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Maghribi Arabic Form IX/XI as a result of Berber influence

Lameen Souag

Arabic dialects west of Libya stand out within Arabic and within Semitic more generally for using a fairly productive verb pattern *Fʕāl* for change-of-state quality verbs, starting before the 12th century. This has long been identified with Classical Arabic's Form IX (*iFʕaLLa*) or XI (*iFʕāLLa*), but does not regularly correspond to either, and shows a rather different lexical distribution. This article proposes a new explanation for its unexpected form, greater productivity, and uniquely Western distribution, based on contact with Berber. Across most Berber varieties, a verb pattern whose perfective stem may be reconstructed as **əFCāl* is regularly used for change-of-state verbs. The originally accidental similarity in form and function would have allowed first-language Berber speakers learning Arabic in the Umayyad period to identify this with Arabic Form IX/XI, and therefore to extend the use of **əFCāl* to their Arabic.

1. Introduction

All Arabic dialects west of Libya productively make use of a verb form *Fʕāl* to generate change-of-state verbs. These typically correspond to trilateral adjectives, which may be of any of a wide variety of shapes and meanings: thus, in Dellys (Algeria), we find *smān* 'he got fat' : *smīn* 'fat', *qrās* 'it went sour' : *qārāṣ* 'sour', *dbāl* 'it withered' : *məḍbāl* 'withered', and *ṣfār* 'he turned yellow' : *ṣfar* 'yellow'. The dialects which use this *Fʕāl* form consistently lack regular reflexes of Classical Arabic's Form IX (expected **FʕaLL*) and Form XI (expected **FʕāLL*).

This situation contrasts sharply both with dialects further east and with Classical Arabic. No dialect east of Libya is known to have a productive *Fʕāl* verb form. From Cairo to Abu Dhabi, Form IX (*iFʕaLL*) is maintained for some change-of-state verbs; rather than being evenly distributed across multiple shapes and meanings, the corresponding adjectives almost always belong to the *ʔaFʕaL* class reserved principally for colours and handicaps. Classical Arabic normally uses Form IX (*iFʕaLLa*) or its rarer variant Form XI (*iFʕāLLa*) in such contexts; no regular reflex of the latter (**iFʕāLL*) is attested in any modern dialect. Eastern dialects which have lost Form IX replace it, not with *Fʕāl*, but rather with more productive existing forms already extensively used for purposes other than change of state: Form II (*FaʕʕaL*) in Yemen or Sudan, Form VII (*inFaʕʕaL*) in Wadi Ramm and Benghazi. (A few Gulf varieties attest a newer form *FōʕaL*.)

Since the early 19th century, Maghribi Arabic *FʿāL* has normally been analysed either as a reflex of Form IX or of Form XI, as described in more detail below. Neither proposal accounts for its ungeminated form, nor for its much greater productivity; nor does either proposal explain why this form should show such a tightly areal distribution. Berber verbal morphology provides the missing link. Across Berber, a dedicated verbal form – Prasse’s Conjugation IV – is used productively for quality and change-of-state verbs; comparative reconstruction reveals that, in most varieties, it reflects a merger of a verbal conjugation dedicated exclusively to change-of-state verbs with a conjugated adjective used to express qualities. Its aorist stem is always of the form (V)FCVL – across a large area, *VFCaL* – and its perfective stem can be reconstructed as **əFCāL*. The Berber varieties surviving in southern Tunisia provide a good proxy for the extinct varieties of central Tunisia which would have formed the earliest substrate of proto-Maghrebi Arabic; in these varieties, as in the much less heavily Arabic-influenced Tuareg, **VFCāL* has been extended to cover both the aorist and the perfective.

These facts suggest that Maghrebi *FʿāL* owes its existence to early Arabic-Berber contact. The originally coincidental formal and semantic similarity between Arabic Form IX/XI and Berber Conjugation IV encouraged L2 speakers of Arabic with Berber as their L1 to misinterpret the former as the latter and therefore to use Berber’s Conjugation IV in their Arabic. The crucial role of Berber speakers in this process explains why no comparable development took place anywhere else in the vast expanse across which Arabic is spoken.

2. Change-of-state verbs across Arabic

In order to evaluate the plausibility of a link between Maghribi *FʿāL* and Form IX/XI, it is necessary first to examine the strategies used in Arabic across time and space for forming change-of-state verbs from quality roots, both for colours and more generally. A literature review indicates that *FʿāL* has never been used east of Benghazi, while from Malta westwards it is overwhelmingly dominant and has been productive since at least the 12th century.

2.1 From Proto-Semitic to Classical Arabic

In Classical Arabic, the dominant strategy for forming change-of-state verbs uses Form I, typically with a high vowel: e.g. pf. *kabur-a*, impf. *ya-kbur-u* ‘be/become big’, with the corresponding adjective *kabīr* ‘big’. Such verbs are in general ambiguous between stative and dynamic interpretations, rather than being dedicated exclusively to change of state. This strategy is found throughout most of Semitic from an early period (Aro 1964: 198), and does not concern us here.

