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STEPHAN PROCHÁZKA

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Fresh Perspectives and New Data*

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‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’ as comparative ecolinguistic concepts: Evidence from Arabic historical dialectology and contact linguistics¹

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Abstract: The traditional dichotomy of Arabic dialects into ‘Bedouin’ and ‘Sedentary’ varieties has recently been contested due to its oversimplifications and the lack of solid linguistic evidence. This study proposes a paradigm shift from the ‘Bedouin-Sedentary’ linguistic dichotomy to an ecolinguistically grounded ‘Nomadic-Sedentarised-Sedentary’ (NSS) trichotomy. The NSS framework does not use the labels ‘Nomadic’, ‘Sedentarised’, and ‘Sedentary’ to define fixed dialect prototypes. Instead, it employs these concepts as comparative tools to explore synchronic variation on an areal level while allowing the analysis of its diachronic causes. The NSS trichotomy is founded on a two-step comparative methodology that focuses on the distribution of exclusive ecolinguistic features and the reconstruction of both internal and external mechanisms of language change. The NSS framework is applied to three Arabic-speaking regions: Western Sudanic Arabic (WSA), Southwestern Maghrebi Arabic (SwMA), and the Arabic of the Syrian Steppe and Adjacent Regions (SyStAR). In WSA, clear distinctions emerge between the three types: ‘Nomadic’ dialects, such as the Baggāra varieties, retain original phonological features, ‘Sedentary’ dialects exhibit significant SLA-driven shifts, whereas ‘Sedentarised’ dialects represent an intermediate stage. SwMA displays diverse ecolinguistic patterns, with ‘Nomadic’ features largely confined to areas with ongoing nomadic practices. The distribution of the other features highlights the influence of migration, geographical isolation, and contact with Amazigh-speaking communities. In SyStAR Arabic, the ‘Nomadic’ traits persist in communities which at least until recently led a pastoralist way of life, while ‘Sedentarised’ and ‘Sedentary’ dialects reflect varying degrees of convergence due to contact, particularly with prestige varieties. The study ultimately demonstrates that the NSS trichotomy has the potential not only to redefine

¹ A preliminary version of this paper has been presented by Stefano Manfredi at the 1st WIBARAB Symposium (7-9 June 2023) with the title ‘*Language contact and the ‘Bedouin/Sedentary’ split*’. Stephan Procházka’s share in the writing of this paper was within the context of the WIBARAB project, which is funded by the ERC Advanced Grant 101020127 (2021-2026). The authors would like to express their gratitude to Ana Iriarte Díez and the anonymous reviewer whose valuable comments helped to improve the final version of this study. Any errors and omissions in this work remain the sole responsibility of the authors.

traditional approaches to comparing and classifying Arabic dialects but also to serve as a valuable framework for modelling other dialect continua beyond Arabic.

Keywords: Linguistic ecology, Arabic dialectology, Bedouin, Nomadic, Sudanic Arabic, Maghrebi Arabic, Arabic of the Syrian Steppe, Iraqi Arabic, Levantine Arabic

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1 Introduction

Until recently, the classification of Arabic dialects into two types, ‘Bedouin’ and ‘Sedentary’, was a widely accepted and rarely questioned standpoint in the study of spoken varieties of Arabic (e.g., Heath 2002: 2; Younes 2018: 265). The idea of a linguistic Bedouin-Sedentary dichotomy was adopted early on in Western Arabic studies from the Arabic grammatical tradition itself. Medieval Arab grammarians and historians, such as Ibn Jinni (died 1002) and Ibn Khaldun (died 1406), posited a distinction between the dialects spoken by urban settlers and Bedouins, generally considering the latter’s speech to be purer or more correct. This perspective endured, partly because the contrast between nomads and town or village dwellers has been, and in certain areas still is, a longstanding feature of the ecology of Western Asia and North Africa (WANA).

Despite its widespread use, scholars are increasingly questioning the usefulness of the Bedouin-Sedentary dichotomy, primarily due to its inconsistencies and oversimplifications in the classification of modern Arabic dialects (see, among others, Owens 2006; Watson 2011). Benkato (2019), for example, criticizes the classification of North African Bedouin-type dialects as being overly reliant on medieval sources and their colonialist interpretations, with only minimal basis in linguistic facts. Indeed, the main methodological pitfall in the way the Bedouin-Sedentary dichotomy is applied in traditional Arabic dialectology is that it is used simultaneously for synchronic classifications and diachronic characterizations of spoken dialects. It is also true that the idealized notion of “nomadic tribes that were still roaming in the deserts of the Arabian Peninsula” (Rosenhouse 1984: 1) and subsequently spread across large parts of the WANA region, largely preserving their specific tribal dialects, clearly overstates the link between linguistic communities and linguistic varieties. Furthermore, despite the general decline of pastoral nomadism across the Arabic-speaking world, it is often forgotten that there are still large communities that rely on mobile pastoralism. This latter point raises the question of whether (and, if so, why) the dialects spoken by these nomadic communities are synchronically different from those spoken by sedentary populations living in the same area.

In this study, we argue that resolving the ‘panchronic paradox’ inherent in using ‘Bedouin’ and ‘Sedentary’ as linguistic labels for both diachronic and synchronic dialect classifications requires a renewal of the comparative concepts traditionally employed in Arabic dialectology. To this end, we propose a paradigm

shift from the linguistically defined ‘Bedouin-Sedentary’ dichotomy to a ‘Nomadic-Sedentarised-Sedentary’ (hereafter NSS) ecolinguistic trichotomy. This new framework primarily focuses on assessing the relationship between language variation and the ecological differences among communities living in the same environment. Therefore, we don’t use the ‘Nomadic-Sedentarised-Sedentary’ concepts to refer to dialect prototypes or to provide historical evidence of their diachronic relationships. Rather, we employ them as a comparative tool to uncover ecolinguistic variation in synchrony and to analyse its historical causes in diachrony.

For the aims of this study, we propose to adopt a two-step comparative methodology that is intended to explain the distribution of exclusive ecolinguistic features on an areal level while allowing for the reconstruction of both internal and external mechanisms of language change. The study eventually shows that the NSS trichotomy does not only have potential to reshape traditional comparisons and classifications of Arabic dialects, but it can also turn useful for modelling other dialect continua that involve pastoral communities.

The paper is organized as follows: *Section 2* introduces the ecolinguistic understanding of the ‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’ concepts and explains their pertinence for the comparison of Arabic dialects. *Section 3* sets the methodological framework of the study and details the synchronic and diachronic implications of the NSS trichotomy. *Section 4* furnishes important socio-historical information about the three dialect areas examined in the study, namely Western Sudanic Arabic, Southwestern Maghrebi Arabic, and the Arabic of the Syrian Steppe and Adjacent Regions. The core of the paper is *Section 5* which investigates the synchronic distribution and reconstructs the diachronic development of a closed set of selected phonological and morphological features in the three dialect areas. *Section 6* finally summarizes the results of the comparative study, emphasizing the advantages of the adoption of the NSS trichotomy in terms of both synchronic comparison and diachronic reconstruction of Arabic dialects.

2 ‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’: an ecolinguistic trichotomy

The primary aim of this paper is to advocate for the adoption of three ecolinguistic concepts in Arabic dialectology: ‘Nomadic,’ ‘Sedentary,’ and ‘Sedentarised.’ On a terminological ground, we prefer the term ‘Nomadic’ over the traditional term ‘Bedouin’ for two main reasons. First, the term ‘Bedouin’ (derived from the Arabic *badw* and related to *bādiya* meaning ‘steppe’) has historically carried, and continues to carry different and sometimes even stigmatizing connotations (Leder

2015; Sowan 2005).² In contrast, ‘Nomadic’ is a neutral socio-economic label that is widely used in the anthropological and geographical literature on pastoral societies, within and beyond the Arab world. Secondly, the adoption of the term ‘Nomadic’ stresses the adoption of an ecolinguistic perspective of analysis against the traditional linguistic understanding of the label ‘Bedouin’, which is used as a classification tool irrespective of ecological variation.³ In this regard, Salzman (1996: 24) states:

Being a ‘pastoral nomad’ means having pastoralism and nomadism as a part of one’s psychic, social and technological repertoire. The acting out of pastoral production and nomadic movement is itself contingent, subject to environmental conditions, as are the more specific orientations of generalization/specialization and consumption/market.

As for the term ‘Ecolinguistic’, we employ it to refer to the theoretical framework called ‘Linguistic Ecology’ (or ‘Ecology of Language’), which was first defined by Haugen (1972: 325) as “the study of the interactions between any language and its environment”.⁴ If Haugen’s original definition of ‘Ecology of Language’ is primarily centred around “people who learn, use and transmit (a given language) to others”, later studies claim that the key property of any ‘Linguistic Ecology’ lies in its structured diversity (Mühlhäusler 1996b: 206), which is defined “not so much in terms of numbers but in terms of the quality of meaningful interrelationships” between “species of different languages”.

In this perspective, a ‘Linguistic Ecology’ is viewed as a complex ecosystem encompassing different linguistic components, rather than as bounded ecological environment in which a single language is spoken and transmitted. More interestingly, Mühlhäusler (1996a: 2) points out that an ecolinguistic view of language “suggests that we can at best achieve partial and local explanations but that we can hope for understanding and empathy”. Building on this assertion, we argue that the comparative concepts of ‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’ hold ecolinguistically valid only if used as a means for dialect

² Additionally, in many Arabic speaking societies, the term ‘Bedouin’ carries positive ideological nuances, often associated with the notions of ‘true Arabness’ and ‘linguistic purity’ (see Laaber 2025).

³ The term ‘Nomadic’ has been sometimes used as synonymous of ‘Bedouin’ in Arabic dialectology (cf. Holes 1983). Rosenhouse (1984; 2006), on her part, is most plausibly the only author to distinguish between ‘Nomadic’ and ‘Semi-Nomadic’ varieties of ‘Bedouin’ dialects based on different patterns of pastoral mobility. Conversely, Cadora (1992) keeps using the traditional term ‘Bedouin’ despite his advocacy for an ecolinguistic approach to language variation. The same is true for al-Sharkawi (2010).

⁴ Therefore, here ‘ecolinguistic’ does not make reference to the Ecological Linguistics (or Ecolinguistics) paradigm, which rather develops linguistic theories in relation with broader (non-human) ecosystems in the quest to address ecological issues.

comparison on an *areal* level as they do not serve as linguistic labels to identify dialect types across different ecological contexts.

Furthermore, Ludwig et al. (2018: 19-20) stress that the 'Linguistic Ecology' framework should take a primarily *synchronic* perspective of analysis. However, they also insist that historical links and integrations (what they call *foundations*) must be included in the analysis of linguistic data to establish a multidimensional approach covering *speakers, time, space, and linguistic systems*. In the light of this, we use 'Nomadic', 'Sedentary', and 'Sedentarised' as *synchronic* concepts to draw a parallel comparison of different patterns of language variation associated with diverse linguistic ecologies. Nonetheless, we maintain that the interpretation of the synchronic distribution of exclusive ecolinguistic features in a given area always needs to be supported by the reconstruction of historical dynamics of divergence/convergence via different mechanisms of language change.

Another important aspect to stress is that the concepts of 'Nomadic', 'Sedentary', and 'Sedentarised' primarily refer to the linguistic reflexes of ecological and socio-economic differences between communities living in the same environment. Therefore, it is necessary to initially define the NSS trichotomy from an ecological perspective before analysing its possible linguistic implications. In this regard, we agree with El-Arifi (1975: 89) that two fundamental criteria must be met for an ecological definition of 'Nomadism' to be operational:

- (i) The ownership of livestock [...]; (ii) a homogeneous group of migration regardless of the distance moved, the seasonal permanency, and the degree of engagement in other subsidiary economic activities.⁵

Bearing this in mind, we suggest broadly defining the 'Nomadic', 'Sedentary', and 'Sedentarised' categories as follows:

'*Nomadic*' refers to communities that mainly rely on a mobile system of production, typically linked to nomadic pastoralism. Depending on local ecological factors, those communities present different degrees of mobility, ranging from full-scale nomadism to seasonal nomadism (often referred to as 'semi-nomadism'). The latter is usually combined with agricultural activities like grain farming or date palm cultivation as well as with wage labour.

'*Sedentary*' refers to communities that traditionally rely on a settled system of production (e.g., subsistence agriculture, wage labour). 'Sedentary' communities can be in contact with nomads with which they entertain in-depth and long-term socioeconomic relations.

⁵ See also Casciarri (2015) for an anthropological overview of the notion of 'Nomad' and 'Nomadism'.

'*Sedentarised*' refers to communities that used to rely on a mobile system of production and that gradually settled due to ecological and economic changes. 'Sedentarised' communities may keep strong kinship links with the 'Nomadic' sections of their agnatic groups.

The question obviously arises of how the previous ecological definition of the NSS trichotomy can be useful for analysing dialect continua that entail, or that have historically entailed, the coexistence of 'Nomadic', 'Sedentary', and 'Sedentarised' communities, as in the case of Arabic. To address this question, it is crucial to consider the mechanisms of language change that can be produced by the migration and the progressive sedentarisation of pastoral nomads. In situations where 'Nomadic' groups enter a given ecolinguistic environment, leading to the spread of an exogenous linguistic variety, there are three primary ways by which the language/dialect spoken by the newcomers can undergo change over time. (1) The arrival of pastoral groups may produce a gradual process of language shift among local 'Sedentary' populations leading to the appearance of new versions of the exogenous linguistic variety. In this scenario,⁶ the dialects spoken by 'Sedentary' communities primarily emerge via a process of Second Language Acquisition (SLA) with a 'Nomadic' variety as target language.⁷ This situation typically entails the transfer of substrate features into 'Sedentary' varieties, but it also correlates with the acquisition of 'Nomadic' linguistic features. (2) The gradual process of sedentarisation of pastoral groups does not produce, at least in its initial phases, a rupture in the intergenerational transmission of their ancestral language/dialect. Therefore, dialects spoken by 'Sedentarised' communities are different from those spoken by 'Sedentary' groups in that they are primarily a result of transmission of a 'Nomadic' ancestor variety. This situation obviously correlates with a stronger inheritance of 'Nomadic' features, but it can also produce language attrition, depending on different degrees of bilingualism with other 'Sedentary' and 'Sedentarised' languages/dialects spoken in a given region. (3) The exogenous linguistic variety if still spoken by 'Nomadic' groups can also undergo long-term linguistic change due to attrition with 'Sedentary' and 'Sedentarised' languages/dialects, contingently with their local prestigious status. Based on the above, the definition of the NSS trichotomy is grounded in identifying ecolinguistic differences between communities and comparing their effects on mechanisms of language change, rather than in identifying shared linguistic features that presumably derive from a common linguistic ancestor.

⁶ Which in Arabic dialectology is often referred to as 'Bedouinisation'.

⁷ In this regard, it is important to remark that SLA intervenes irrespective of the genetic and typological distance/proximity between ancestral 'Sedentary' languages/dialects and the superposed 'Nomadic' variety.

It should be reminded that, since we cannot exclude the possibility that 'Sedentary' dialects existed in a given area before the introduction of an exogenous 'Nomadic' variety, we also distinguish between 'Genetically Related' and 'Genetically Unrelated Sedentary' dialects when necessary. The 'Genetically Related' category includes typical 'Sedentary' dialects that primarily emerged through a process of SLA with the exogenous 'Nomadic' variety as target language. In contrast, 'Genetically Unrelated' refers to those dialects which are spoken by autochthonous 'Sedentary' populations. They may have been influenced by subsequent language attrition involving the exogenous 'Nomadic' variety, although this development largely depends on the specific region in question. It should be emphasized that the term 'Genetically Unrelated' does in no way refer to different language families or phyla. Instead, it indicates that these Arabic dialects do not trace back to the same dialect linkage as the exogenous 'Nomadic' variety and may therefore exhibit significantly different linguistic features (cf., for example, Chefchaouen Arabic in § 5.2 and Mosul Arabic in § 5.3). In this sense, the label 'Genetically Unrelated Sedentary' dialect broadly corresponds to the traditional understanding of 'Sedentary' in Arabic dialectology. As a further matter, given that sedentarisation of mobile pastoral groups is a gradual process that can occur at different historical stages, we also make a distinction between 'Long-term Sedentarised' and 'Short-term Sedentarised' dialects in contexts in which we can identify different layers of 'Sedentarised' dialects with the same 'Nomadic' ancestor (cf. § 4.2). The definition of these two ecological subcategories depends on local factors. Fig. 1 resumes the typical processes of language change at work within the NSS trichotomy.

