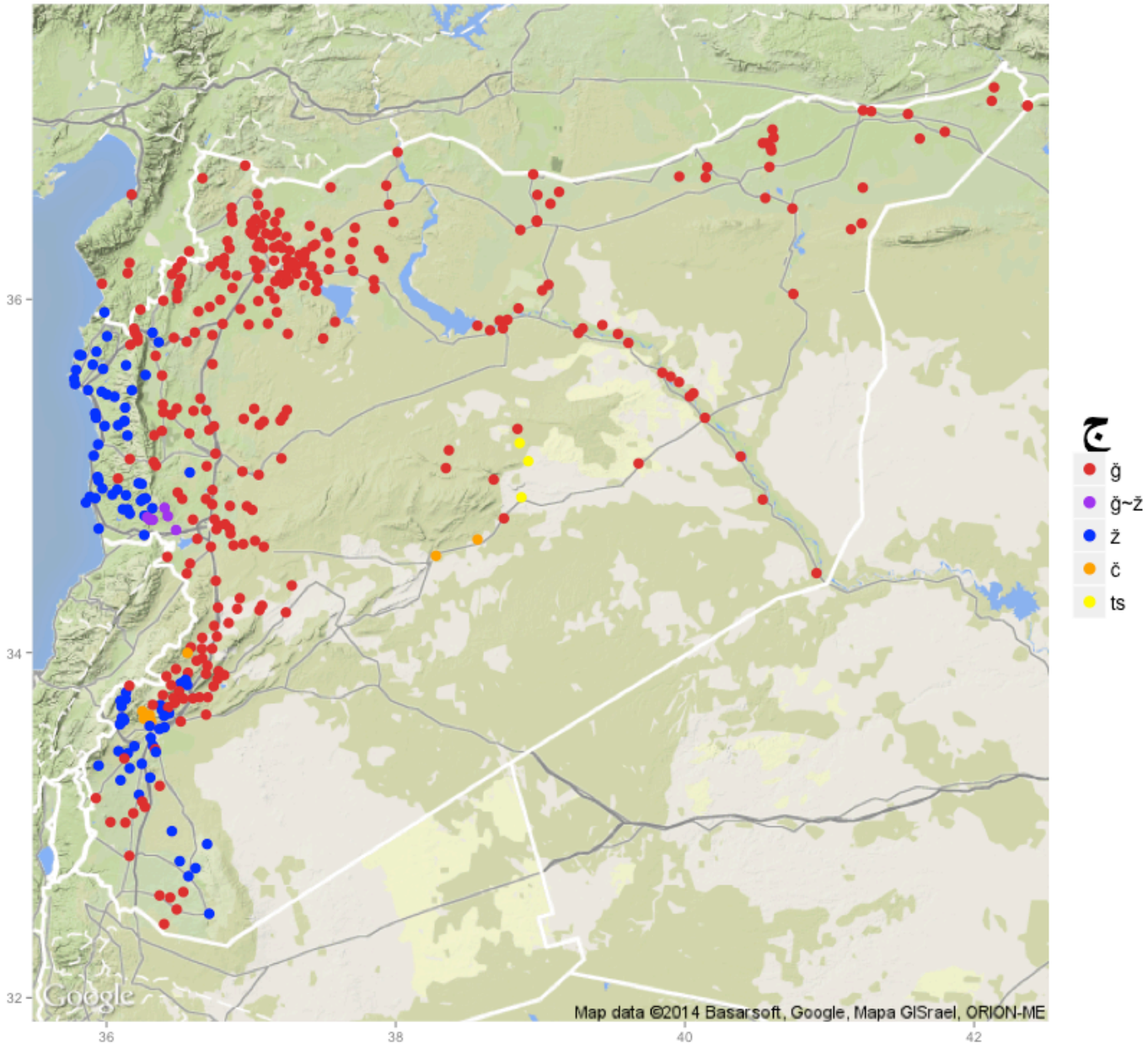
APPENDIX



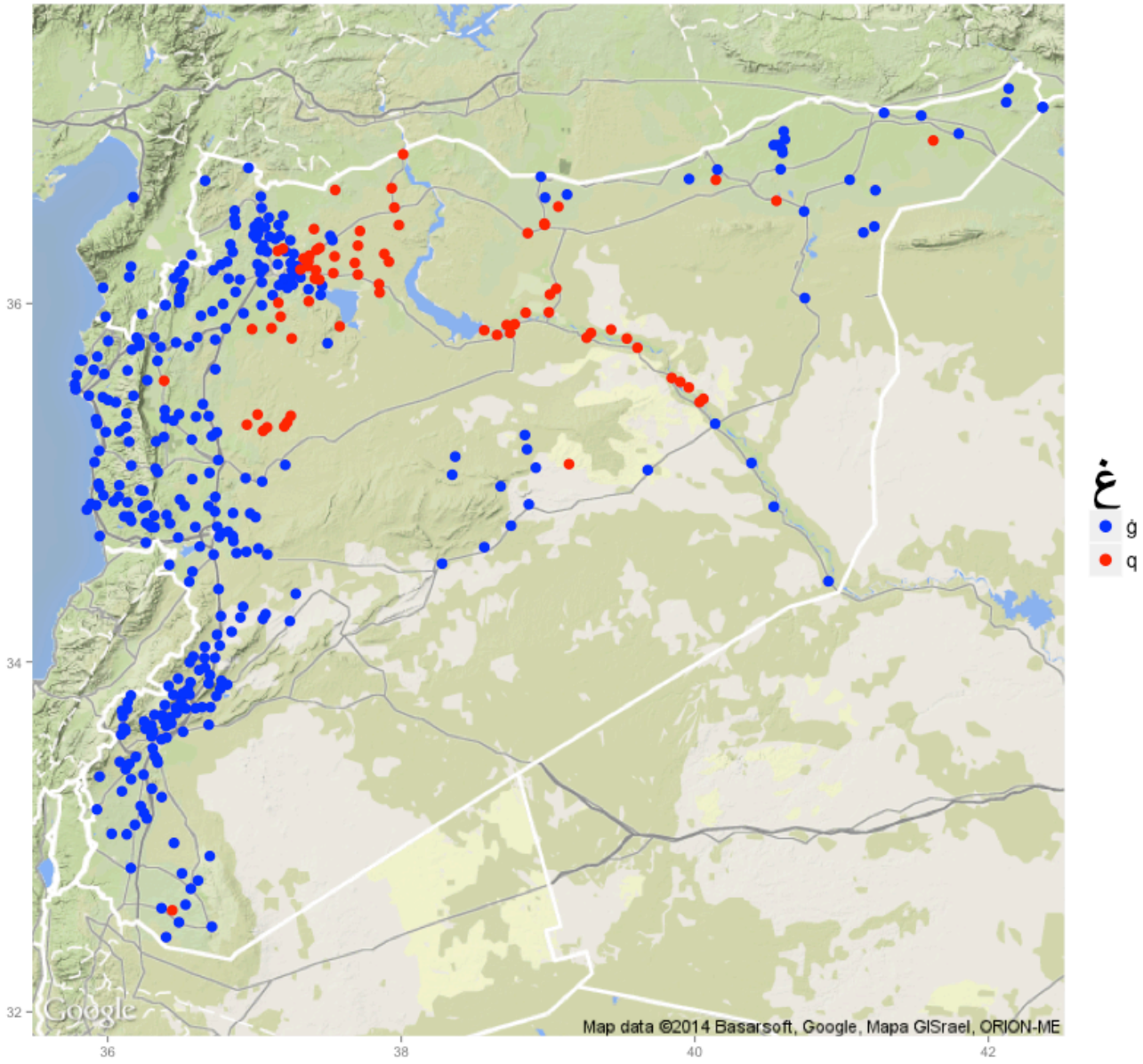
Map 6. Reflexes of **q*.



Map 7. Reflexes of *k.



Map 8. Reflexes of *ğ.



Map 9. Reflexes of *ġ.