For a small subset of qualities, however – primarily, those with adjectives of the form *ʔaFʿaL*, typically referring to colours or handicaps – Classical Arabic uses a rather different pattern characterised by doubling of the final consonant, usually with a short vowel (Form IX), occasionally also with a long vowel (Form XI): e.g. pf. *ibyaḍḍa*, impf. *ya-byaḍḍ-u* ‘be/become white’ (or *ibyāḍḍa*, *ya-byāḍḍ-u*), corresponding to *ʔabyaḍ* ‘white’. While a stative interpretation is possible in some contexts, a change-of-state reading is far more accessible; al-Fārābī (2003: 73), for instance (d. ca. 960), simply glosses most such verbs as *šāra* [*ʔaFʿaL*] ‘it became [corresponding adjective]’. There is no clearcut functional or lexical distinction between Forms IX and XI, though the latter is sometimes reported to indicate a more intense or less stable quality. In Classical Arabic,

according to Eisenstein (1991), Form IX includes over one hundred verbs, nearly half of which relate to colour; among the rest, the largest semantically coherent subcategories describe dispersion (e.g. *irfaḏḏa* ‘become dispersed’), handicaps/infirmities (e.g. *iḥḏabba* ‘be/become humpbacked’, cp. *ḏaḥḏab* ‘humpbacked’), and undesirable qualities more generally (e.g. *iḥwazza* ‘be/become poor, needy’, cp. [modern?] *ḏaḥwaz* ‘poor, needy’), with a significant minority falling outside such subcategories (e.g. *imlassa* ‘be/become smooth’, cp. *ḏamlas* ‘smooth’). While most such verbs correspond to *ḏaFḥaL* adjectives, the dispersion ones often do not correspond to any particular adjective, and similar cases are sometimes found even in other categories, e.g. *ilwanna* ‘be/become coloured’, with no corresponding adjective **ḏalwan* (rather *mulawwan*).

Some sort of verbal stem with reduplication of the final radical must be reconstructed for Proto-Semitic (Huehnergard 2017: 23); this stem was associated with qualities and states more generally. Hebrew shows a few examples of a rare and unproductive *PaḥLaL* binyan, e.g. *raḥānan* ‘be verdant’ (Joüon & Muraoka 2000: 169), although the corresponding adjectives, where attested, also seem to show reduplication (*raḥānān* ‘verdant’). Modern South Arabian languages use a similar form notably productive for colours (Belova 2007: 307), e.g. Mehri *əwbīnūn* ‘become white’ (< *ləbīnūn) vs. *əwbōn* ‘white’), *ḥəwīrūr* ‘turn black’ vs. *ḥōwər* ‘black’ (Rubin 2018); in such forms the reduplication is unambiguously a property of the verb template. In Akkadian, the R-stem – already unproductive by the Old Babylonian period – seems to express intensified qualities through reduplication of the third radical consonant, e.g. *šaḥurur-um* ‘to become paralysed (with fear)’ (Huehnergard 2011: 463–464). However, the tight morphological relationship found in Classical Arabic between Form IX/XI and *ḏaFḥaL* adjectives appears to be unparalleled elsewhere, and must represent an Arabic innovation, as indeed is the very existence of a dedicated class of *ḏaFḥaL* adjectives referring to colours and handicaps.

2.2 In non-Maghribi Arabic varieties

The core of the description of Classical Arabic in 2.1 carries over straightforwardly to most dialects across a vast region stretching from Lower Egypt through the Levant and Mesopotamia and south into central and eastern Arabia. The use of Form I for change-of-state seems to survive everywhere. Form IX – always with a short *a* and with gemination of the final radical – continues to exist for *’aFḥaL* adjectives in Iraq and Iran¹; across the Levant², including Anatolia³; in Cyprus⁴; in Lower Egypt⁵, the northern Western Desert⁶, and Sinai⁷; and in much of central and eastern Arabia⁸. In

1 E.g. Baghdad (Blanc 1964: 115; Erwin 1963: 229), Hit (Khan 1997: 89), Shatt al-Arab (Ingham 1982: 43), Khuzistan (Ingham 1974: 157).

2 As attested for instance in Jerusalem (Bauer 1926: 49), Haifa (Geva-Kleinberger 2004: 116), Yatta (El-Haleese 1971: 510), Wadi Musa (Al Huneety 2015: 123), Damascus (Cowell 1964: 250), Mharde (Yoseph 2012: 120), Kfar Abida (Feghali 1919: 184), Wadi Khalid (Herin & Younes 2013: 49), Der iz-Zor (Jastrow 1978: 194), Khawetna (Talay 1999: 140).

3 Described for Mardin (Grigoire 2009: 145), Azəx (Wittrich 2001: 57), Daragözü (Jastrow 1978: 194), Çukurova (Procházka 2002: 104), Siirt (Lahdo 2009: 149).

4 Cf. Borg (2004: 86).

5 As consistently described for Cairo (Mitchell 1956: 69; Abdel-Massih 2009: 285); also in Tahway (Abu Farag 1960: 151).

6 In both Bahariya (Drop & Woidich 2007: 70) and the Maryūt coast (Maṭar 1981: 116).

7 As described for Central and Southern Sinai (Jong 2011: 99, 181, 270–271).

8 Including Rwala and Hofuf (Procházka 1988: 44; O’Hara 2019: 281), Najd (Al-Sweel 1987: 74), Ha’il (AlAmmar 2017: 54), Abu Dhabi or the UAE more broadly (Al Kaabi 2015: 32–36; Qafisheh 1977: 58), and, in northern Oman, Al-Awabi (Morano 2019: 122) and Khabura (Brockett 1985: 85).

some Levantine varieties where this form survives, its productivity is described as limited even for *'aFʕaL* adjectives⁹.

Further south, in contrast, Form IX is often nonexistent, as in Upper Egypt¹⁰, Sudan¹¹, Chad¹², and Nigeria¹³; all along western Arabia from Wadi Ramm¹⁴ through the Hijaz¹⁵ and Asir¹⁶ to Yemen¹⁷; and across southern Arabia as far east as much of Oman¹⁸. Across most of this area, from Nigeria to Oman, it is typically replaced by Form II¹⁹, effectively shifting its gemination to the second rather than third radical. In between the Form IX and Form II areas, other strategies are more sporadically attested. In some sedentary Gulf dialects²⁰, Form IX is replaced by *FōʕaL* (at least for colours), while in southwestern Jordan it is typically replaced with Form VII, *anFaʕaL*. Periphrastic forms are also found. See Figure 1 for the schematic distribution of these strategies.