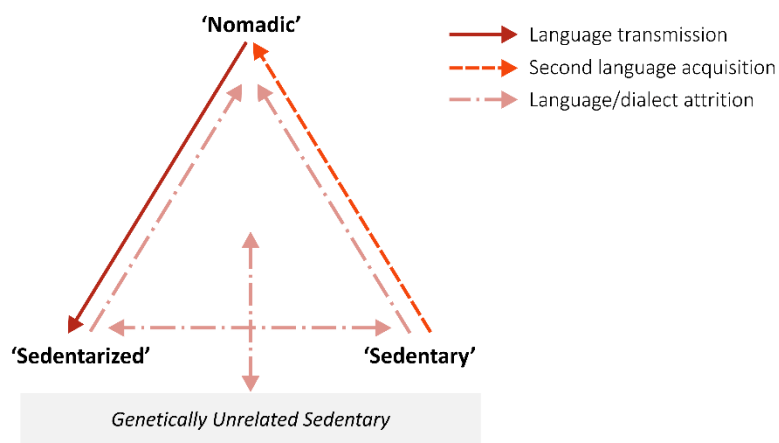


Fig. 1 – The typical mechanisms of language change at play within the NSS trichotomy

At this point it is worth noting that, being *areal* and *synchronic*, the linguistic reflexes of the NSS trichotomy may vary greatly across different dialect areas, irrespective of the diachronic mechanisms of language change producing synchronic ecolinguistic variation. For this reason, we do *not* use the NSS trichotomy to classify dialects spoken in a given area as ‘Nomadic,’ ‘Sedentary,’ or ‘Sedentarised.’ Instead, we use it to describe areal patterns of variation that are considered ecolinguistically meaningful (see also § 3). Against this background, for a linguistic feature to be defined as ‘Nomadic’:

- It must be typical of a community that is reliant on a mobile system of production (i.e., nomadic pastoralism).
- It should be exclusive when compared to its reflexes attested among ‘Sedentary’ and/or ‘Sedentarised’ communities living in the same ecological environment.
- It may or may not be shared by other ‘Nomadic’ communities living in other ecological environments.

The previous definition also implies that any exclusive feature distinguishing varieties spoken by ‘Sedentary’ and ‘Sedentarised’ communities in synchrony should be demonstrated by historical reconstructions with reference to an earlier ‘Nomadic’ developmental stage. Furthermore, we will see that in certain areas (i.e. South-Western Maghreb and the Syrian Steppe) such reconstructions must necessarily take into account the presence of ‘Genetically Unrelated Sedentary’ dialects.

3 Methodology

To test the validity of the NSS ecolinguistic trichotomy, we will compare the synchronic distribution and diachronic development of a closed set of phonological and morphological features in three distinct dialect areas. It is important to remind that our objective here is not to analyse the distribution of traditional ‘Bedouin’ features (such as the realization of the etymological *q) across different dialect areas. Instead, our focus is on the ecolinguistic characterization of linguistic features within individual dialect areas. To achieve this, we propose a two-step comparative methodology. The first step involves identifying exclusive features that may indicate an ecolinguistic distinction between the dialects spoken by ‘Nomadic’, ‘Sedentary’, and/or ‘Sedentarised’ communities within the same area. Unlike traditional isoglosses, ecolinguistic exclusive features do not reflect the geographical extension of a linguistic trait but rather map socio-ecological differences onto linguistic variation. Specific exclusive features may hold ecolinguistic significance in one area but not in

another.⁸ Alternatively, the same exclusive feature might have different ecolinguistic values in different geographic regions.

The second step of our comparative approach involves reconstructing the developmental stages that a particular linguistic feature has undergone. A ‘developmental stage’ is defined here as a specific point along the timeline of linguistic change. Since linguistic features progress independently through different developmental stages, we will reconstruct the emergence of each exclusive feature separately. Furthermore, a given developmental stage may involve both convergent and divergent changes, which can be driven by the same or different mechanisms of language change (e.g., transmission, second language acquisition (SLA), attrition; cf. § 2). As we will see, identifying these mechanisms is crucial for understanding the synchronic distribution of exclusive ecolinguistic features and for reconstructing their different developmental stages. To ensure that ‘developmental stages’ are comparable across areas that have undergone Arabicization in different ways and at different times, we have aligned them with fixed points along the timeline of linguistic change linked to the spread of an exogenous ‘Nomadic’ variety in a given environment. These stages can be outlined as follows:

Developmental stage 0 – This represents the reconstructed form of a ‘Nomadic’ feature before the migration and the arrival of Nomadic groups in the area being analysed.

Developmental stage 1 – This corresponds to a reconstructed form of a ‘Nomadic’ feature as it was introduced by Nomadic groups in the area being analysed. This might also correspond to the synchronic form of the ‘Nomadic’ feature if no change occurred since its introduction in the area. When parallel changes occur at the same developmental stage, these stages are further distinguished by letters (e.g. Stage 1a, Stage 1b, etc.) to indicate divergence in the mechanisms of change (i.e., SLA, transmission, attrition, see § 2), even if the linguistic outcomes are ultimately the same.

Developmental stages 2, 3, etc. – These stages represent the subsequent developments that a ‘Nomadic’ feature may undergo in the area being analysed. They generally coincide with ‘Sedentary’ and/or ‘Sedentarised’ reflexes of Stage 1, but they can also correlate with a further ‘Nomadic’ developmental stage. When parallel changes occur at the same developmental stage, these stages are further distinguished by letters (e.g. Stage 2a, Stage 2b, etc.) to indicate

⁸ Bruce Ingham called this phenomenon the ‘multivalency’ of dialectal features (Ingham 1982: 31-32). It is not only observed with regard to ecolinguistic settings but also found with regard to ‘confessional’ varieties (see (Holes 2019: 77) who states that “the ‘same’ feature can have a quite different social significance (or none at all) in different communities.”

divergence in the mechanisms of change (i.e., SLA, transmission, attrition, see § 2), even if the linguistic outcomes are ultimately the same.

As an example, consider a hypothetical area inhabited by ecologically defined ‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’ communities. In this context, the ‘Nomadic’ feature X has two possible competing forms prior to its introduction in the area under analysis: X^0 and X^1 . The fact that only the reflex X^1 is synchronically attested among local ‘Nomadic’ populations suggests that it corresponds to the Developmental Stage 1 and that X^0 was either not transmitted or was only limitedly transmitted after the arrival of the pastoral groups in the area. In this context, local ‘Sedentary’ communities present the innovative reflex X^2 that can be possibly a result of SLA (Developmental Stage 2b). On the other side, ‘Sedentarised’ groups present both X^1 and X^2 reflecting the transmission of an ancestral ‘Nomadic’ feature that is undergoing change because of language attrition (dialect levelling) with ‘Sedentary’ varieties (Developmental Stage 2a). This situation suggests a synchronic and ecolinguistic split between ‘Nomadic’, ‘Sedentarised’, and ‘Sedentary’ dialects that can be traced back to different mechanisms of language changes (Fig. 2).

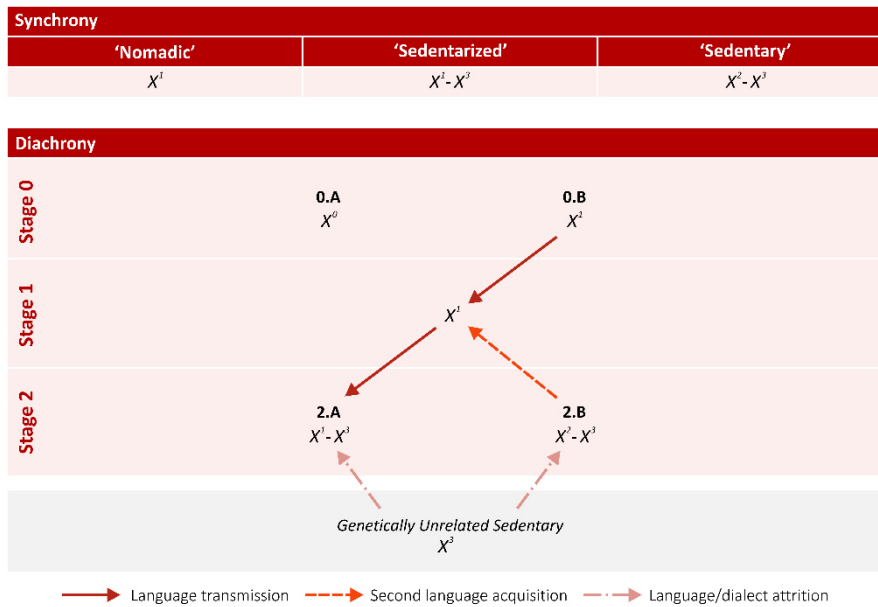


Fig. 2 – The synchrony and diachrony of the feature X

Fig. 2 provides a synchronic ecolinguistic classification of feature X coupled with a diagram providing a visual representation of the changes that feature X underwent. As a general rule, transmission and SLA are represented by vertical arrows: the former is depicted as continuous up-down and the latter as a dotted

down-up. Other mechanisms of change (e.g. language/dialect attrition) that can intervene in the development of a feature are represented as different horizontal or bottom-up arrows pointing to a given developmental stage. Additionally, 'Genetically unrelated' dialects appear outside the developmental frame, whereas the possible influence on 'Genetically related' varieties is still indicated. As 'Genetically Unrelated Sedentary' dialects fall outside the synchronic ecolinguistic comparison, they only appear in the diachronic reconstruction. It is also important to emphasize that the arrows do not signify a genetic affiliation between dialects, as they rather reflect the historical changes of a feature. Furthermore, as we do not exclude the possibility of multi-causal change, a given developmental stage can result from different changes occurring simultaneously (i.e., different arrows converging on the same developmental change). In the light of this, the NSS trichotomy and the associated two-step comparative methodology are flexible and open models, capable of accommodating a wide range of mechanisms of linguistic change (e.g. areal diffusion, § 5.1.2; convergence with the substrate/adstrate, § 5.2.1; morphological mixing, § 5.2.2; innovative internal developments, § 5.2.3), provided these mechanisms define a developmental stage in a given area. This adaptability also makes the framework valuable for analysing ecolinguistic settings where one of the three categories is absent, such as linguistic ecologies involving only 'Sedentarised' and 'Sedentary' communities due to the complete sedentarisation of pastoral nomads.

As we will see, while identifying the synchronic distribution of exclusive features in a given area is often straightforward, reconstructing the mechanisms of change across different developmental stages can be more complex. For instance, a synchronic convergence between 'Sedentarised' and 'Sedentary' dialects (where they exhibit the same synchronic reflex of a given feature) can obscure different mechanisms of diachronic change. Similarly, a synchronic divergence between 'Nomadic' and 'Sedentary' dialects (where they do not exhibit the same synchronic reflex of a given feature) cannot be easily attributed to a single language change process. For example, 'Sedentary' dialects may diverge from the 'Nomadic' target variety due to SLA, but this same divergence could also result from contact between the 'Nomadic' variety and a 'Genetically Unrelated Sedentary' variety (cf. § 2). Additionally, exclusive internally induced changes can obviously create differences between 'Nomadic', 'Sedentarised', and 'Sedentary' dialects spoken in the same area. Therefore, identifying the developmental stages that a linguistic feature has undergone and determining the diachronic depth of its reconstruction largely depends on considering both local dynamics of language contact and instances of internal change. However, the scarcity of both anthropological and historical data in certain areas can limit our ability to fully account for the dynamics of interaction and to differentiate between different mechanisms of change. When reliable information regarding the arrival of Nomadic groups is unavailable or when evidence suggests ongoing trade and

back-and-forth interactions rather than a singular migration event, the NSS framework may encounter limitations. More generally, we acknowledge that relying solely on discrete exclusive features to determine ecolinguistic affinities or divergences is problematic because, much like isoglosses, they rarely overlap. These challenges highlight the importance of carefully defining the geographical boundaries of the area under study, as a well-delimited scope is crucial for ensuring that the comparative methodology can effectively account for the complexity of linguistic dynamics in such settings.

4 Dialect areas

Our selection of the three dialect areas for comparison is primarily based on evaluating their differences in terms of the presence or absence of mobile pastoralism, the historical depth of Arabicization, and the local dynamics of language and dialect contact. It is also important to note that the areas considered vary in geographical size. Additionally, the number of dialects representing each area is inconsistent and may not be proportional to the geographical extent of that area. However, these factors do not limit our approach, as our objective is not to provide a quantitative analysis of dialect variation but rather to test the qualitative validity of the NSS trichotomy and the associated comparative methodology. It must be also noted that the data underlying the case studies are not homogeneous in terms of the time periods in which they were collected. In fact, the time span



Map 1 – General view of the three areas (Western Asia and North Africa)

between the oldest studies (beginning of the 20th century) and the most recent ones (early 2020s) exceeds a century. We recognize that this poses a metho-

dological challenge, requiring caution in interpreting the data. However, in some cases, the availability of data from different eras has allowed us to detect developments that overall support our hypotheses. Lastly, it should be reminded that this study primarily focuses on ‘Sedentary’/‘Sedentarised’ dialects with links to the same ‘Nomadic’ ancestor.

4.1 Western Sudanic Arabic

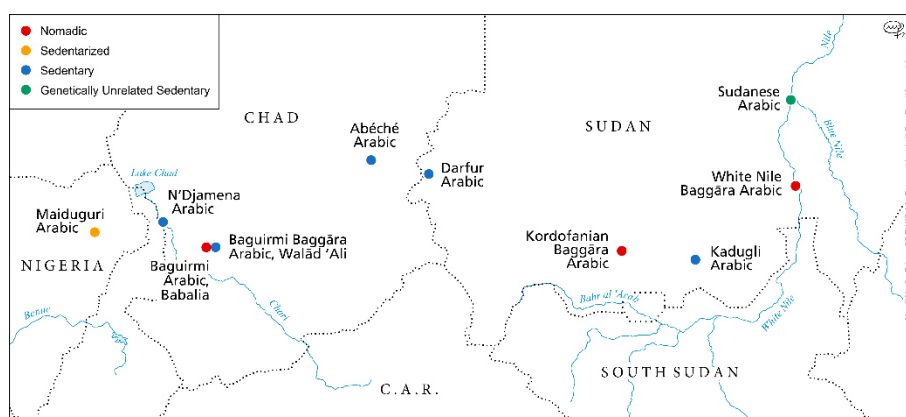
The first dialect area under investigation is Western Sudanic Arabic (WSA). WSA traditionally encompasses the Arabic dialects spoken in Nigeria, Cameroon, Chad, and Western Sudan (see Owens 1993b and Roth 1994 for detailed discussions). This area is of particular interest for our study due to its unique ecological, socio-historical, and linguistic characteristics. First, WSA covers one of the few regions in the Arabic-speaking world where mobile pastoralism is still widely practiced. Secondly, the region between the White Nile in the East and Lake Chad in the West is characterized by a relatively recent process of Arabicization, which began in the 14th or 15th centuries and is still ongoing in some areas (e.g., Darfur, Nuba Mountains, Wadai, Baguirmi). Furthermore, WSA is distinct from other Arabic-speaking dialect areas due to the fragmentation of its linguistic substrate, which includes a large number of typologically and genetically unrelated languages (mainly Nilo-Saharan and Niger-Congo). Despite these peculiarities, Western Sudanic Arabic remains largely understudied and it is hardly included into traditional dialect comparisons. There is strong linguistic evidence suggesting that this region was primarily Arabicized by nomadic groups migrating to Sudan from southern Egypt (Owens 1993b, 2003, 2006). Within this context, the Arabic-speaking semi-nomadic groups collectively known as Baggāra (i.e. ‘cattlemen’, see Manfredi 2010; Manfredi and Roset 2021), have been major catalysts in the Arabicization process of this area. Despite their strong genealogical connections (with all the Baggāra tribes purportedly descending from the Yemeni Ġuhāyina), what defines the Baggāra is their system of production, which is based on a traditional South-North (West-East in northern Nigeria) transhumance pattern combined with seasonal intensive agriculture. Though representing a homogeneous dialect type, Baggāra Arabic also gives evidence of an important diatopic variation produced by both internally and externally induced changes (Manfredi and Roset 2021).

For the aims of this study, it is important to highlight that Baggāra Arabs are involved in various dynamics of language contact with local ‘Sedentary’ groups, depending on their degree of sedentarisation and relative demographic presence. For example, speakers of Maiduguri Arabic (Nigeria) form a fully settled and urbanised linguistic minority. As a result, speakers of Nigerian Arabic exhibit a high level of bilingual proficiency in Kanuri and Hausa while still maintaining their ‘Sedentarised’ dialect (Owens 2020).

In contrast, the Hawāzma (a Baggāra subgroup) in Southern Kordofan (Sudan) represent an ethnolinguistic majority that maintains a semi-nomadic lifestyle. Consequently, they have not developed extensive bilingual competence in the languages spoken by local ‘Sedentary’ communities in the Nuba Mountains (Manfredi 2010). Conversely, due to the dominant status of Khartoum Arabic in Sudan, eastern Baggāra groups experience varying degrees of dialect mixing and levelling towards Eastern Sudanic Arabic (see Manfredi 2012). It is also important to note that the Arabic dialects spoken by Baggāra nomads have represented, and in some cases still represent, the target varieties for sedentary bilingual communities, that lead to the emergence of local ‘Genetically Related Sedentary’ dialects (see § 2). Further to this, if we exclude the influx of Sudanese Arabic on the easternmost Baggāra dialects, in the Western Sudanic area, there are no proper ‘Genetically Unrelated Sedentary’ varieties that predate the arrival of nomadic groups from southern Egypt. Lastly, due to the relatively recent and ongoing sedentarisation process of nomadic groups, it is difficult to distinguish between ‘Long-term’ and ‘Short-term Sedentarised’ communities in the area. For our comparative study, we will focus on nine WSA varieties, plus the genetically unrelated Sudanese Arabic, whose geographical distribution and ecolinguistic characterization are illustrated by Map 2.