Figure 1: ‘Turn red’ across Arabic dialects

The general trend is for Form IX to become less productive, giving way to other verb forms or to periphrasis. However, a couple of exceptions may be observed. Sporadic instances of extension to

9 As in Soukhne (Behnstedt 1994: 88), Nabk (Gralla 2006: 93–94), or Hebron (Seeger 1996: 72)

10 E.g. Qift (Nishio 1995).

11 E.g. Khartoum (Dickins 2008), Darfur (Roset 2018), (implicitly) Shukriyya (Reichmuth 1983: 251–252).

12 Cf. Jullien de Pommerol (1999), Zeltner and Tourneux (1986), Roth (1979: 22, 29).

13 Cf. Owens (1993: 129).

14 According to Almashaqba (2015: 143).

15 Including Makkah (Ingham 1971: 293) and the Harb (Il-Hazmy 1975: 105).

16 E.g. al-Baha (Nadwi 1968: 75), Abha (Al-Azraqi 2005: 10), and (implicitly) Rufaidah and Bal-Qarn (Prochazka 1988: 46).

17 E.g. Sanaa (Watson 1993: 438) – although, for the same city, Naïm (2009: 64) only says that Form IX “has a tendency to yield its place to Form II”, possibly reflecting emergent variation due to increased contact with more northerly dialects.

18 Including Dhofar (Davey 2013), Muscat (Glover 1991: 114).

19 As explicitly noted for Dakhla and Kharga (Drop & Woidich 2007: 70), Makkah (Bakalla 1979: 264–265), Jabal Fayfa (Alfaifi & Behnstedt 2010: 62), Yemen (Behnstedt 2008: 132), B`ērī (Woidich 2008), Khartoum (Dickins 2008: 267), and Jabal Akhdar (Abdunnabi 2000: 110). In Ha`il, it is described as alternating synchronically with Form II (AlAmmar 2017: 54).

20 For Hadari (Kuwait), see Al-Bahri (2014: 42); for Bahrani, cf. Holes (2000: 129).

non-’*aFʕaL* adjectives are reported in Cairo (especially *iḥlaww* ‘become sweet’) and Mardin, e.g. *kwass* ‘become beautiful’ (Jastrow 1978: 193). In an Emirati variety, Form IX has apparently been extended to changes in physical appearance more generally, yielding forms like *dʕaff* ‘become thin/weak’ (*dʕif* ‘thin/weak’) or *wsaʕʕ* ‘become loose’ (*wsīʕ* ‘loose’) alongside the more usual colour and handicap terms (Al Kaabi & Ntelitheos 2019). In Bukhara Arabic, Form IX seems to have been extended beyond quality verbs in some kind of inadequately described mediopassive function: thus *fat samaka fi_tūr iḡlābbet* ‘a fish was caught in the net’ (Zaborski 2008: 427; Vinnikov 1969: 243).

Two generalisations appear rather solid across all these varieties. One is exceptionless: Form XI, rare enough in Classical Arabic already, has left no reflexes anywhere; the *a* is always short rather than long, and the final radical is always geminated. The other is statistical: Form IX often loses productivity, sometimes disappearing entirely, but only very rarely gains it.

2.3 In Maghribi Arabic varieties

Across most of Western Arabic, we find a verb form so far unattested anywhere further east or south: *Fʕāl*, impf. *yv-Fʕāl*. This strategy again coexists with the older use of Form I; however, the area’s dialects show no traces of *FʕaLL*, with the debatable and long-extinct exception of Andalus. (Many Moroccan and Algerian dialects have arguably lost distinctive vowel length as a result of the merger of historically short vowels to /ə/, leaving historically long vowels as phonologically /a/, /i/, /u/; such vowels will be transcribed here as *ā*, *ī*, *ū* to facilitate cross-dialectal comparison.)

This form’s history goes back a long way. In *Tatqīf al-lisān wa-talqīh al-janān*, the 12th century Sicilian author Ibn al-Makkī (later resident in Tunis) provides a particularly explicit early attestation, correcting popular *املاس, احمار, اصفار, اظلام, ابكام, ibkām (ar-rajul)* ‘(the man) became deaf’, *اڨلام (al-layl)* ‘(the night) became dark’, *ايشفار (wajhu-h wa-)ḥmār* ‘(his face) became yellow (and) became red’, *املاس (al-šayʕ)* ‘(the thing) became smooth’ to the Classical forms *bakima*, *’aḏlama*, *išfara/išfāra*, *iḥmarra*, *imlāssa/immalasa* respectively (Molan 1978: 215; Ibn al-Makkī al-Šiqillī 1990: 119, 180). In the same century, Ibn Quzmān and the Codex Arabicus Monacensis Aumer 238 attest Andalusī forms such as <našfār> ‘I grow pale’, <aḏlāmat> ‘she became dark’ (Institute of Islamic Studies of the University of Zaragoza 2013: 85; Corriente 1977: 105). Traces of the Classical Form IX are, however, observed in the early 13th c. (?) Andalusī *Vocabulista in arabico*, which has <ašfarr> ‘to grow pale’, v.n. <išfirār> – perhaps a classicism?