Locations and main sources of the WSA varieties:

1. Maiduguri Arabic (Nigeria), Sedentarised (Owens 1993a)
2. N’Djamena Arabic (Chad), Sedentary (Jullien de Pommerol 1999)
3. Baguirmi Baggāra Arabic, Walād ‘Ali (Chad), Nomadic (Décobert 1985; Zeltner and Tourneux 1986)
4. Baguirmi Arabic, Babalia (Chad), Sedentary (Décobert 1985)
5. Abbéché Arabic (Chad), Sedentary (Roth 1979)
6. Darfur Arabic (Sudan), Sedentary (Roset 2018)
7. Kordofanian Baggāra Arabic (Sudan), Nomadic (Manfredi 2010)
8. Kadugli Arabic (Sudan), Sedentary (Manfredi 2013)
9. White Nile Baggāra Arabic (Sudan), Nomadic (Manfredi and Roset 2021)
10. Sudanese Arabic (Sudan), Genetically Unrelated Sedentary (Manfredi 2010)



Map 2 – The WSA dialect sample and distribution

4.2 Southwestern Maghrebi Arabic

The second area comprises the westernmost periphery of the Arabic *Sprachraum* and thus covers the dialects spoken in Morocco and Mauritania. Although Morocco is among the best-studied countries in Arabic dialectology, the classification of its dialects is still debated⁹ and there is yet no linguistic atlas in the strict sense available.¹⁰ The most widely accepted classification of Southwestern Maghrebi Arabic distinguishes three main groups: ‘Northern’, ‘Central’ and ‘Saharan’ dialects. ‘Northern dialects’ are categorized as ‘Genetically Unrelated Sedentary’ dialects in this study, as they trace back to the earliest wave of Arabicization of Western North Africa, which began around the 7th to 8th centuries. This group includes the traditional dialects of most large Moroccan cities, such as Tangiers, Tetouan, Fes, and Taza, as well as Chefchaouen and Rabat, which are considered in our study. ‘Central dialects’ are less a geographical category and more a typological term that encompasses both urban and rural dialects of varied origins. In our framework, most of these dialects are classified as ‘(Long-term) Sedentarised’. The ‘Saharan dialects’ include not only the Ḥassāniyya varieties spoken in Mauritania and southern Morocco but also those found in the plains and hill country of central Morocco.

The situation is further complicated by the stratification of dialects across different layers and the presence of Arabic-speaking enclaves within extensive Amazigh-speaking areas, which are divided into Tarifit (north), Tamazight (central), and Tashelhit (south) regions. Full-scale nomadism is still present in

⁹ See (Heath 2002; Aguadé 2008; Taine-Cheikh 2017; Francisco 2021). In particular, Heath states that “Morocco is a special case that resists simple classification.” (Heath 2002: 2).

¹⁰ Simple maps are provided by Heath (2002); Northern Morocco is covered in Behnstedt (2022).

Mauritania but has become very rare in Morocco. However, semi-nomadic groups continue to inhabit the fringes of the Sahara in the eastern and southern parts of Morocco, and semi-nomadism was practiced in the central plains and hill country until the mid-20th century. Consequently, it can be assumed that, up until two or four generations ago, many speakers of Saharan-type varieties were semi-nomadic pastoralists. This may also be true, though to a lesser extent, for the Zaer (Zŕir) and Chaouia (Šāwiyya) who live in the hinterlands of Rabat and Casablanca, and whose dialects show clear connections to Saharan varieties. A semi-nomadic lifestyle until relatively recent times might also apply to the region around Oujda in the northeast (including Berkane), though concrete evidence is lacking. Dialects from this region are typically classified as a subgroup within the ‘Central dialects’. A notable characteristic of the ‘Central dialects’ is their high degree of dialect mixing and influence from contact with Amazigh. This includes their southern subgroup, which spans from the Atlantic coast (Essaouira) to the Algerian border and up to Tafilalt (Taine-Cheikh 2017: 25-26; Francisco 2021).

Aside from the ‘Northern dialects’, all Arabic dialects spoken in Morocco and Mauritania trace back to the second wave of Arabicization, corresponding to the migration of nomadic Arabian tribes between the 11th and 13th centuries. Especially in rural areas, there has historically been and continues to be significant contact with speakers of the various Amazigh languages (see Aguadé 2018; Taine-Cheikh 2018 for historical overviews). In the large cities of the north and along the Atlantic coast, dialectal interactions and influences from ‘Genetically Unrelated Sedentary’ dialects also occur. In the list below, an asterisk indicates a highly likely semi-nomadic way system of production up until the 1950s or 1960s. For some dialects, we have micro-diachronic data (i.e., multiple data collections over the past century) that demonstrate a gradual shift from ‘Nomadic’ to ‘Sedentarised’ features. These dialects are labelled as ‘Short-term Sedentarised’. Our sample does not include ‘Genetically Related Sedentary’ dialects emerged via SLA with the ‘Nomadic’ variety as target language.

Locations and main sources of the SwMA varieties:

1. Chefchaouen, Genetically Unrelated Sedentary (Moscoso García 2003)
2. Hyāyna, Long-term Sedentarised (Zoubid 2011)
3. Rabat, Genetically Unrelated Sedentary (Brunot 1931; 1952)
4. Casablanca, Long-term Sedentarised (Aguadé 2003; 2005)
5. Zaer, Short-term Sedentarised (Aguadé 1998; Heath 2002, Djavadova 2026)
6. Chaouia, Short-term Sedentarised (Kampffmeyer 1912, Djavadova 2026)
7. Rhāmna, Long-term Sedentarised (Marjani 2019)¹¹
8. Wad Sous, Short-term Sedentarised (Destaing 1937; Moscoso 2002)
9. Marrakesh, Long-term Sedentarised (Sánchez 2014)

¹¹ The Rhāmna came after the 16th century from Wad Sous and Wad Draa to this then Berber-speaking region (Marjani 2019: 2).

10. Berkane, Short-term Sedentarised (Behnstedt et al. 2002; Guerrero 2024)
11. Skūra, Long-term Sedentarised (Aguadé et al. 1995; Elyaacoubi 1998)¹²
12. Wad Draa, Long-term Sedentarised (Aguadé 2000; Behnstedt 2004)
13. Mhāmid Arabic, Nomadic (Heath 2002)
14. Tata Arabic, Nomadic (Heath 2002)
15. Ḥassāniyya Arabic (Mauritania), Nomadic (Cohen 1963; Taine-Cheikh 2007)¹³



Map 3 – The SwMA dialect sample and distribution

¹² The inhabitants of Skūra settled there only some generations ago coming from different regions, among them Wad Sous, Tafilalt, and the surroundings of Marrakesh (Aguadé and Elyaacoubi 1995: 14).

¹³ “By the middle of the 20th century, most speakers still had a Bedouin lifestyle.” (Taine-Cheikh 2007: 240)

4.3 The Arabic of the Syrian Steppe and Adjacent Regions

The third area investigated in this article comprises the Arabic of the Syrian Steppe and Adjacent Regions (hereafter SyStAR). Due to the foundation of nation states after the First World War, Arabic dialects belonging to this type are spoken in numerous countries, namely Iraq, Syria, Turkey, Lebanon, Israel and Jordan. In traditional Arabic dialectology, the dialects of the region in question are usually not grouped together. Those varieties which are spoken in Iraq, are classified as Iraqi *gilit*-type dialects,¹⁴ whereas all other nomadic dialects are generally subsumed under the umbrella term ‘Šāwi-dialects’ which refers to a bundle of closely related varieties spoken in the Syrian Steppe and in many areas to the north and west of it.¹⁵ Another term used to label these varieties is ‘Syro-Mesopotamian Fringe Dialects’ (Fischer and Jastrow 1980: 24). The Syrian Steppe has been an Arabic speaking region since Late Antiquity, i.e. several centuries before the rise of Islam. Except some few oases such as Palmyra, the semi-arid areas south of the Euphrates and east of the line Aleppo-Homs-Amman have remained in the hands of pastoralists even during the heyday of the Arab Empires between the 8th and 10th centuries. The Fertile Crescent proper, however, including the so-called Ġazīra¹⁶, was then a predominantly agricultural region whose population likely spoke relatively homogenous sedentary-type dialects. Due to political turmoil, semi-nomadic sheep and goat breeding communities migrated from the Syrian Steppe to the Ġazīra after the 11th century and according to a census conducted in the 16th century, there was not a single village in the whole area, i.e. the sedentary population had left or had been absorbed by the Bedouins (Göyünç and Hütteroth 1997: 77; 128). As for Iraq, the Mongol conquest led to significant de-urbanisation and semi-nomadic dominance from the 13th century onwards. Therefore, the local and historically sedentary dialects of the *qəltu*-type have only been preserved in larger towns in the north (e.g. Mosul) and in the speech of the non-Muslim population (Holes 2007: 130f.). Thus, over almost a whole millennium, the historically sedentary dialects of the Levant and Mesopotamia have been geographically separated by nomadic varieties which stretch like a wedge up to parts of south-eastern Turkey (particularly to the Plain of Harran).

¹⁴ The respective realizations of the word ‘I said’ are used to differentiate the two main groups of Iraqi Arabic which are therefore labelled as *gilit* and *qəltu* dialects (see Holes 2007; Jastrow 2007). The first are regarded to be ‘Bedouin-type’ dialects, the latter ‘Sedentary-type’ dialects, i.e., ‘Genetically Unrelated Sedentary’ dialects in our terminology.

¹⁵ For additional information and a grammatical sketch of (mainly) western Šāwi dialects see Younes and Herin (2019). By and large, the ‘Šāwi dialects’ correspond to what Jean Cantineau in his seminal studies on the nomadic dialects of the region classified as ‘Dialect Group C’ or ‘*petits nomades*’ (Cantineau 1937: 226-229).

¹⁶ Roughly corresponding to today’s north-eastern Syria, parts of south-eastern Turkey, and north-western Iraq.

Most of the tribes were sheep and goat herding semi-nomadic communities which are distinguished from the camel breeding ‘real Bedouins’¹⁷, who have always been regarded as nobler and militarily superior (Dukhan 2018: 20-21). The latter, above all members of the Šammar and ʕAnaza confederations, only reached the region in the early 19th century from Northern and Central Arabia and speak dialects which significantly differ from those of the semi-nomads (Behnstedt 2000: 424-458).

In contrast to the two regions described in the preceding sections, the SyStAR Arabic speaking nomads did not migrate into areas which were mainly populated by non-Arabic speakers. Linguistic contact has always implied ‘Nomadic’ and historically ‘Sedentary’ dialects (called here ‘Genetically Unrelated Sedentary’ dialects) and – in present times – supra-regional prestige varieties such as ‘Syrian Arabic’. It should also be emphasized that until rather recent times, the speech of the nomads had a high prestige in the rural areas of the region investigated, in particular because they were socially and militarily dominant. This led to contact-induced changes in the ‘Genetically Unrelated Sedentary’ dialects of the village and town dwellers which exhibit many ‘Nomadic’ features, particularly in phonology and lexicon. Good examples for such developments are the *qəltu*-type dialects of Dēr az-Zōr (Jastrow 1978) and the Khawētna (Talay 1999). Although contact with Kurdish speakers exists in large parts of the area, it has only a very low influence on SyStAR Arabic since bilingualism on the side of Arabic speakers is rare. The situation is different with regard to Turkish, because practically all speakers who live on the territory of Turkey have been full bilinguals since at least two generations.

Similar to the situation in the southwestern Maghreb described above, we do not possess linguistic data which can be assigned with certainty to speakers who presently lead a nomadic or semi-nomadic lifestyle. However, both historical sources and oral traditions suggest that particularly semi-nomadism was practiced in many regions of the area until the middle of the 20th century. Groups, for which a (semi-) nomadic lifestyle until the 1950s or 1960s is attested, are marked by an asterisk in the list below. For the sake of comparison, we have also included two urban ‘Genetically Unrelated Sedentary’ dialects (Mosul, Aleppo) which have never been exposed to large-scale contact with nomadic varieties. In contrast to these dialects, the term ‘Sedentary’ is used here for the speech of towns or regions which has a substratum of ‘Genetically Unrelated Sedentary’ dialects.¹⁸ Thus, our

¹⁷ During the era of the French Mandate of Syria and Lebanon (1920-1946), the authorities differentiated between nomadic tribes (except for two, all camel breeders), who were allowed to carry weapons, and semi-nomadic tribes (the Šawāya) who also were charged under state and not tribal law (Chatty 2010:34).

¹⁸ For the linguistic history of Muslim Baghdadi, see the detailed study by (Palva 2009). As for Salt, see (Palva 1994).

‘Sedentary’ type emerged mainly due to SLA of ‘Nomadic’ Arabic by the autochthonous sedentary population.

Locations and main sources of the SyStAR varieties:

1. Basra Arabic (Iraq), Sedentary (Mahdi 1985)
2. Nāṣiriyya Region Arabic (Iraq), Nomadic (Ingham 2009; Hassan 2024b)¹⁹
3. Kwayriš Arabic (Iraq), Sedentarised (Meißner 1903; Weissbach 1908; 1930)²⁰
4. Muslim Baghdadi Arabic (Iraq), Sedentary (Blanc 1964; Erwin 1963)
5. Mosul Arabic (Iraq), Genetically Unrelated Sedentary (Jastrow 1979)
6. Tayy Arabic (Syria), Nomadic* (Talay 2008; Bettini 2006)
7. Ġbūr Arabic (Syria), Nomadic* (Bettini 1989; 2006)
8. Šammar Arabic (Syria), Nomadic* (Behnstedt 2000)
9. Harran Arabic (Turkey), Nomadic* (Procházka 2018; 2003)²¹
10. Aleppo Arabic (Syria), Genetically Unrelated Sedentary (Sabuni 1980)
11. Sfīre Arabic (Syria), Sedentarised (Behnstedt 1994b; 1997)²²
12. Soukhne Arabic (Syria), Sedentary (Behnstedt 1994a)²³
13. Ḥawrān Arabic (Syria), Sedentary (Cantineau 1946)
14. Reyhanlı Arabic (Turkey), Nomadic* (Arnold 1998)²⁴
15. ṢArab Bekaa Arabic²⁵ (Lebanon), Nomadic* (Younes 2021; 2017)
16. ṢArab al-Maslax Arabic (Karantina/Beirut Lebanon), Sedentarised (Iriarte Díez and Laaber 2026)
17. ṢArāmša Arabic (Israel), Nomadic* (Rosenhouse 1983; 1984)²⁶

¹⁹ They were nomads when Ingham conducted his fieldwork in 1977 (Ingham 2009: 99).

²⁰ At the turn from the 19th to the 20th century, the inhabitants of Kwayriš, who belong to two sub-branches of the Zubēd tribe, were mostly sedentarised; only some of them still led a semi-nomadic lifestyle (Denz 1971: 52).

²¹ According to the oral tradition, the Arabic speakers of the Harran-Urfa area were primarily semi-nomads when the Republic of Turkey was founded in 1923. After that event, contacts to other Arabic speakers stopped more or less completely which explains that this variety does not show any influences of Arabic prestige dialects and/or Standard Arabic.

²² The inhabitants of this village claim descent from the ṢAfāḍle tribe; they settled there several generations ago (Behnstedt 1994: 419).

²³ The dialect of this oasis has been strongly influenced by the speech of surrounding nomads.

²⁴ They belong to the Baggāra tribe and settled in the town not before the 1920s (Arnold 1998:344).

²⁵ We call it ṢArab Bekaa Arabic in order to make it clear that this variety does not subsume the ‘Genetically Unrelated Dialects’ spoken in the Bekaa Valley.

²⁶ According to the report provided by Ashkenazi, these people still lived in tents and were semi-nomadic in 1938 (Rosenhouse 1984: 55).

substratum influence, originally non-native speakers having difficulty in mastering *ħ/ʕ*.” However, Manfredi and Roset (2021) emphasize that this hypothesis applies exclusively to the ‘Sedentary’ dialects of WSA, where the developments *ħ > h* and *ʕ > ʔ, Ø* are generalized (cf. map 5). This is evident, for instance, in the ‘Sedentary’ dialects of Ndjamena (Jullien de Pommerol 1999: 11), Abéché (Roth-Laly 1972: 68), and Baguirmi-Babalia (Décobert 1985: 42) in Chad, as well as in Darfur Arabic (Roset 2018: 18) in Sudan. On the other hand, the ‘Nomadic’ varieties spoken by the Baggāra cattle herders, both in Chad and Sudan, still retain the etymological pharyngeal consonants *ħ* and *ʕ*. This is the case, for instance, of Baguirmi-Walād ‘Ali (Décobert 1985: 45-47), Kordofanian (Manfredi 2010: 232), and White Nile Baggāra (Manfredi and Roset 2021) dialects. In this overall situation, the ‘Sedentarised’ variety of Maiduguri in Nigeria (cf. § 4.1) aligns with WSA ‘Sedentary’ dialects in lacking pharyngeal consonants (Owens 1993a: 20). This ecolinguistic distribution clearly indicates a synchronic split between ‘Nomadic’ dialects on one side and ‘Sedentary/Sedentarised’ varieties on the other. Nevertheless, the development *ħ > h* and *ʕ > ʔ, Ø* in ‘Sedentary’ and ‘Sedentarised’ WSA dialects is not motivated by the same processes of diachronic change. If the lack of pharyngeal consonants among non-Arab ‘Sedentary’ populations in Chad and Sudan could indeed be attributed to substrate interference via SLA, this is not the situation for the ‘Sedentarised’ Baggāra of Maiduguri. In fact, given the Nigerian Arabs’ likely bilingual proficiency in Kanuri and/or Hausa as a result of their transition to a sedentary lifestyle (cf. § 3), a more plausible hypothesis is that deparyngealization in Maiduguri is a relatively recent phenomenon prompted by language attrition with local dominant languages. From this viewpoint, speakers of Maiduguri Arabic gradually forfeited their capacity to realize the etymological **ħ* and **ʕ*, subsequently substituting them with their laryngeal equivalents (Manfredi and Roset 2021; Lucas and Manfredi 2020: 6).²⁹ Adopting a diachronic perspective (cf. Fig. 3), the pharyngeal consonants **ħ* and **ʕ* correspond to the developmental Stages 0 and 1 in WSA, being the only form introduced in this area by Baggāra nomadic groups. Subsequently, **ħ* and **ʕ* were lost either through language attrition among ‘Sedentarised’ nomads in Nigeria or through SLA among

²⁹ In this regard, it should be noted that, based on the variation in the occurrence of etymological pharyngeals and their glottal counterparts (among other phono-morphological variants), Owens (1998) argues that Maiduguri Arabic is not an independent linguistic entity but rather a re-localization of rural norms. However, this perspective underplays the fact that urbanization, particularly in the Sahel, is a relatively recent phenomenon compared to other Arabic-speaking areas. This recency is crucial to understanding why urbanized varieties such as Maiduguri (Owens 2006) and Kadugli (Manfredi 2013) Arabic display variation between innovative and conservative features, including the retention of pharyngeals in specific groups, and their gradual loss among others.

'Sedentary' populations across Chad and Sudan, corresponding to developmental stages 2.A and 2.B, respectively.

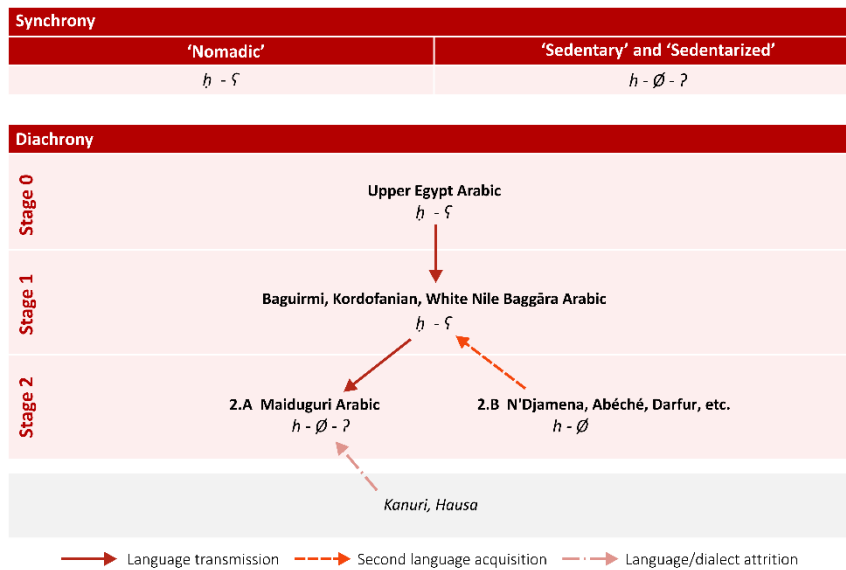


Fig. 3 – The synchrony and diachrony of pharyngeal consonants in WSA



Map 5 – The geographic and ecolinguistic distribution of pharyngeal consonants in WSA

5.1.2 The implosives ɗ and G

Moving to the second feature for comparison, Owens (1993: 165) and Owens and Jidda (2011: 710) consider the presence of implosive consonants, specifically the pharyngealized alveolar implosive ɗ (e.g. **tayyib* > *ɗayyib* 'good, well') and the

velar implosive *G* (e.g. **ḡanam* > **qanam* > *Gānam* ‘sheep’), as a typical feature of WSA. However, a more detailed analysis suggests that the two implosive consonants are not generalized across all WSA dialects but are instead confined to ‘Nomadic’ and ‘Sedentarised’ varieties (cf. map 6). In fact, while earlier studies attributed the presence of these sounds to contact with Fulani (Owens 2020: 179), their absence in ‘Sedentary’ WSA dialects (Roth-Laly 1994; Roset 2018; Manfredi 2018) suggests a more complex linguistic evolution (see also Manfredi and Roset 2021).

– *The implosive ɗ*

The pharyngealized alveolar implosive *ɗ*, appears to originate in Upper Egypt as a glottalized reflex of **t*, rather than from substrate interference. In fact, Khalafallah (1969: 29) notes a complementary distribution between **t* and its implosive reflex in Saʿīdi Arabic, and similar patterns are observed by Behnstedt and Woidich (1985) from Asyut to Aswan. Schroepfer (2016: 152) further documents the variation between *t* and *ɗ* in Aswan Arabic, in a pattern that parallels the distribution of *ɗ* in Kordofanian Baggāra Arabic (Manfredi 2010). This connection suggests that the occurrence of *ɗ* in WSA Nomadic varieties is better explained as an inherited feature from Upper Egypt, diffusing into the Baggāra Belt, rather than an imposed feature from the Fulani substrate.³⁰

³⁰ The role of Fulani as a contact language in the linguistic history of Baggāra Arabic is complex and merits careful consideration. While earlier studies, such as Braukämper (1993: 17–20), underscore the significant influence of Fulani on the eco-historical transformation of the Baggāra, there are nuances that require further discussion. Braukämper’s historical analysis links the Baggarization process to the 16th–17th century southward migration of Arab camel herders following the overthrow of the Tunjur dynasty in Wadai. According to him, this event facilitated contact between Arab and Fulani nomads, resulting in the adoption of cattle rearing by Arabic-speaking groups. Owens (1993b: 166; 2003: 723; 2006) offers another hypothesis, suggesting that the Baggarization process occurred as early as the 15th century in the Kanem-Bornu and Baguirmi regions, where Fulani and Arab groups had already established contact. This perspective shifts the focus from a singular Baggarization event to a broader, more incremental process of socio-economic integration. In this context, the gradual nature of Baggarization is further supported by anthropological and genetic studies. Haaland (1969) emphasizes that Baggāra tribes in Darfur, such as the Taʿīsha and Rizeygāt, have historically incorporated sedentary groups, including cattle-owning Fur farmers. Similarly, Manfredi (2010) notes that the Ḥawāzma Baggāra of Kordofan and the Bānu Sulēym of the White Nile reflect a history of admixture with both sedentary and nomadic communities, including Nuba farmers, camel-herding Abbāla, and Shilluk pastoralists. Recent genetic studies (Čížková et al. 2017; Priehodová et al. 2020; Nováčková et al. 2020) reveal limited biological interaction between Fulani and Arab nomads, underscoring the ethnolinguistic heterogeneity of the Baggāra and complicating claims of a dominant Fulani substrate. In this regard, we agree with

Synchronically speaking, *ɖ* is attested as a phoneme in the ‘Nomadic’ Baguirmi Baggāra Arabic (Decobert 1985: 45-47) and the ‘Sedentarised’ variety of Maiduguri (Owens 1993: 19). In Kordofanian Baggāra Arabic, *ɖ* is more limited in distribution, functioning as an allophone of *t* in proximity of central vowels (Manfredi 2010), and it is entirely absent from White Nile Baggāra Arabic (Manfredi and Roset 2020). In diachronic terms (cf. fig. 4), Stage 0 reflects a long-lasting variation between the etymological *t* (Stage 0.a) and its implosive reflex *ɖ* (Stage 0.b) which is still attested in southern Egypt. If *t* was directly inherited by Sudanese Arabic, *ɖ* likely represents the developmental Stage 1.a in WSA, being the phonological reflex introduced by the ancestors of the nowadays Baggara Arabs migrating from southern Egypt to western Sudan and Chad.

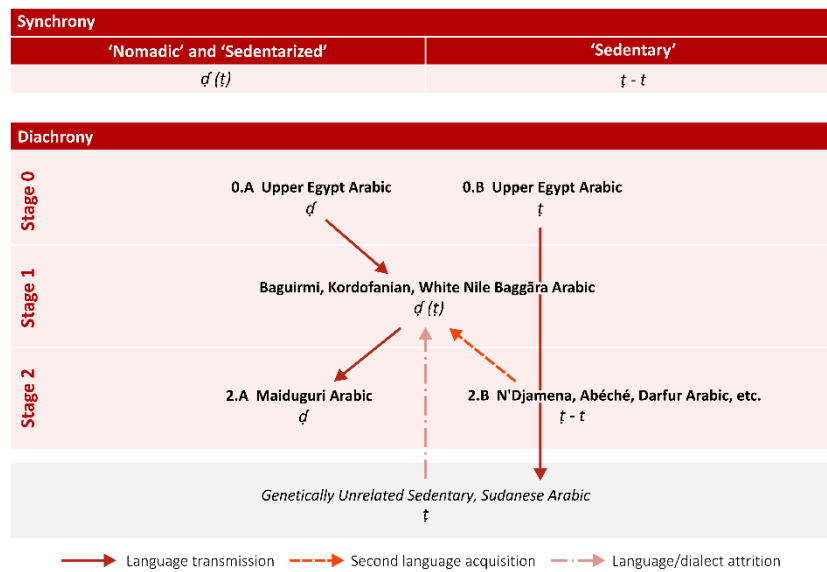
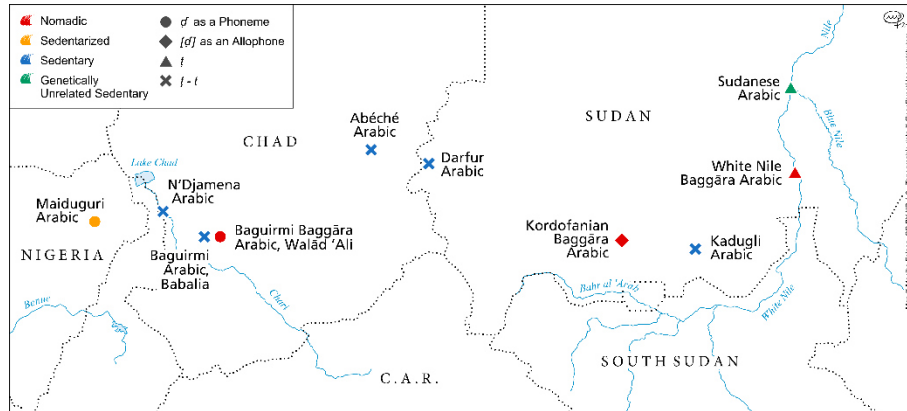


Fig. 4 – The synchrony and diachrony of the implosive *ɖ* in WSA

Accordingly, the occurrence of the etymological *t* in the easternmost ‘Nomadic’ WSA dialects (i.e., Kordofan and White Nile) corresponds to the developmental Stage 1.b emerging later due to attrition with Sudanese Arabic. Besides, the retention of *ɖ* in the ‘Sedentarised’ variety of Maiduguri corresponds to Stage 2.a,

Manfredi and Roset (2021) that Baggarization should be viewed as an adaptive process driven by the socio-economic needs of diverse communities in the eastern Sahel. Rather than a sudden Fulani-driven ethnolinguistic hybridization, it reflects a long-standing interplay of ecological, economic, and linguistic factors. This gradualist perspective accounts for the absence of a uniform substrate language. Thus, while Fulani played some role in certain historical contexts, its influence on Baggāra Arabic must be understood as part of a larger, more complex pattern of areal diffusion.

reflecting a process of inheritance. In contrast, the variation between *t* and *t̥* in ‘Sedentary’ dialects likely stems from SLA processes, which plays a role in the loss of secondary sounds like implosives, defining Stage 2.b.



Map 6 – The geographic and ecolinguistic distribution of the implosive *ɗ* in WSA

– The implosive *G*

By contrast, the ecolinguistic distribution of the velar implosive *G* follows a distinct developmental path, likely emerging through areal diffusion across the Baggāra Belt. Given that *G* is not attested in Upper Nile Arabic, it is more plausible that this feature developed as an innovation after the arrival of Nomadic populations from Southern Egypt, evolving from an earlier $*ḡ > *q$.³¹ The voiceless velar plosive *q* remains attested at the fringes of the Baggāra dialect continuum, particularly in Nigeria to the west and Kordofan to the east (cf. map 7). Moreover, as Manfredi and Roset (2021) point out, the velar implosive *G* is rarer than *ɗ* in the ‘Sedentary’ languages spoken throughout the Baggāra Belt. Despite this, there is little reason to attribute the presence of *G* in Baggāra Arabic to a Fulani substrate, as it is also found in various language families in the Lake Chad region, including Afro-Asiatic and Nilo-Saharan groups.³² These languages

³¹ The development $*ḡ > q$ is traditionally considered as a ‘Bedouin’ feature attested in Mauritania, southern Algeria, and northern Syria (Cantineau 1960; Taine-Cheikh 2017; Procházka 2023).

³² The uvular implosive *ɠ* is also attested in Afro-Asiatic languages, such as the Chadic languages Tera and Bole, and in Nilo-Saharan languages, including Central Sudanic languages like Sara and Bongo, spoken in the broader Lake Chad region (Manfredi and Roset 2021). Based on this, *ɠ* is best interpreted as a phonological innovation that arose in Chad through areal diffusion. This also means that its distribution across the Baggāra Belt is shaped by the retention of conservative phonological features, such as

are spoken in close proximity to Baggāra communities, suggesting that the development of *G* in Baggāra Arabic likely resulted from broader areal diffusion rather than specific influence from a single language. In synchrony, *G* is attested as a phoneme only in Baguirmi Baggāra Arabic (Decobert 1985: 45-47) and appears as an allophone of *q* in Kordofanian Baggāra Arabic (Manfredi 2010: 34). The uvular *q* is instead attested in the ‘Nomadic’ variety of the White Nile Band and in the ‘Sedentarised’ dialect of Maiduguri (Owens 1993: 19). In sedentary WSA dialects, the reflex of **ġ* is typically the voiceless velar fricative *x* (Roth-Laly 1979: 77; Roset 2018: 36). Considering this synchronic distribution, the diachronic development of *G* in WSA can be outlined as follows (see Fig. 5). Stage 0 most likely reflects a variation between the etymological **ġ* (Stage 0.a) and a uvular **q* (Stage 0.b). Parallel to what happened with **t*, the etymological **ġ* was inherited by Sudanese Arabic, whereas **q* likely represents Stage 1 in WSA, corresponding to the original phonological reflex introduced into the region. In this framework, Stage 2.a signals the subsequent emergence of variation between *q* and *G*, produced by language contact and areal diffusion following the arrival of the Baggara ancestors. The lenition of the implosive *G* in the easternmost Baggara dialects aligns with Stage 2.b, attributed to language attrition with Sudanese Arabic. Finally, the absence of *G* in the ‘Sedentarised’ Maiduguri variety corresponds to Stage 3.a, reflecting the transmission of a more ‘conservative’ *q*. In contrast, the variation between *q* and *x* in ‘Sedentary’ dialects likely arises from second language acquisition (SLA) processes.

q in Nigerian Arabic, as well as the influence of Eastern Sudanic Arabic varieties, exemplified by *ġ* in White Nile Baggāra Arabic.