Today, regular reflexes of a productive *Fʕāl* verb form are found for changes of quality in every adequately described variety spoken in Mali²¹, Mauritania²², Morocco²³, Algeria²⁴, Tunisia²⁵, and Malta²⁶. Within Libya, this form is much less widely attested, with striking diatopic and religious variation in the morphology of change-of-state verbs. Among Jewish speakers, change-of-state

21 Cf. Heath (2004: 94).

22 As best described for the Gebli (Cohen 1963: 127).

23 E.g. for the Branes (Colin 1918: 100); Anjra (Vicente 2000: 96); Ghomara (Naciri Azzouz 2021: 236–239); Sous (Destaing 1937: 206); near Fez (Caubet 1993: 51–53); Essaouira (Francisco 2019: 131); and indeed across the whole country (Heath 2002: 339).

24 E.g. South Oranais (Mercier 1907: 290), Saida (Marçais 1908: 105), Ain Madhi (Kampffmeyer 1905: 242), Arba` (Dhina 1938: 330), Metlili (Grand’Henry 1976: 57), Touggourt (Moscoso García 2015: 181, 259), Jijel (Marçais 1952: 200), Tlemcen (Marçais 1902: 84–85), Algiers (Brown 1955: 79; Cohen 1912: 236), Dellys (Souag 2005: 55).

25 E.g. Tunis (Stumme 1896: 30–31; Cohen 1975: 121–122; Singer 1984: 394–395), Susa (Talmoudi 1980: 106), Douz (Ritt-Benmimoun 2014: 383–387), Jewish Gabes (Gebbski 2022: 107).

Fʕāl is highly productive in Tripoli²⁷ and is used as far south as Yefren and as far east as Benghazi²⁸; among Muslim speakers, on the other hand, it is attested only on the Tripolitanian coast, and with reasonable productivity only in Misrata²⁹. In Tripoli, it has been recorded recently for only three verbs, *ṭwāl* ‘grow long’, *šyān* ‘become ugly’, *ḍyāg* ‘become narrow’ (Pereira 2010: 127), and was described a century earlier as entirely absent, apart from the isolated case of *ḥsāb* ‘consider’ (Stumme 1898: 245). The latter is also the only *Fʕāl* verb in current use in Benghazi (Benkato 2014: 78 and p.c.).

Otherwise, Libyan varieties prefer other strategies. For colours, Tripoli shows Form X, e.g. *staxḍar* ‘he turned green’³⁰. Further south in the Nefusa Mountains and Fezzan³¹, colour change-of-state verbs use Form II³² or Form I (degeminated Form IX?)³³. Further east, change-of-state verbs use Form VII³⁴ in central Libya and in Benghazi, alongside geminate-final Form IX in the latter³⁵. In the Jabal Akhdar, Form IX is reported to have been replaced by Form II³⁶. While the southern Libyan attestations of Form II fit into a broader areal pattern within Arabic on both sides of the Red Sea, and as such are likely old, and the extension of Form VII in Benghazi may at least be compared with Wadi Ramm in Jordan, that of Form VIII in Tripolitania appears to be a sharply localised innovation; as such, it might well have replaced earlier *Fʕāl* in a context where the latter was sociolinguistically stigmatised.

2.4 The form and function of *Fʕāl*

The only studies dedicated specifically to the lexical distribution and functions of Maghribi *Fʕāl* found are Borg (2005) for Maltese and Brunot (1950) for Morocco; among reference grammars, Singer (1984: 392–397) for Tunis also stands out. The core function of this form is to indicate changes of state increasing the quality expressed by the root. For quality adjectives, there are no identifiable semantic constraints on the formation of change-of-state *Fʕāl* verbs; they exist not just for colours and infirmities but also physical and moral qualities (Borg 2005: 95). In fact, all seven of the categories in Dixon’s (1982: 16) typology of property concepts are represented: dimension (Dellys *qṣār* ‘get shorter’ : *qṣīr* ‘short’); physical (*qrāṣ* ‘become sour’ : *qārāṣ* ‘sour’); colour (*kḥāl* ‘turn black’ : *kḥal* ‘black’); human propensity (*qbāḥ* ‘become bad’ : *qbīḥ* ‘bad’); age (*sgār* ‘get

26 Already recognised as a formally distinct verb class by Vassalli (1791: 178); for more recent descriptions, cf. e.g. Sutcliffe (1936: 98–99), Vanhove (1993: 29), Borg and Azzopardi-Alexander (1997: 289).

27 Cf. Yoda (2005: 183).

28 Jewish Yefren has examples like *ṭwāl* ‘he became tall’, *smānāt* ‘she got fat’, *ḥmārāt* ‘she turned red’ (L. D’Anna, p.c.; cf. D’Anna (2021)). A Jewish speaker from Benghazi is attested as using *as-sakkina taṭwāl* ‘the knife gets longer’ (D’Anna ms), matching with other western Libyan features of their dialect (D’Anna ms).

29 Examples include *ḥāmār* ‘turned red’, *sāmān* ‘turned fat’, *zayān* ‘turned beautiful’ – but these are apparently used only in 3rd person perfective forms (H. Ras Ali and C. Pereira, p.c.)

30 Cf. Pereira (2010: 129). Comparable forms (e.g. *astaṣfar*) are reported in southeast Tunisia alongside *Fʕāl*, apparently with an implication that the transformation was incomplete (Said Haji, p.c.).

31 Marçais et al. (2001) does not make the fate of these verbs explicit, but conspicuously omits Form IX/XI from his inventory of attested verb forms.

32 For a somewhat unclear location implied to be not far from Yefren, Harrama (1993: 213) gives examples such as *sawwad* ‘become black’.

33 For Al-Ain (a little further west, near Ryayna) Hwaidi (2016: 68, 156) cites verbs like *byoḍ* ‘became white’, *s(i)wid* ‘became black’, which clearly cannot represent *Fʕāl*.

34 Owens (1984: 123–124), Vella (1970: 224–228), Panetta (1943: 203–204), and Iannotta (1933: 91–92) encountered neither *Fʕāl* nor *FʕaLL*; instead, they heard Form VII, e.g. *inḥamar* ‘turn red’. The latter is also reported further south near Ajdabiya and further west between Sirt and Al Khums (elicited by author through social media).

35 Benkato (p.c.) reports a Form IX extended beyond *aFʕāl* adjectives, e.g. *yubyadḍ*, *yuṭwall*, and *yušgarr*.

36 According to Abdunnabi (2000: 102–103, 110).

young/small' : *sgīr* 'young/small'); value (*bnān* 'become tasty' : *bnīn* 'tasty'); and speed (*tqāl* 'become heavy/slow' : *tqīl* 'heavy/slow').

Similarly, as long as the adjective is trilateral, there are almost no formal constraints on the formation of a corresponding change-of-state *Fʕāl* verb. The original form of the adjective may include any of the basic adjectival patterns: *FaʕīL* (e.g. Dellys *ṭwīl* 'tall' : *ṭwāl* 'get tall'), *FāʕiL* (e.g. *qārāṣ* 'sour' : *qārāṣ* 'get sour'), *FvʕL* (e.g. *rṭab* 'soft' : *rṭāb* 'get soft'), and *'aFʕaL* (e.g. *ḥmār* 'red' : *ḥmār* 'turn red'). Cases like *mādbāl* 'withered' : *dbāl* 'wither' are also well-attested, but are better seen as deverbal. In Maltese, *Fʕāl* can even be derived from appropriately shaped Romance loanwords, e.g. *fnad* 'get deep' : *fond* 'deep', and from diminutives, e.g. *ċkien* 'get small' : *ċkejken* 'small'. Accordingly, in every adequately documented Maghrebi variety, most *Fʕāl* verbs do not correspond to *'aFʕaL* adjectives – indeed, in modern Tripoli, *Fʕāl* is attested *only* for non-*'aFʕaL* adjectives. This contrasts strikingly with the behaviour of regular dialectal reflexes of Form IX, which are typically almost restricted to colour adjectives and in no attested case exclude them.

Not all trilateral adjectives, however, take *Fʕāl*. The existence of Form I change-of-state verbs normally blocks its formation (thus for *kbīr* 'big' Dellys has *kbār* 'get big' but not **kbār*). Weak-final roots allow this form only in some (mainly Bedouin) varieties, thus Hassaniya and Douz *ḥlāw* vs. Dellys *ḥla* 'become sweet' (adj. *ḥlu* 'sweet'). Agent patterns such as *Faʕʕāl* (e.g. *ḥaggār* 'bullying') or passive ones such as *maFCūL* (e.g. *maḥgūr* 'oppressed'), *muFaCCaL* (e.g. *mzəwwəq* 'decorated') do not yield change-of-state *Fʕāl* verbs.

The conjugation of *Fʕāl* is constant across dialects for the imperfective and the 3rd person perfective (setting aside broader phonological differences), but the treatment of non-3rd person perfective forms differs. Most dialects (e.g. Dellys, Tunis) shorten the vowel, as in Form I or VIII hollow verbs: thus Dellys *ṭwəlt* 'you got tall' alongside *ṭwāl* 'he got tall'. Those which have gone furthest in losing phonemic vowel length, notably northern Morocco and Jijel in Algeria, simply keep the stem constant: *ṭwālt* 'you got tall'. Urban Moroccan and western Algerian varieties (e.g. Saida, Tlemcen...) keep the vowel constant but add an augment *-ay-* > *-ī-*, as in geminate-final verbs: thus Saida *ṭwālāyt* 'you got tall'. The augment strategy seems not to be attested further east than old Algiers, a notably limited distribution suggestive of a localised innovation rather than a retention. (On the geographical distribution of these strategies, see Marçais (1977: 64–65) and Heath (2002: 219).)

As Marçais (1952: 201) correctly emphasises, *Fʕāl* verbs are not used for simple attribution of a static quality; they imply a context of change. Their core function is to indicate non-agentive changes of state, e.g. Dellys *šyənt!* "you've gotten thin!", or:

<i>mā</i>	<i>ṛā-nā-š</i>	<i>n-əsḡār-u</i>
NEG	PROG-1PL-NEG2	1IMPF-get.small-PL
We're not getting any younger. (Dellys)		

<i>bla</i>	<i>bī-k</i>	<i>əl-ʕašra</i>	<i>mṛār-ət</i>
without	INST-2SG	DEF-socialising	become.bitter-3FSG.PFV
Without you, socialising has become bitter. (Oran: a 2013 song title by Cheb Hasni)			

It can, however, sometimes be extended to more agentive contexts:

mā t-əqbāh-ū-š
 NEG 2IMPF-turn.bad-PL-NEG2
 Don't misbehave! (Dellys)

Fṣāl has often been extended beyond qualities to a few non-agentive verbs, notably (both in Morocco and in Tunisia) *ksāb* ‘own’ and (from Morocco to Libya) *ḥsāb/shāb*, variously ‘seem’ or ‘consider’, as well as Moroccan *xlāq* ‘be born’ and even *ḡrāq* ‘drown’. Some of these are widespread, and may date back early; others appear too localised to date back very far. Since Form VIII is rather unproductive in many Maghribi varieties, relict Form VIII hollow verbs such as *ḥtāz* ‘need’ are also reinterpreted locally as *Fṣāl*.