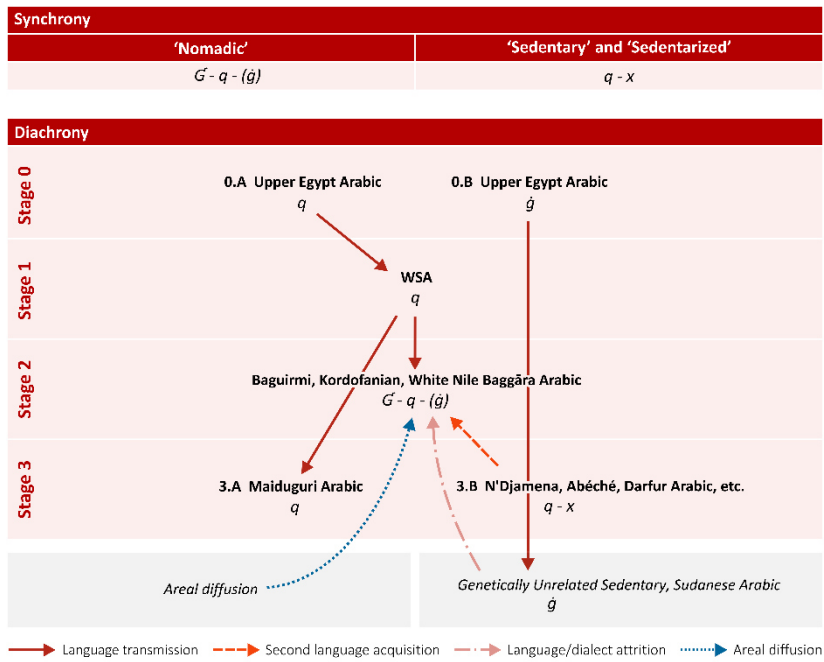


Fig. 5 – The synchrony and diachrony of the implosive \mathcal{G} in WSA



Map 7 – The geographic and ecolinguistic distribution of the implosive \mathcal{G} in WSA

5.1.3 1SG and 2SG.M personal indexes in the suffixed conjugation

Concerning the third feature under discussion, it should be reminded that 'Nomadic' WSA dialects are characterized by the elision of the 1SG and 2SG.M pronominal indexes in the suffixed conjugation of consonant-final verbs lacking

nominal/pronominal objects (Manfredi and Roset 2021). In these conditions, the opposition between the 1SG/2SG.M and 3SG.M persons is grammatically marked by stress shift from the first to the last syllable of a verbal root (e.g., *kátab* write.3SG.M vs. *katáb* write.1SG/3SG.M). Additionally, the underlying suffix *-t* marking 1SG and 2SG.M persons regularly appears before bound pronouns (e.g. *katab-t=ah* write.1SG=3SG.M ‘I wrote it’). This paradigm type is attested, for instance, in Baguirmi (Zeltner and Tourneaux 1986: 72), Kordofanian (Manfredi 2010: 240), and White Nile Baggāra dialects (Manfredi and Roset 2021). Conversely, the Arabic varieties spoken by ‘Sedentary’ populations across Chad and western Sudan regularly present the suffix *-ta* marking the 1SG/2SG.M persons in the suffixed conjugation (cf. Map 8). This is the case of the Arabic dialects of Ndjamenā (Jullien de Pommerol 1999: 60) and Abéché (Roth-Laly 1979: 2) in Chad, as well as of Darfur (Roset 2018: 177) and Kadugli (Manfredi 2013: 15) in Sudan. Different from what we have seen for pharyngeal consonants, in this case, the ‘Sedentarised’ variety of Maiduguri aligns with ‘Nomadic’ WSA in eliding the 1SG and 2SG.M pronominal indexes and using grammatical stress to distinguish them from the 3SG.M person. Therefore, the suffix *-ta* marking 1SG and 2SG.M persons can well be considered as an exclusive feature that synchronically opposes ‘Sedentary’ varieties to both ‘Nomadic/Sedentarised’ dialects in WSA. Diachronically speaking (cf. Fig. 4), the elision of the 1SG and 2SG.M pronominal indexes in Maiduguri (developmental stage 2.A) can be easily explained in the light of the transmission of a historically ‘Nomadic’ feature (developmental stage 1). On the other hand, the ‘Sedentary’ morpheme *-ta* is most plausibly an innovation produced by morphological reanalysis via SLA (developmental stage 2.B). In this perspective, the form *-ta* could have been grammaticalized from the reanalysis of the underlying Baggāra suffix **-t* followed by a 3SG.M bound **=a(h)* (i.e., **-t=ah* > *-ta*) probably because of the higher occurrence of transitive verbs bearing pronominal objects.³³

³³ A similar morphological development produced by SLA can be observed in Sudanic Arabic-based creoles (Owens 2016: 253-254) in which the 3SG.M bound pronoun **=(h)u* derived from Eastern Sudanic dialects has been reanalysed as part of transitive verbal stems.

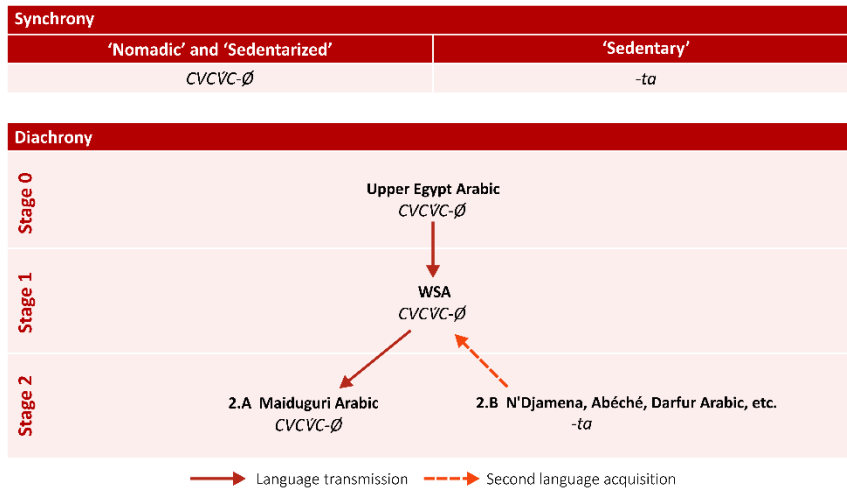
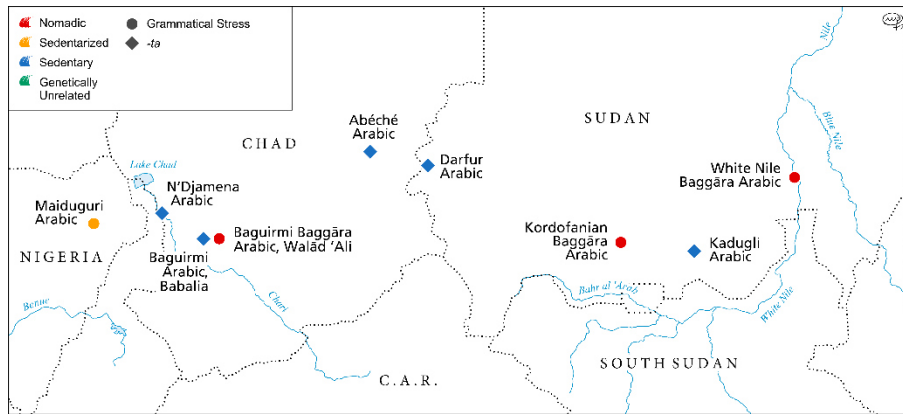


Fig. 6 – The synchrony and diachrony of 1SG and 2SG.M pronominal indexes in WSA



Map 8 – The geographic and ecolinguistic distribution of 1SG and 2SG.M personal indexes in WSA

5.1.4 Summary for WSA

Taking everything into account, the synchronic distribution of the three features under comparison reveals a linguistic ecology in which ‘Nomadic’ varieties are distinctly separate from both ‘Sedentary’ and ‘Sedentarised’ dialects. This distinction is largely due to the significant presence of mobile pastoralist communities in the region. Additionally, the relatively recent Arabization of the area — evidenced by the absence of ‘Genetically Unrelated Sedentary’ dialects in WSA — is another important factor that sustains the relevance of the NSS

trichotomy in this region. In diachronic terms, we can identify distinct developmental paths across different varieties of WSA. In ‘Nomadic’ (i.e. Baggāra) varieties, contact-induced phonological changes occur primarily through areal diffusion, resulting in the presence of both *ɟ* and *G*. These varieties display a higher degree of linguistic retention, maintaining original ‘Nomadic’ traits with relatively minimal morphophonological erosion. In contrast, WSA ‘Sedentary’ dialects typically undergo phonological and morphological changes driven by SLA, where the ‘Nomadic’ dialect serves as the target language. This results in the loss of marked features such as pharyngeal and implosive consonants and the morphological reanalysis of personal indexes in the suffixed conjugation. ‘Sedentarised’ dialects, such as Maiduguri Arabic, occupy an intermediate position. While they retain some original ‘Nomadic’ morphological traits through language transmission, they experience phonological attrition, largely due to longstanding bilingualism with genetically unrelated languages. In these varieties, language attrition leads to the loss of phonological features like *G*, while other features, such as *ɟ*, are retained. This diverse patterning of change across ‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’ varieties of WSA highlights the role of distinct mechanisms of change in different ecolinguistic settings, where ‘Nomadic’ dialects exhibit strong retention (i.e., a slower rate of change), ‘Sedentary’ varieties show abrupt changes driven by SLA, and ‘Sedentarised’ dialects reflect a mix of inheritance and loss shaped by language attrition.

5.2 The NSS trichotomy in Southwestern Maghrebi Arabic

The possible application of the NSS framework is again tested by being based on three features for SwMA: (1) The occurrence of the three interdental fricatives *ɟ*, *ɬ*, and *ɟ̣*, (2) the presence/absence of gender distinction in the perfective and imperfective conjugations for the 2SG person, and (3) the imperative forms of the verb ‘to come’.

5.2.1 The interdentals *ɟ*, *ɬ*, and *ɟ̣*

In the vast majority of SwMA dialects, the interdental fricatives are reflected as postdental stops. Dialects that exhibit interdentals are usually perceived as ‘Bedouin’ (*bdāwi*) by today’s speakers of the Moroccan *koiné*. Among the locations covered by our study, interdentals are found in the varieties of ‘Nomadic’ groups of Mauritania (Taine-Cheikh 2007: 241) as well as in Mḥamid and Tata, located at the fringes of the Sahara (Heath 2002: map 4.14). These sounds are also documented in Berkane and its surroundings (Behnstedt 2022: 162), as well as in the Zaer (Loubignac 1952; Aguadé 1998) and Chaouia (Heath 2002: 132) varieties. However, more recent data from these last three regions indicate a drastic decline in the use of the interdentals (Djavadova 2026, Guerrero 2024). All other dialects – whether ‘Sedentarised’ or ‘Genetically Unrelated Sedentary’ – do not exhibit remnants of the interdental fricatives.

As for the diachronic development, the interdental fricatives were present at Stage 0 in both the Arabic variety that arrived in Morocco in the late 7th century and in the predecessor of the varieties which were brought by Nomadic groups from the east. When they reached Morocco between the 11th and 13th centuries, the interdental fricatives represent Stage 1. By that period, the ancestor varieties of today's 'Genetically Unrelated Sedentary' dialects had already completely lost the interdental fricatives by having shifted them to post-dental stops (Aguadé 2018: 42-43). Stage 2.a, inheritance of the interdental fricatives from the ancestor variety, still exists in the 'Nomadic' dialects of the south, including those in Mauritania. Stage 2.b is reflected in the eastern 'Short-term Sedentarised' groups in and around Berkane where the presence of interdental fricatives in the surrounding Tarifit Berber variety may have been the main factor for phonological convergence and the retention of interdental fricatives (see map 6 in Behnstedt 2022: 162). Stage 2.c signals the rather recent gradual reduction of interdental fricatives among 'Short-term Sedentarised' groups, in particular those in Zaer and Chaouia, under the influence of the 'Long-term Sedentarised' dialects (e.g. Hyāyna, Rhāmna, and Marrakesh) which all have reached Stage 3, i.e. entire loss of the interdental fricatives, due to a process of merging and attrition with 'Genetically Unrelated Sedentary' dialects and those Amazigh varieties which lack interdental fricatives (Tamazight, Tashelhit).

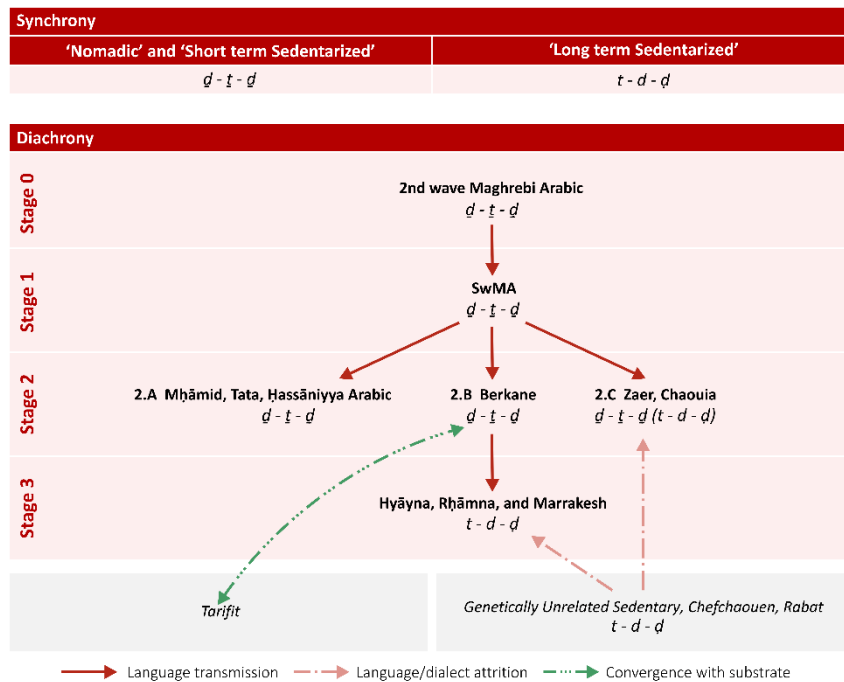
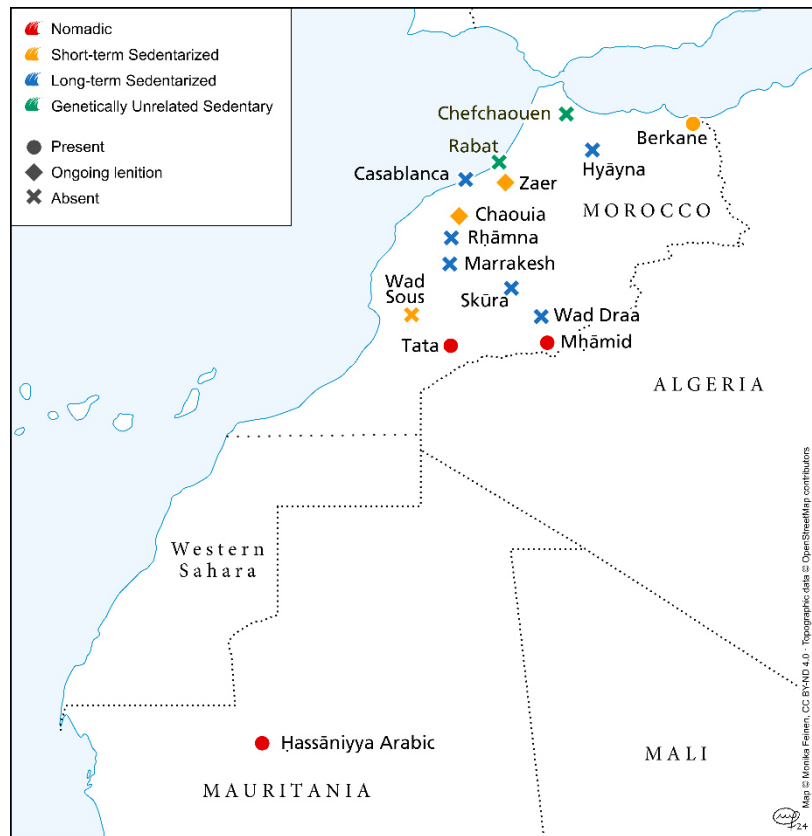


Fig. 7 – The synchrony and diachrony of the interdental fricatives $*d$, $*t$, $*\check{d}$ in SwMA



Map 9 – The geographic and ecolinguistic distribution of interdentals in SwMA

5.2.2 Gender distinction in 2SG verbal indexes

As for gender distinction in the verbal indexes of the 2SG person, three different possibilities are attested for SwMA: *Type A* dialects exhibit gender distinction in both PFV (M *-t*, F *-ti*) and IPFV (M *t-Ø*, F *t-i*), *Type B* dialects have gender distinction in the imperfective only, i.e. PFV *-ti* and IPFV M *t-Ø*, F *t-i*, and *Type C* dialects lack gender distinction completely, i.e. PFV *-t* and IPFV *t-Ø*. *Type A* is a typical 'Nomadic' feature and found in the dialects of Mauritania (Taine-Cheikh 2007: 245-246) and those Moroccan dialects which are situated south and east of the Atlas Mountains. These include Skūra (Aguadé and Elyaacoubi 1995), Wad Draa (Aguadé 2000; Behnstedt 2004), Mhāmid (Heath 2002), Tata (Heath 2002) and the Sous Valley (Heath 2002: 215; 220). Only for the last one, *Type B* is also reported (Moscoso 2002: 24, fn.12). *Type B* is found in all dialects which are spoken between the Atlas Mountains and the Atlantic Ocean, regardless of being

‘Nomadic’ ~ ‘Short-term Sedentarised’ (e.g. Chaouia, Djavadova 2026; Rhāmna, Marjani 2019: 7; Casablanca, Aguadé 2003:303) or ‘Genetically Unrelated Sedentary’ (e.g. Rabat, Brunot 1931). *Type C* is restricted to the ‘Genetically Unrelated Sedentary’ dialects of northern and central Morocco (e.g. Chefchaouen, Moscoso 2003: 63-64). The only exception is the ‘Long-term Sedentarised’ dialect of the Hyāyna which is spoken in close vicinity to the ‘Genetically Unrelated Sedentary’ dialects (Zoubid 2011: 286; 290). It is worth mentioning that *Type A*, i.e. gender differentiation in both perfective and imperfective, is not only found in the ‘Nomadic’ dialects, but also in a couple of ‘Sedentarised’ dialects which all have in common that they are situated south and east of the High Atlas, i.e. in a predominantly Amazigh speaking area. All but one central and northern ‘Sedentarised’ dialects exhibit *Type B*, which they share in that region with ‘Genetically Unrelated Sedentary’ dialects like Rabat. *Type C* is restricted to the latter group further north where also the only ‘Sedentarised’ dialect exhibiting this type, the Hyāyna, is spoken.

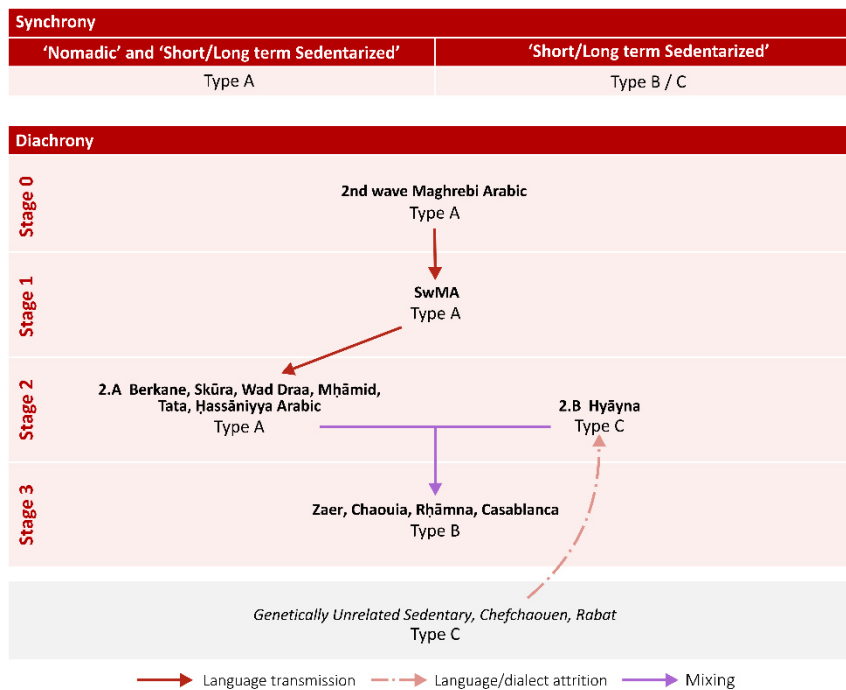
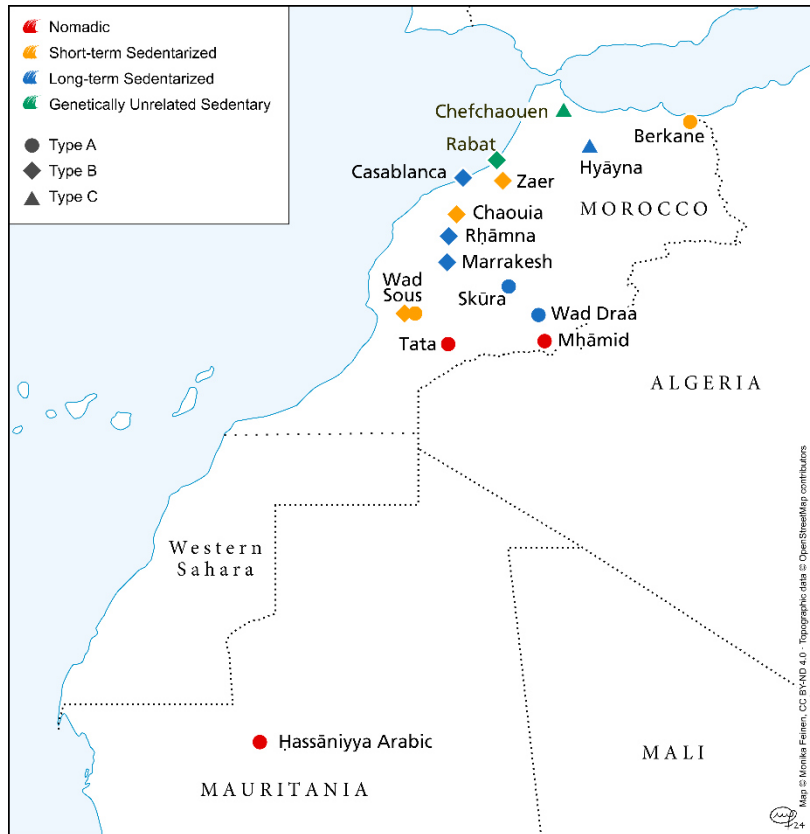


Fig. 8 – The synchrony and diachrony of gender distinction for 2SG indexes in SwMA



Map 10 – The geographic and ecolinguistic distribution of gender distinction for 2SG personal indexes in SwMA

Diachronically speaking, *Type A* reflects Stage 0 as the original type underlying all dialects and it also represents Stage 1 as we do not assume that any dialect that reached the Maghreb had preserved 1SG *-tu* or 2SG.M *-ta* (the first is common in the *qāltu*-dialects of Mesopotamia, both forms in some Yemeni dialects). Stage 2.a corresponds to *Type A* in the ‘Nomadic’ dialects of the south and some ‘Sedentarised’ dialects east and south of the High Atlas. *Type C*, which exhibits the highest degree of morphological reduction, represents Stage 2b and is typical for the ‘Genetically Unrelated Sedentary’ dialects of the north and a few ‘Long-term Sedentarised’ dialects spoken in their vicinity. The asymmetric pattern (gender distinction in imperfect only) of *Type B* in both ‘Sedentarised’ and ‘Genetically Unrelated Sedentary’ dialects aligns with Stage 3. The fact that

Type B is shared by two large groups let us assume that it is a mixed type which originated in the contact of ‘Nomadic’ *Type A* and ‘Sedentary’ *Type C* speakers.

Table 1	PERFECT	IMPERFECT
Type A	yes – M <i>-t</i> / F <i>-ti</i>	yes – M <i>t-∅</i> / F <i>t-i</i>
Type B	no – COM <i>-ti</i>	yes – M <i>t-∅</i> / F <i>t-i</i>
Type C	no – COM <i>-t</i>	no – COM <i>t-∅</i>

Table 1: The three types of the 2SG MASCULINE, FEMININE and COMMUNIS in SwMA

A look at Table 1 shows that in *Type B* the original FEMININE form of *Type A* has become the COMMUNIS form in the PFV. The fact that the IPFV COMMUNIS form of *Type C* is homophone with the 3SG.F and that the ‘new’ PFV COMMUNIS form of *Type B* has an *i*-suffix, may have fostered the retention of the *t-i* pattern in the IPFV forms yielding the above-mentioned asymmetry.³⁴

5.2.3 Imperative ‘come!’

As the equivalent of the verb ‘to come’, reflexes of OA *ǧā / yaǧī* are used without exception in all SwMA dialects (see map 323a in Behnstedt and Woidich 2014). However, with regard to the imperative ‘Come!’, four different forms are attested, namely: (1) The imperative *āzi ~ ži*, derived from the same verb; and the three suppletive imperatives (2) *tšāl ~ tšāla*, (3) *rwāḥ*, and (4) *wahāy*. In OA and most Arabic dialects (see *ibid.*, map 324a) no imperative forms are derived from the basic verb *yǧī*, the common lexeme being the suppletive imperative derived from the verb *tašālā* ‘to rise’. Thus, the forms *āzi ~ ži* must be seen as an innovation. As for the two other suppletive forms, *rwāḥ* is linked to the verb *rawwah* which in these dialects has both the meanings of ‘to go home’ and ‘to come back’ (see *ibid.*, map 322c). The origin of *wahāy* is most likely an interjection meaning ‘hey you!’ (Behnstedt and Woidich 2014: 94).

Reflexes of **tašālā* are found among the ‘Nomadic’ groups of Mauritania (Taine-Cheikh 1989: 1489) where they are used besides *wahāy* (Behnstedt and Woidich 2014: map 324a).³⁵ In Morocco, **tašālā* is the common imperative in the regions south of the Atlas Mountains (Heath 2002: 244) with the exception of Skura (Aguadé and Elyacoubi 1995: 51). The same form is also found in central Morocco, more precisely in the dialects of Zaer, Chaouia and Rḥāmna (Heath 2002: 244; Djavadova 2026; Issam Marjani, p.c.). The form *rwāḥ* is restricted to

³⁴ That the ‘danger of homophony’ may have played a role is also evident in the choice of the feminine form of the PFV (which cross-linguistically seen is a rare process) as this creates a contrast between 1SG and 2SG PFV. It can be assumed that the retention of the gender contrast is of particular importance for the speakers in the imperative forms, which more or less correspond to the 2nd person IPFV forms without the prefix.

³⁵ For the local dialect of Gābla, Cohen (1963: 110) provides the form *ži*.

the very east of the country, particularly Berkane.³⁶ But it is also found, next to *tʃāl*, in Tata in the south (Heath 2002: 244). The other dialects, among them all ‘Genetically Unrelated Sedentary’ dialects, exhibit *āʒi* ~ *ʒi*: Chefchaouen (Moscoso 2003: 75), Hyāyna (Zoubid 2011: 287), Casablanca (Aguadé 2003:305), and Marrakech (Sánchez 2014: 133).

As for diachrony, the suppletive imperative *taʃālā* reflects Stage 0. We start also from the assumption that reflexes of **taʃālā* were the sole imperative and thus Stage 1 of the ‘Nomadic’ dialects when they reached Morocco in the 13th century. Stage 2.a, i.e. retention of the suppletive imperative *tʃāl(a)* is typical for both the ‘Nomadic’ and the rural ‘Short-term Sedentarised’ dialects. Both groups, however, also exhibit Stage 2.b, namely the emergence of other suppletive imperatives which happened very likely through a process of internal innovation (semantic shift of *rawwāḥ* and grammaticalization of an interjection). The ‘Long-term Sedentarised’ and primarily urban dialects show Stage 2.c which means that they have adopted the originally innovative *āʒi* imperative under contact with the ‘Genetically Unrelated Sedentary’ dialects.

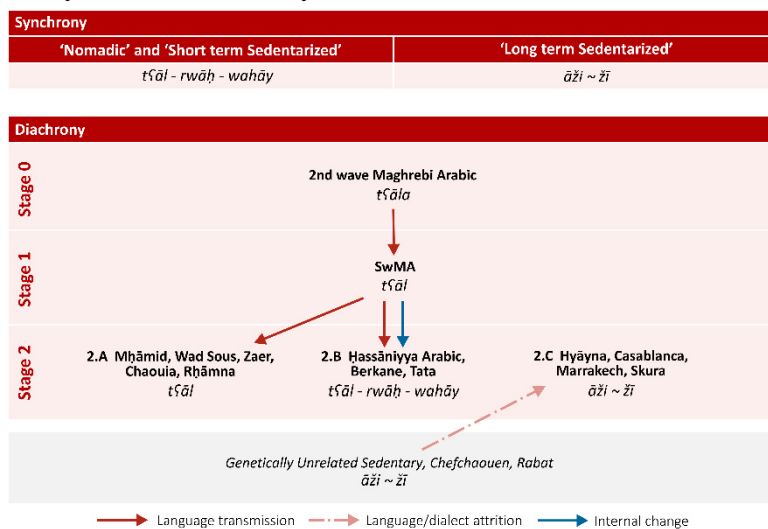
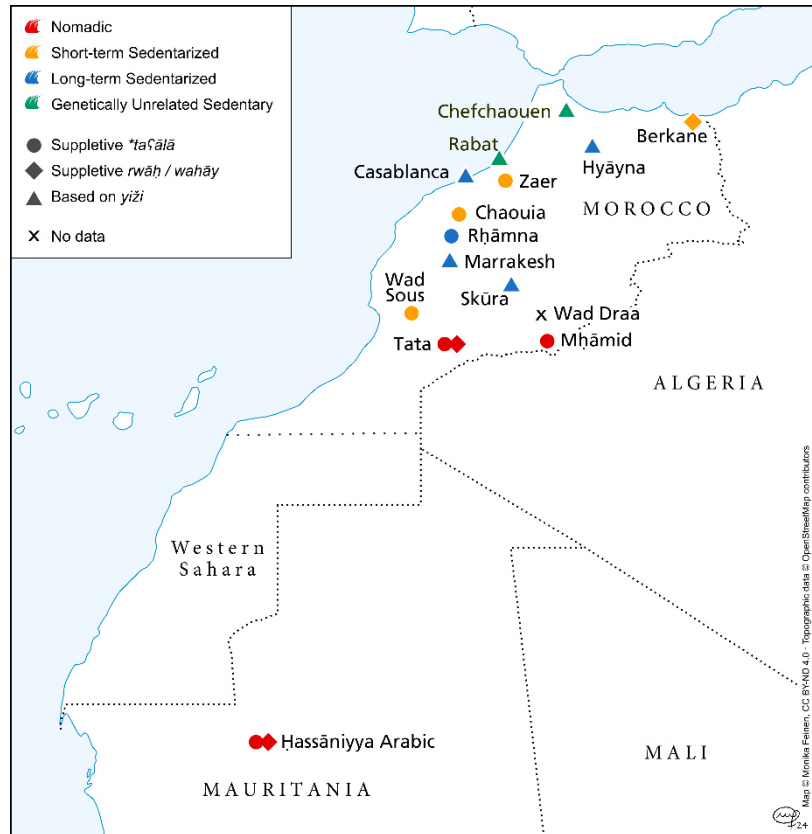


Fig. 9 – The synchrony and diachrony of the imperative ‘come!’ in SwMA

³⁶ The imperative *rwāḥ* is typical for some Algerian dialects.



Map 11 – The geographic and ecolinguistic distribution of ‘come!’ in SwMA

5.2.4 Summary for SwMA

The ecolinguistic distribution of the three features selected for this study proves challenging to interpret, as it yields eco-linguistically clear results for some, but not all dialects analysed here. The co-occurrence of the three ‘Nomadic’ features is limited to Mauritania (specifically the Ḥassāniyya varieties) and the southeastern Moroccan dialects of Mḥamid and Tata. This finding aligns well with the NSS framework, as these dialects are associated with communities that still maintain, or until recently maintained, a nomadic lifestyle. Berkane stands out by sharing two features (interdentals and gender distinction) with the ‘Nomadic’ dialects but diverges in the third feature. Although Berkane uses *rwāḥ* as the imperative for ‘Come!’, it does not align with the ‘Genetically Unrelated Sedentary’ or other ‘Sedentarised’ dialects, displaying instead an innovative suppletive form also found as a variant in Tata. Thus, the classification of

Berkane — and potentially other dialects in northeastern Morocco — remains somewhat open. Recent nomadic practices are plausible for these regions, though unproven. Furthermore, it should be noted that interdentalals are found across a relatively large area in northeastern Morocco (see map 6 in Behnstedt 2022), bordering Amazigh-speaking areas where interdentalals are also present (e.g., the Tarifit variety). Hence, the preservation of interdentalals may not strictly be an ecolinguistic phenomenon but rather a result of language contact (see also Moscoso García 2002).

All three ‘Sedentary’ features are found exclusively in the ‘Genetically Unrelated Sedentary’ dialect of Chefchaouen and the ‘Long-term Sedentarised’ but originally ‘Nomadic’ dialect of the Hyāyna, located nearby (see Zoubid 2011). Most other dialects share two features — either one ‘Nomadic’ and two ‘Sedentary’ or vice versa. If we consider *Type B* of Feature 2 as a hybrid form likely emerging through SLA among sedentary speakers and later becoming a regional rather than ecolinguistic feature, then Chaouia and Zaer represent model examples of ‘(Short-term) Sedentarised’ dialects. For these, it is plausible that extended linguistic contact with *Type B* dialects, alongside a less common semi-nomadic lifestyle, contributed to the fading of gender distinctions in the 2SG PERFECTIVE. Presently, both the interdentalals and semi-nomadic practices are in decline.

The other ‘Short-term Sedentarised’ dialect, Wad Sous, exhibits the imperative *tāl*, combines both *Type A* and *Type B* gender systems, and lacks interdentalals. This mixed profile likely reflects the region’s origins as primarily Amazigh-speaking, with Arabic functioning largely as a second language. The absence of interdentalals can be attributed to their non-existence in the contact variety, Tashelhit. Similarly, the two ‘Long-term Sedentarised’ dialects (Skūra and Wad Draa), which are isolated Arabic varieties in predominantly Amazigh-speaking regions show a similar trend, though with Tamazight as the principal Amazigh variety. The retention of *Type A* in these areas may be due to their geographic isolation, which limited their contact with ‘Sedentary’ speakers (*Types B* and *C*) until recent times. Urban ‘Long-term Sedentarised’ dialects, especially those in Marrakesh and Casablanca, fully align with the ‘Genetically Unrelated Sedentary’ dialects in the area (e.g. Rabat). They lack interdentalals, show gender distinction only in the imperfective, and do not use a suppletive imperative for the verb ‘to come.’