2.4 Previous explanations for Maghribi *Fṣāl*

Most prior work proposing wider connections for Maghribi *Fṣāl* has derived it either from Classical Form IX or from Classical Form XI, or, more neutrally, both at once (Heath 2002: 339; Marçais 1977: 64). Practically all contemporary work simply takes such identifications for granted; reconstructing the argumentation for these positions requires going back to older sources.

2.4.1 *Fṣāl* as Form IX

For Maltese, both school textbooks and scholarly descriptions conventionally identify the local reflex of *Fṣāl* (*QTaL / QTieL*) as Form IX, without necessarily excluding other etymologies (Borg 2005). The same analysis is sometimes adopted for Maghribi varieties, as for instance by Vicente (2000: 96). The first to propose it seems to be Cherbonneau (1868: 75), in a discussion of quadrilateral verbs in Algerian Arabic:

These verbs express the beginning of an action, or the passage from one state to another, sometimes even the persistence of a situation. They correspond to infirmities and colours. One might consider them as an alteration of the Form IX of trilateral verbs.

The suggestion was well received in subsequent work, despite the fact that his own examples already include qualities that correspond neither to infirmities nor to colours. It has the pedagogical advantage of matching the Classical form usually used to form change-of-state verbs from colours and handicaps to a Maghribi form whose uses also cover the formation of change-of-state verbs from colours and handicaps. However, it has the great disadvantage of failing to account for why we find *Fṣāl* rather than **FṣaLL*. Brunot (1950: 55) attempts to propose a scenario to explain the lack of gemination:

The essential element of the dialectal theme is the long vowel *ā* introduced into the root after the second radical and constituting the pivot of the syllabic structure of the verb thus formed. The geminated consonant of the Classical was reduced to a simple consonant as is the nearly constant rule in final position, especially after a long vowel.

This suggestion, however, neither accounts for the long *ā* nor conforms to the principle of regular sound change. In fact, no such “nearly constant rule” exists: most (probably all) Maghribi dialects regularly retain final geminates, after long vowels and otherwise, thus e.g. Dellys *ḥārṛ*, Maltese *ḥarr* ‘hot’, contrasting with Dellys *ḍārṛ*, Maltese *darr* ‘damage’ and Dellys *fār*, Maltese *far* ‘boil over’.

2.4.2 *Fʿāl* as Form XI

Recent Maghribi reference grammars typically treat *Fʿāl* as a degeminated Form XI, including Caubet (1993: 51), Yoda (2005: 183), and Ritt-Benmimoun (2014: 383–387), as already suggested by Panzavecchia (1845: 121) for Maltese. Stumme (1896: 30), along the same lines as Cherbonneau above, supports this with the poorly founded claim that “as in Classical, it is mostly used to designate bodily properties and colours.” Marçais (1902: 84–85) found what he took to constitute morphological corroboration of this etymology in Tlemcen, where:

The perfect is characterised by the appearance between the end of the root and the consonantal person suffixes of a long *î*. This *î* appears in the conjugation of the surd [geminate] verb in the perfect, between the doubled consonant and the consonantal suffixes. However, in Classical Arabic, doubling of the 3rd radical characterises precisely Form XI *افعال*. This doubling has disappeared after the long vowel *â*, as often happens in the vulgar dialects (cf. *sup.* p. 65 *in princ.* [The doubling of the 2nd radical (of surds) does not generally make itself heard after a long vowel: *ḥâj*, pilgrim; *ḍân*, thinking etc.]) But it seems that, in treating this verb as a surd verb, Tlemceni has retained the feeling of this original doubling.

The morphological argument is superficially attractive, but not compelling. The apparent motivation for *-ay-/-î-* augments in geminate-final verbs is to allow the stem shape to remain constant, avoiding Classical alternations like that between *-hibb-* and *-ḥbib-*. Most Maghribi dialects do not allow long vowels before non-geminate consonant clusters, leading in many dialects to stem shape alternations between e.g. 3msg. *Fʿāl* and 2msg. *FʿaL-t*. Extending the augment to *Fʿāl* allows the stem shape to remain constant there too. Moreover, as seen above, the geographically restricted distribution of the augment strategy suggests a localised innovation rather than a retention.

Marçais’ claim about gemination has already been falsified above. Brockelmann (1908: 66, 517) explained the loss of doubling slightly differently, as a result of the principle that “almost all Semitic languages also alternate long vowels in open syllables with short ones before geminated consonants”. This, however, fails on two counts. As phrased, it predicts a shift $\bar{a}CC > aCC$; but vowel length is regularly maintained before geminates, as most clearly seen in active participles and Form III derivations from geminate-final verbs, e.g. Dellys *ḥābb* ‘wanting’, *māṣāddīn* ‘holding each other’. Moreover, such a shift would merely have turned Form XI into Form IX; accounting for *Fʿāl* would require a shift $\bar{a}CC > \bar{a}C$, which, Marçais aside, is not observed either. The regular reflex of Form XI would therefore be $*FʿāLL$, not *Fʿāl*.

Cohen (1912: 236–237) adds a semantic argument:

If one admits that the proper value of the 11th form in the Classical language is the designation of a quality not as a state but as becoming – in opposition to the form without the long vowel (9th form: *iḥmarra*), which designates quality as a stable state (see Wright, *Arabic Grammar* I p. 43) – the meaning of the form in the dialect would confirm the indication given by phonetics regarding its origin.

This too appears unfounded. There can be no doubt that Form IX has been used for changes of state since the earliest texts; *ibyadḍat ṣaynāhu min al-ḥuzni* (Qur’ān 12:84) evidently means “his eyes

turned white from sorrow”, rather than having always been white. Some grammarians rather tentatively assert a semantic difference between *ifṣalla* and *ifṣālla*, to which Wright alludes, but this relates not to being vs. becoming, but rather to whether the quality predicated is necessary (*lāzim*) and stable (*tābit*), or accidental (*ʿāriḍ*) and unstable (Al-Astarābādī 1982: 112; Ibn al-Nāḍīm 2010: 47).

2.4.3 Alternative scenarios

Neither of the scenarios above conform to the principles of regular sound change, as already pointed out by Retsö (2013: 469). The regular reflexes of Form IX and Form XI are respectively **FṣaLL* and **FṣāLL*, not *FṣāL*. They moreover fail to account for the lexical distribution of *FṣāL*, which, unlike IX/XI, applies no less readily to originally *FaṣīL* or *FāṣīL* adjectives than to **aFṣaL* ones; while spread of IX to such adjectives is not wholly unprecedented, it is notably rare among dialects outside the Maghrib, being well-attested only in the United Arab Emirates. Despite these difficulties, however, alternative scenarios have hardly ever been proposed.

One might read an implicit hypothesis into David Cohen’s neutral description of *FṣāL* as “essentially a denominal form derived from adjectives” (Cohen 1975: 121). His choice of examples might be taken to suggest that it was created by imposing a different vowel on *FṣīL* adjectives; it opens with *ḍṣīf* ‘thin’ : *ḍṣāf* ‘he got thin’, *bnīn* ‘tasty’ : *bnān* ‘it got tasty’. Such a scenario, however, appears unlikely as an Arabic-internal development. From roots with weak middle radicals, like *zayn* > *zīn* ‘good’, Maghribi dialects derive not **zān* but *zyān*. From roots with weak-final radicals, the Form I perfective in many Maghribi varieties (e.g. Dellys) shows appropriate vocalisation: *ḥlu* ‘sweet’ : *ḥla* ‘it got sweet’. But if such forms had been the starting point, one would expect a high vowel in the imperfect, like Classical pf. *ḥalā*, impf. *ya-ḥlū*. Few if any change-of-state verbs with weak radicals show *a*-vocalisation in both the perfective and the imperfective. Old Arabic thus provides no good starting point for the analogy needed.

Retsö (2000: 115; 2013: 439) connects Maghribi *FṣāL* to the rare adjective pattern *FuṣāL* (e.g. *šujāṣ* ‘brave’), “well known from the `Arabiyya but also found in Aramaic with meanings similar to those in Maghribi”. In such a scenario, we would expect *FuṣāL* adjectives to belong to the core of adjectives most regularly corresponding to *FṣāL* change-of-state verbs. The opposite appears to be true. Singular adjectives of the form **FṣāL* (the expected reflex of *FuṣāL*) seem not to exist in Maghribi Arabic (Marçais 1977: 101; Caubet 1993: 83), and the only originally *FuṣāL* adjective for which a colloquial reflex is easily found, *šjīṣ* / *sjīṣ* ‘brave’, has no attested change-of-state verb (cf. Prémare 1993). Such a development would, moreover, be unprecedented across Arabic dialects, where deadjectival verbs are rather consistently formed via root extraction rather than by making a previously adjectival pattern verbal. This scenario therefore seems unlikely.

It thus appears that 150 years of research has yet to find a way to account adequately for the form and the lexical distribution of *FṣāL* based on Semitic-internal data alone. This suggests that explanations going beyond Semitic should be considered. All Arabic varieties featuring change-of-state *FṣāL* are spoken in areas with a former Berber presence, and show clear lexical traces of early Berber influence (for a small sample of recent literature, cf. Aguadé & Vicente 1997; Tilmatine 1999; Ould Mohamed Baba 2004; Souag 2018). For instance, the word *fakrūn(a)* ‘tortoise, turtle’, from Berber *i-fkər*, is used as far west as eastern Egypt (Behnstedt & Woidich 2010: 377). Unlike Romance, the other language family with a significant historical presence in this area, Berber shares with Semitic a highly productive root-and-pattern morphology based on trilateral roots, making the

borrowing of templatic patterns possible, as already attested in the opposite direction (Souag 2020). It therefore appears natural to explore the possibility of a scenario involving contact with Berber.

3. Change-of-state verbs in Berber

Across Berber, verbs are marked for subject person, number, and gender using a combination of prefixes and suffixes. In most conjugations, these affixes are identical across all aspects and moods (excluding the imperative). In one conjugation, however – Basset’s (1929: 98) quality verbs, Prasse’s (1972) Conjugation IV – many Berber varieties show a different pattern in the perfective, using only suffixes to the exclusion of prefixes (Kossmann 2009), as illustrated in Table 1 with an example that happens to be borrowed from Arabic. All members of this conjugation refer to qualities; in those Berber varieties that have a nominal subclass of adjectives, such verbs normally have corresponding adjectives.