5.3 The NSS trichotomy in SyStAR Arabic

As for the Arabic spoken in the Syrian Steppe and adjacent regions, we test the applicability of the NSS framework based on the three following features: (1) The presence/absence of the conditioned affrication of the voiced velar *g* (etymologically derived from **q*), (2) the presence/absence of the conditioned affrication of the etymological voiceless velar **k*, and (3) the occurrence of the

low vowel insertion rule after gutturals (in Arabic dialectology usually known as *gahawa*-syndrome). As the first two features show some parallel developments, they are partially treated together.

5.3.1 Affrication of the velars *g* and *k*

Regarding the reflex *g* of etymological **q*, it is the main shibboleth of all dialects which are traditionally called Bedouin-type dialects (Procházka 2024). Affrication leading to *ǧ* [dʒ] or *ǧ* [dʒ] in the vicinity of front vowels though, is regarded to be a typical trait of the ‘Nomadic’ dialects of Northern and Eastern Arabia including the Syrian Desert (for details see Holes 1991). An example for this development is the word for ‘cauldron’, which is *qidr* in Classical Arabic, *gidir* in Negev Arabic, *ǧidir* in Šāwi Arabic and *ǧidir* in Šammari Arabic. The same ‘Nomadic’ dialects show an analogous affrication of *k*, resulting in *č* [tʃ] and *č* [tʃ]. Thus, the equivalents of CA *kabīr* ‘big’ are *kibīr* in Negev Arabic, *čibīr* in Šāwi Arabic and *čibīr* in Šammari Arabic.

In all ‘Nomadic’ varieties of the region, the affrication of this voiced/voiceless pair of velar consonants developed to a very high degree in parallel. This in the sense that the conditioned change of *g* to *ǧ/ǧ*, respectively *k* to *č/č*, follows more or less strictly the phonetic rule that *g* and *k* are affricated if in the vicinity of /i/, /e/ and /ε/.³⁷ Among the ‘Nomadic’ dialects investigated here, conditioned affrication is, e.g., found in Nāširiyya Region Arabic in Iraq (Ingham 2009: 101), Ṭayy and Šammari Arabic in Syria (Talay 2008: 441; Behnstedt 2000: 429), Harran-Urfa Arabic in Turkey (Procházka 2003: 78), ṢArab Bekaa Arabic in Lebanon (Younes 2017: 360), and ṢArāmša Arabic in Israel (Rosenhouse 1983: 41).

Among ‘Sedentarised’ and ‘Sedentary’ groups, however, these two features do not exhibit a parallel path of development. There are regional differences but generally speaking affrication of *g* is much less frequent in these types of dialects than affrication of *k*.

In the ‘Sedentarised’ dialects, the affricated variant *ǧ* occurs only in particular lexemes, i.e. the affrication has become purely lexicalized and thus can no longer be regarded a phonological process. In ṢArab al-Maslax Arabic (Karantina/Beirut Lebanon), the occurrence of *ǧ* (< *g* < **q*) is merely vestigial and moreover restricted to elderly speakers. As for Bani ṢAbbād Arabic in Jordan, Torzullo 2022: 6 states the same, but remarks that affrication was still common in the 1970s. In Sfīre Arabic, the voiced *g* has completely disappeared and was replaced by *q*. Young speakers have even adopted the typical urban Levantine pronun-

³⁷ Exceptions to this rule are not infrequent, particularly in the vicinity of /ε/; there are also numerous examples in which affrication is present or absent because of alignment within a paradigm: there are, for instance, dialects which exhibit the expected pair *dahḥag* / *ydaḥḥiǧ* ‘he looked / looks’, but there are also dialects which have *dahḥaǧ* / *ydaḥḥiǧ* and others which have *dahḥag* / *ydaḥḥig*.

ciation ʔ (Behnstedt 1994b: 419). Only the sedentarised dialect of Kwayriš in Iraq exhibits a larger number of affricated forms (Meißner 1903: 138).³⁸

All ‘Sedentary’ dialects coincide in the almost complete absence of the affricated variant of *g*. This is true for Basra Arabic (Mahdi 1985: 56-57), Muslim Baghdadi Arabic (Blanc 1964: 27),³⁹ Soukhne⁴⁰ and Ḥawrān Arabic⁴¹ as well as for Salt Arabic⁴². With the exception of Ḥawrān Arabic (Cantineau 1946: 125), the ‘Sedentary’ dialects exhibit numerous lexical items in which etymological **q* is reflected by *q* (in the case of Soukhne by *k*). The distribution of *g* and *q* (*k*) in these dialects is lexicalized (for the situation in Baghdad, see Abu-Haidar 1987) and thus largely unpredictable. The hallmark of all ‘Genetically Unrelated Sedentary’ dialects is a voiceless reflex of **q* which has been largely retained in the Mesopotamian *qəltu*-type dialects as, for instance, in Mosul (Jastrow 1979: 39). The same is true for many rural dialects of the Levant where **q* has usually shifted to ʔ in the urban dialects (e.g. in Aleppo) and their surroundings (Sabuni 1980: 31, Behnstedt 1997: map 9).

As for *k*, affrication is also widely found beyond the ‘Nomadic’ dialects. Above all, the Iraqi dialects are prone to keep even the conditioned affrication of *k > č*, regardless if they belong to the ‘Sedentarised’ (Kwayriš, Meißner 1903; rural southern Iraq, Hassan 2024b) or ‘Sedentary’ (Basra, Baghdad⁴³) dialects. In the Levant, the ‘Sedentary’ dialects have also largely preserved the affrication, but there the distribution of *k* and *č* is to a high degree lexicalized and no longer conditioned.⁴⁴ In the dialect of the oasis of Soukhne the affricated variant *č* has even become the sole reflex of **k*. All three Levantine ‘Sedentarised’ dialects, however, have in common that the affricated allophone of *k* is rapidly disappearing and only kept in some vestigial forms and in the speech of the oldest speakers.

³⁸ Recent studies on the dialects of that region indicate that the affricated variant is still common; see, for instance, the many examples in (Hassan 2024a).

³⁹ Muslim Baghdadi Arabic is regarded as ‘Sedentary’ in our terms since the original population spoke a genetically non-related *qəltu*-dialect and acquired the nomadic variety through SLA (see also the diachronic study by Palva 2009).

⁴⁰ In this dialect, **q* has generally shifted to *k* (*k*); *g* is only found in typical nomadic vocabulary (Behnstedt 1994a: 5-6).

⁴¹ See Cantineau 1946: 125: “Le *g* des parles ḥōrānais ne subit aucune affrication en *č*.”

⁴² See Herin 2010: 23: “La réalisation affriquée de /*g*/ n’est absolument pas attestée à Salt”.

⁴³ As with the distribution of *g* and *q*, Muslim Baghdadi Arabic exhibits also many lexemes which do not have affrication of **k* (see Abu Haidar 1987: 48-49).

⁴⁴ In both Salt and Ḥawrān Arabic, the affrication “relies on a root-based lexical distribution” (Al-Wer et al. 2015: 78). This means that the variation of /*k*/ and /*č*/ has been to a high degree lexicalized whereby the distribution is usually according to the whole root rather than single lexical items.

Affrication of g – Diachrony

The affrication of *g* in the vicinity of front vowels originated in Central Arabia sometime between the 11th and 14th centuries.⁴⁵ From there it spread through nomadic migrations to SyStAR Arabic where most speakers continued to have a nomadic or semi-nomadic lifestyle until the middle of the 20th century and longer. Particularly in the Levant, sedentarisation went hand in hand with intensive contacts with ‘Genetically Unrelated Sedentary’ speakers whose dialects do not exhibit variation in the reflexes of **q*. Apparently, this led to a successive reduction of the *ǧ*-affricate which reflects **q* — a process which may have been reinforced by the fact that the product of the affrication is phonetically identical with *ǧ* < **ǧ*. This merger might have caused confusion in conversations with the non-nomadic population. As for the Levant, the decline of affricated forms as attested, for example, in ṢArab al-Maslax and Bani ṢAbbād Arabic is a relatively recent phenomenon that started only two generations ago. The speakers in Sfire have mainly adopted the reflex *q* from the ‘Genetically Unrelated Sedentary’ dialects.⁴⁶ There is certainly more than one factor responsible for such a development, but the adoption of *q* might have been fostered by the fact that the ‘Nomadic’ dialects of that region have *q* as the reflex of **ǧ*, i.e. the sound *q* was not alien to the speech of the nomadic group which settled in the village. As for the South Iraqi countryside, sedentarisation happened earlier and on a larger scale than in the Levant. Contacts with nomadic groups coming from the Peninsula have always been strong. This, together with the absence of any ‘Genetically Unrelated Sedentary’ population can possibly explain the still frequent *ǧ*-forms in Kwayriš and other rural dialects of that region.⁴⁷ The ‘Sedentary’ dialects are characterized by an almost complete lack of affricated forms. It is striking that a lexicalized distribution of *g* and *q* is much more common, particularly in urban settings (Basra, Baghdad, Salt).⁴⁸ Only in the rural dialects of Ḥawrān we find *g* as the sole reflex of **q*.

⁴⁵ See (Holes 1991: 667) who states that dating the affrication with any certainty is very difficult. What can be taken for granted is that the affrication *g* > *ǧ* and *k* > *č* preceded *g* > *ǧ* and *k* > *č*. The latter emerged as another innovation in Central Arabia, probably not before the late 18th century.

⁴⁶ Younger speakers have shifted to the urban ?

⁴⁷ Data from contemporary Šrūgi dialects confirm that this has not changed during the last century (Hassan 2024a).

⁴⁸ It can be assumed that in a first phase typical ‘nomadic’/‘rural’ vocabulary exhibited *g*, whereas ‘urban/educated’ vocabulary had *q*. This has even led to lexical doublets as, for instance, in Muslim Baghdadi: *Ṣagrab* ‘scorpion’ vs. *Ṣaqrab* ‘clock-hand’; *warga* ‘leaf’ vs. *warqa* ‘sheet of paper’ (Abu-Haidar 1987: 46). However, in a later stage this differentiation has largely become blurred.

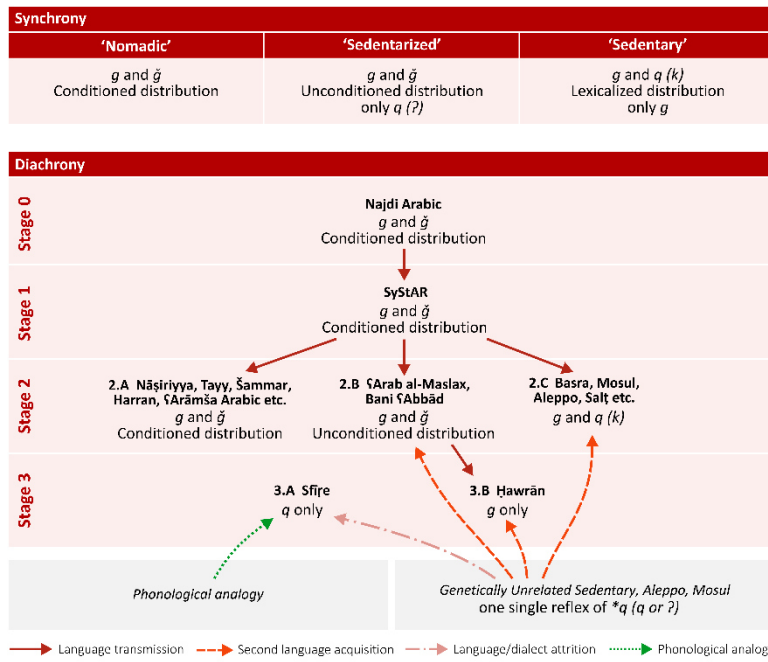
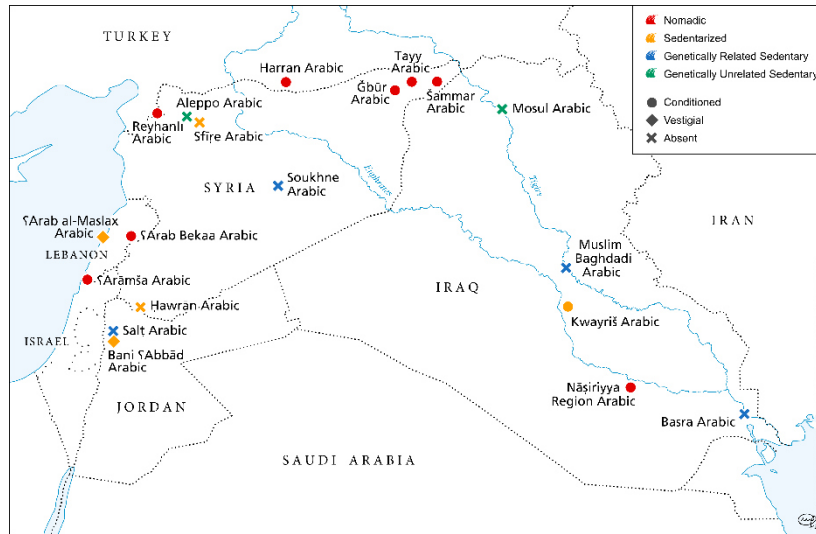


Fig. 10 – The synchrony and diachrony of the affrication of *g* (< **q*) in SyStAR Arabic



Map 12 – The geographic and ecolinguistic distribution of the affrication of *g* (< **q*) in SyStAR Arabic

Affrication of k – Diachrony

The affrication of *k* likely originated at the same time as the affrication of *g* in Central Arabia and spread from there to the north.⁴⁹ In both the Levant and Mesopotamia, affrication is absent from the large majority of the ‘Genetically Unrelated Sedentary’ dialects which exhibit *k* only.⁵⁰ In contrast to the affrication of *g*, this fact had, however, less influence on the treatment of the affricate *č* in contact situations. In Iraq, conditioned affrication still prevails in both ‘Sedentarised’ and ‘Sedentary’ dialects, and in the Levant lexicalized affrication is very common in the ‘Sedentary’ dialects. The retention of *č* in contrast to *ǧ* (< *g*) may be the result of a bundle of different factors. A major one is the former prestige of the ‘Nomads’ (i.e. the ‘Bedouins’) which certainly fostered accommodation towards their speech. Thus, in both Iraq and the Levant, the pair *g* / *č* enabled clear distinction from the pair *q* (ʔ) / *k* which is common in the ‘Genetically Unrelated Sedentary’ dialects.⁵¹ As for possible other factors it may be mentioned that the voiceless affricate *č* cannot be confused with any sound present in the phonological system of the ‘Genetically Unrelated Sedentary’ dialects (in contrast to the voiced *ǧ*). Particularly in Iraq, the phoneme *č* is well established in all dialects as it has entered their phonemic inventories because of the numerous Persian, Kurdish and Ottoman loanwords.

The diverging developments in the ‘Sedentary’ and ‘Sedentarised’ dialects can be explained by the relatively recent heavy contact of the latter with ‘Genetically Unrelated Sedentary’ dialects. Meanwhile, the sound *č* is no longer associated

⁴⁹ Our assumption that today’s distribution of affrication in the eastern nomadic dialects is the product of a parallel development of the shifts **g* > *ǧ* and **k* > *č* is not in line with other scholars. Holes (1991: 666-667) assumes that **k* > *č* happened earlier and not later than the 13th century. Owens claims, with good reasons, that the *k-č* split already existed in pre-Islamic times in some Arabic varieties (Owens 2023: 66). Since affrication is cross-linguistically such a frequent phenomenon we think that it could have emerged more than once in different times at different locations. Our assumption is, among other things, corroborated by the situation in the speech of the Āl Murra which completely lacks affrication but otherwise is clearly of the Najdi type (Ingham 1986: 278). Most probably, the Āl Murra left Najd to the south before the affrication emerged.

⁵⁰ Except for some central Palestinian dialects, which stand out in having a general shift from **q* > *k* and **k* > *č*.

⁵¹ As Heikki Palva convincingly showed for Baghdad (Palva 2009: 26), this tendency was often reinforced by the fact that the speech of the nomads was also associated with being Muslim, whereas the genetically unrelated sedentary dialects are also spoken by Christians and/or Jews. In Jordan, it seems that some originally regional features including the affricate *č* are on the way to become ‘sectarian’ as they are mainly preserved by Christian speakers (see (Al-Wer et al. 2015)

with prestigious 'Nomadic' dialects but mostly regarded to be a rustic feature associated with traditional speech and therefore avoided.⁵²

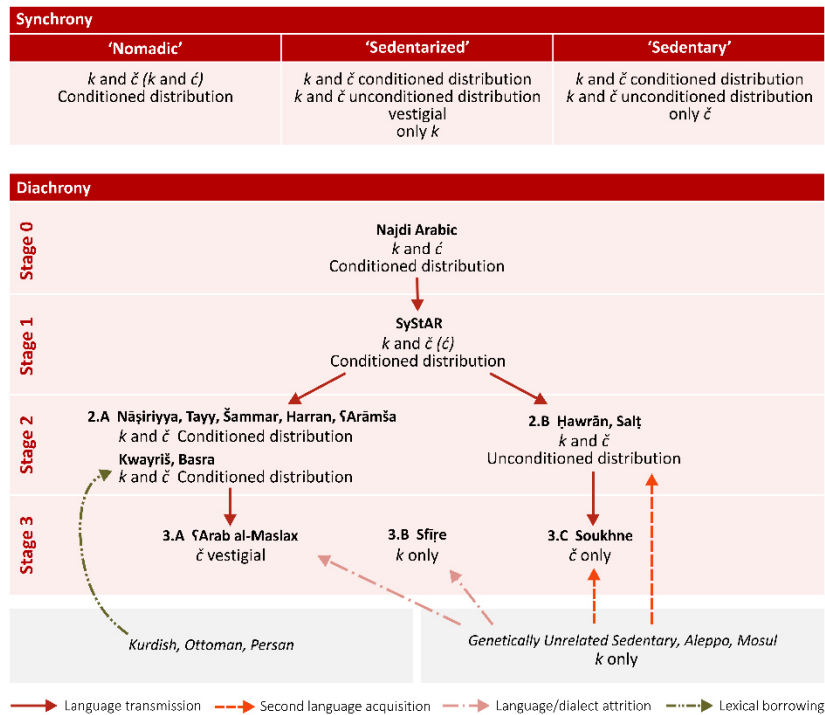
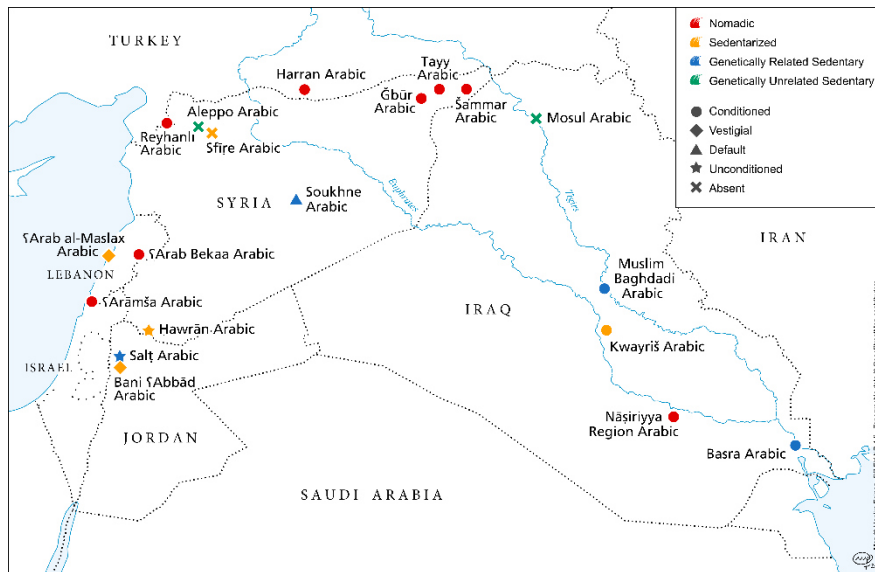


Fig. 11 – The synchrony and diachrony of the affrication of *k* in SyStAR Arabic

5.3.2 The low vowel insertion rule (gahawa syndrome)

The third feature considered for this study, is the so-called *gahawa*-syndrome. This term is used to describe a phonotactic phenomenon which leads to a change in the structure of a syllable whose nucleus is a short /a/ that is followed by a guttural consonant (G) as the coda of the same syllable. Thus, an originally closed syllable turns into two open syllables through insertion of an anaptyctic /a/: *CaG-Cv(C) > CaGa-Cv(C), e.g., *gahwa > gahawa ‘coffee’; *yaʕrif > yaʕarif ‘he knows’. In numerous dialects the original vowel /a/ has later been elided yielding ghawa and yʕarif. In Arabic dialectology, the low vowel insertion rule is traditionally regarded to be a typical phonological feature of many Bedouin-type varieties. This is particularly true for those spoken in Western Asia, but there is also evidence of this phenomenon in some North African dialects (see de Jong 2007) as well as in WSA.

⁵² See, for instance, (Al-Wer and Herin 2013: 58) for Salt.



Map 13 – The geographic and ecolinguistic distribution of the affrication of *k* in SyStAR Arabic

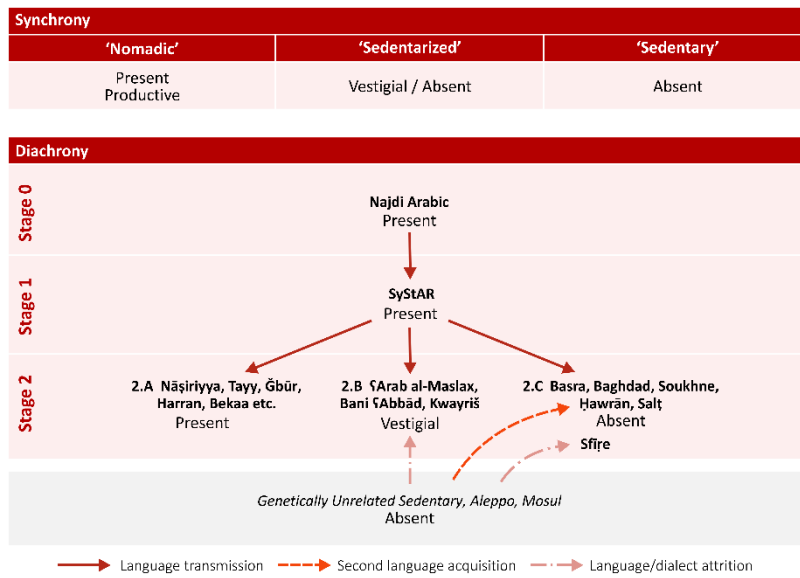
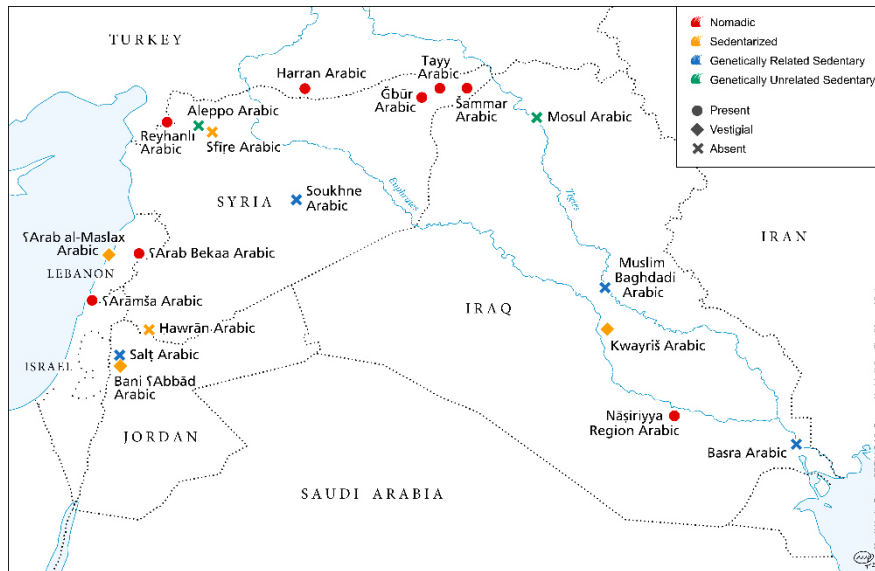


Fig. 12 – The synchrony and diachrony of the low vowel insertion rule in SyStAR Arabic

The ‘Nomadic’ dialects exhibit the low vowel insertion rule throughout, although there are slight differences regarding both the consistency of its application and the morphological patterns which are subject to the rule (for details see Procházka, forthcoming). As for the ‘Sedentarised’ dialects, only some vestigial forms are found in the Levant (ʕArab al-Maslax, Bani ʕAbbād), whereas there are more traces of it in rural Iraqi varieties (e.g. Kwayriš and other parts of southern Iraq according to Hassan 2024b: 170). However, the rule is by no longer productive.⁵³ The ‘Sedentary’ dialects do not show any *gahawa*-forms at all.



Map 14 – The geographic and ecolinguistic distribution of the low vowel insertion rule in SyStAR Arabic

5.3.3 Summary for SyStAR Arabic

The ecolinguistic distribution of the three features discussed above suggests that ‘Nomadic’ traits are preserved in areas where pastoralism is still practiced or was at least prevalent until relatively recently. In such cases, geographic isolation, continuity of homogeneous social structures (particularly tribal affiliation), and limited interaction with speakers of prestige dialects appear to be key factors supporting the retention of ‘Nomadic’ features. The most significant decline of these features occurs among ‘Sedentarised’ communities. Bilingualism with ‘Genetically Unrelated Sedentary’ dialects, often regarded as more prestigious,

⁵³ The same tendency has been described for Kuwait Arabic (Holes 2007b: 612) and Khuzestani Arabic (Ingham 1973:543-544; Leitner 2020: 72).

leads to a swift reduction of features seen as distinctly ‘Nomadic’, disrupting the transmission of the ‘Nomadic’ dialect. Consequently, formerly ‘Nomadic’ features are only preserved in a few residual lexical items, typically related to traditional Bedouin culture and usually heard only among older speakers. Conversely, ‘Sedentary’ dialects of SyStAR Arabic are commonly found in contexts where speakers of a ‘Genetically Unrelated Sedentary’ dialect have adopted a ‘Nomadic’ dialect as their target language. The outcomes of this SLA vary across locations, with notable differences concerning the three investigated features. Phonologically complex features, however, show two clear tendencies: they are either simplified or entirely dropped. None of the ‘Sedentary’ dialects exhibit the *gahawa* syndrome (which involves complex resyllabification patterns), and the conditioned affrication has largely been lost ($g > \check{g}$) or has become lexicalized ($k > \check{c}$). Some dialects exhibit an even greater tendency toward simplifying the phonetic system by adopting only one of several phonetic variants (Ḥawrān, for example, only uses g , Soukhne only \check{c}). The different developmental paths for the affricates \check{g} and \check{c} may reflect an adaptation process: the adoption of \check{c} facilitated accommodation to the then more prestigious ‘Nomadic’ variety. In contrast, with \check{g} , adopting the ‘Nomadic’ g alone was sufficient to differentiate it from the voiceless q , the primary reflex in ‘Genetically Unrelated Sedentary’ varieties. Additionally, the existence of a homophone \check{g} (as a reflex of $*\check{g}$) may have further hindered the adoption of an affricated variant in these contact settings.

6 Conclusions

This study proposes and tests the NSS trichotomy as a new ecolinguistic framework for analysing Arabic dialects. The NSS trichotomy offers a more nuanced alternative to the traditional “Bedouin-Sedentary” linguistic dichotomy by recognizing the complex relationship between ecological factors and language variation and change. Firstly, the terms ‘Nomadic’, ‘Sedentarised’, and ‘Sedentary’ are not intended as static classifications; rather, they serve as comparative ecolinguistic indicators that reflect the interactional nature of various linguistic systems within local ecologies, where inheritance and innovation are shaped by both internal change and language contact. Secondly, the framework proposes a fine-grained methodology enabling synchronic comparison based on exclusive ecolinguistic features and diachronic analysis through ‘developmental stages’ that track language evolution independently of synchronic overlap (cf. § 3). By avoiding assumptions of common ancestry based solely on shared features and focusing on the mechanisms that drive language change, the NSS trichotomy enables a more context-sensitive dialect classification.

Applying the NSS trichotomy across three Arabic dialect areas reveals distinct ecolinguistic settings, each illustrating unique dynamics of language variation aligned with the ecological characteristics of the ‘Nomadic’, ‘Sedentarised’, and

‘Sedentary’ communities. In Western Sudanic Arabic (cf. § 5.1), analysis reveals a clear division among ‘Nomadic’, ‘Sedentary’, and ‘Sedentarised’ varieties. This division is shaped by the presence of mobile pastoralist communities and the relatively recent Arabicization of the region, reflected in the absence of ‘Genetically Unrelated Sedentary’ dialects. Diachronically, Baggāra dialects in Chad and Sudan retain original ‘Nomadic’ features and exhibit only minimal phonological change through areal diffusion. In contrast, ‘Sedentary’ dialects in the region undergo significant shifts through SLA, losing marked features such as pharyngeal (cf. § 5.1.1) and implosive consonants (cf. § 5.1.2) and re-morphologizing the suffixed conjugation (cf. § 5.1.3). ‘Sedentarised’ dialects, like Maiduguri, represent an intermediate case, retaining some ‘Nomadic’ morphological elements but experiencing phonological attrition due to bilingualism with Kanuri and Hausa. These mechanisms underscore the roles of inheritance, SLA-driven shifts, and language attrition, illustrating how diverse ecolinguistic contexts shape language evolution in WSA.

Turning to Southwestern Maghrebi Arabic (cf. § 5.2), the ecolinguistic distribution of features presents interpretive challenges. ‘Nomadic’ features are synchronically limited to the Mauritanian Ḥassāniyya and southeastern Moroccan dialects, aligning with communities maintaining a nomadic lifestyle. The region of Berkane shares two ‘Nomadic’ features but diverges in a third, suggesting an intermediate classification possibly linked to recent nomadic practices. Interdentals (cf. § 5.2.1) appear widely in northeastern Morocco, likely due to contact with Amazigh (Tarifit variety). ‘Sedentary’ features occur only in the ‘Genetically Unrelated Sedentary’ dialect of Chefchaouen and in the ‘Long-term Sedentarised’ Hyāyna dialect. Other dialects mix ‘Nomadic’ and ‘Sedentary’ features in various ways, such as Chaouia and Zaer, which show *Type B* conjugation (a possible SLA-induced hybrid form, cf. § 5.2.2), exemplifying ‘Short-term Sedentarised’ dialects where gender distinctions have faded due to extended contact with ‘Sedentary’ communities. Likewise, ‘Long-term Sedentarised’ dialects in Skūra and Wad Draa, isolated in Amazigh-speaking areas, retain *Type A* conjugation, likely due to limited contact with ‘Sedentary’ dialects. The dialects of the large cities Marrakesh and Casablanca align with ‘Genetically Unrelated Sedentary’ varieties in lacking interdentals, showing imperfective gender distinctions, and omitting suppletive imperatives of the verb ‘to come’ (cf. § 5.2.3). This distribution highlights the interplay of migration, geographical isolation, and language contact with Berber in SwMA.

In the Arabic varieties spoken in the Syrian Steppe and adjacent regions (cf. § 5.3), ‘Nomadic’ traits are retained only in areas with ongoing or recent pastoralist practices. Retention is supported by geographic isolation, stable tribal structures, and limited exposure to prestigious dialects. In contrast, ‘Sedentarised’ communities, often bilingual with more prestigious ‘Genetically Unrelated Sedentary’ dialects, show a marked decline of ‘Nomadic’ features. ‘Sedentary’

dialects in the area develop when speakers of ‘Genetically Unrelated Sedentary’ dialects adopt ‘Nomadic’ traits through SLA, leading to varied outcomes. Phonologically complex features tend to simplify or disappear, with patterns such as the absence of *gahawa* syndrome (cf. § 5.3.2) and reduction in conditioned affrication (cf. § 5.3.1).

Ultimately, we would like to stress that, while the NSS framework may initially seem theoretically ‘heterodox’, it returns to linguistic fundamentals by emphasizing ecology and dynamic variation over static typologies, echoing the traditional Arabic grammarians’ approach of using *badw* synchronically without strict diachronic implications (cf. § 1). In this regard, the NSS trichotomy brings us closer to an ecolinguistic understanding of language variation, offering a promising basis for comparing dialects within dynamic, evolving linguistic ecologies.

Although this study primarily focuses on exclusive features within ‘Sedentary’ and ‘Sedentarised’ dialects with clear links to a ‘Nomadic’ origin, additional data — including overlapping features across grammatical categories — could further test the NSS framework’s generalizability. For this reason, the NSS trichotomy’s focus on mobile pastoralism may extend to other language families beyond Arabic, including Turkic languages. In particular, within the Turkic language continuum, distinctions between ‘Sedentary’ and ‘Nomadic’ Yörük communities in Turkey’s Taurus Mountains remain unexplored but could benefit from this framework. Similarly, dialect continua in African languages, such as Amazigh (e.g. Tuareg) and Fulani could be revisited to assess if pastoralism influences linguistic variation in ways comparable to Arabic-speaking pastoralists. Above all, we hope that this study will encourage further theoretical discussion, challenging the prevailing use of ‘Bedouin’ and ‘Sedentary’ as rigid linguistic labels.

7 References

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List of abbreviations

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| SyStAR | – The Syrian Steppe and Adjacent Regions |
| NSS | – 'Nomadic', 'Sedentary', and 'Sedentarised' |
| SLA | – Second Language Acquisition |
| SwMA | – Southwestern Maghrebi Arabic |
| WSA | – Western Sudanic Arabic |