Table 1. Subject agreement for the quality verb *iwsiɣ* ‘be wide’ in Kabyle (Bendjaballah 2006)

imperfective “be widening”	sg	pl	perfective “be wide”	sg	pl
1	<i>tt^siwsiɣ-əɣ</i>	<i>nə-tt^siwsiɣ</i>	1	<i>wsɣ-əɣ</i>	<i>wsɣ-it</i>
2m	<i>tə-tt^siwsiɣ-əɖ</i>	<i>tə-tt^siwsiɣ-əm</i>	2m	<i>wsɣ-əɖ</i>	<i>wsɣ-it</i>
2f	<i>tə-tt^siwsiɣ-əɖ</i>	<i>tə-tt^siwsiɣ-əmt</i>	2f	<i>wsɣ-əɖ</i>	<i>wsɣ-it</i>
3m	<i>yə-tt^siwsiɣ</i>	<i>tt^siwsiɣ-ən</i>	3m	<i>wsɣ</i>	<i>wsɣ-it</i>
3f	<i>tə-tt^siwsiɣ</i>	<i>tt^siwsiɣ-ənt</i>	3f	<i>wsɣ-ət</i>	<i>wsɣ-it</i>

In most varieties where this conjugation remains distinct (including some where it allows prefixes), it differs from others in interpretation as well as in form: with verbs of this conjugation, the perfective is interpreted as a state, whereas the corresponding non-perfective verb forms are interpreted as involving change of state. Thus, for instance, in Kabyle:

aɖ y-izwiɣ y-imi-s
 IRR 3MSG-red.AOR ANN.SG-mouth-3SG.GEN
 His mouth will turn red. (Tacine & Zaid 2018: 87)
 (cp. Dellys Arabic: *y-əḥmār fuṣṣḥ-u.*)

aman n tasa-inəs zəgg^waɣ-it
 water GEN liver-3SG.GEN red.PFV-PL
 His liver-water [urine] is red. (Tacine & Zaid 2018: 84)
 (Dellys: *əl-būl dyāl-u ɾa-hu ḥmər.*)

or in (Tamahaq) Tuareg:

aman ed ismaɖ-ān dāy ā-bāyoy
 water IRR cold.AOR-3MPL in ANN.SG-waterbag
 The water will get cold in the water-bag.
 (Dellys: *əl-ma ɾāyəḥ y-əbrəd f-əl-gərba.*)

Tenert sǎmmed-Ø.

Tenert cold-3SG.

Tenert is cold. (Prasse 2010: 103)

(Dellys: *Tīnīrt ṛā-hi bārdān-a.*)

Two exceptions to this pattern, however, are historically illuminating. In Zenaga (Taine-Cheikh 2009a) and in some eastern Kabyle/Tasahlit varieties such as Ayt Ziyan (Allaoua 1993; Achab 2012), quality verbs have regularly conjugated perfectives interpreted as resultative – a completed change of state – alongside suffix-conjugated forms interpreted as stative. This suggests that the suffix conjugation was originally not part of the verbal system proper, but rather derives from adjectives conjugated for subject agreement (Galand 1990; van Putten *fc*). For the purpose of comparison with Maghribi *FǎL*, it makes sense to focus on those parts of the paradigm of quality verbs that are interpreted as involving change of state.

3.1 Synchronic formal variation

Berber verbs may typically be characterised in terms of three principal parts: the so-called aorist (or “simple imperfect”, used primarily in irrealis or serial contexts); the perfective (or “preterite”); and the imperfective (or “intensive”, “intensive imperfect”), typically derived from the aorist through internal pattern changes or through prefixation of *t-*. Both the aorist and the imperfective normally correspond in translation to Arabic’s imperfective. For trilateral quality verbs, the aorist is consistently of the form VFCVL; in varieties that do not treat the perfective as stative, the perfective is of this form as well, and is almost always identical to the aorist. The vowels used, however, vary substantially across varieties, and require further attention. Before examining this variation, it is necessary to remind the reader that most Berber varieties do not synchronically have phonemic vowel length; in borrowings from or to Arabic, peripheral “full” vowels *a i u* correspond to Arabic long vowels *ā ī ū*, while central “reduced” vowels *ə ǎ* correspond to Arabic short vowels. In reconstruction, following Prasse’s practice, full vowels will therefore be transcribed as long, and reduced ones as short. Note also that the unmarked conjugation for strong trilaterals in Berber, Prasse’s Conjugation I, can unproblematically be reconstructed with aorist **ǎFCəL*, pfv. **əFCǎL*, impf. **FǎCCǎL* (cf. Kossmann & Suchard 2017; Rössler 1951 on Semitic parallels), and that original **ǎ* regularly merges with *ə* in most northern Berber varieties, yielding a single central vowel whose position is largely predictable and which – unlike other vowels – is subject to phonologically motivated deletion and epenthesis; many Moroccan varieties have even gone on to lose *ə* altogether.

The most widespread patterns display a full second vowel – typically *i/u* in the North, *a* in the South – and usually a full first vowel *i* as well. In Kabyle³⁷, spoken in north-central Algeria, trilateral quality verbs usually display an aorist in *iFCiL* (imperfective *tt^siFCiL*) or more rarely *iFCuL* (impf. *tt^siFCuL*). If the third radical is *y*, however, we instead regularly find *aFCay* (impf. *tt^saFCay*). At the easternmost extremity of Kabyle, Tasahlit shows *FCiL* with the unusual imperfective *FəCCiL* (M. Garaoun, p.c.) In Tashelhiyt³⁸, spoken in southern Morocco, trilateral quality verbs are likewise normally of the form *iFCiL* / *iFCuL*, impf. *tiFCiL* / *tiFCuL*; this applies even to *y*-final ones. Further east in the Tamazight varieties of central and southwestern Morocco³⁹, the dominant form is *FCiL* impf. *ttFCiL*, without the initial *i-*; a less frequent alternative is *FCuL* impf. *ttFCuL*, and with final

37 As studied in detail by Dallet (1953: 424–427), for the Ait Menguellet, and analysed more deeply by Bendjaballah (2006), Bendjaballah and Haiden (*fc*) based on the central variety of Chemini.

38 Cf. Destaing (1931), Sudlow (2021: 95–97).

y we again find *a*: Ayt Ayach *mray* ‘be difficult’ impf. *ttmray*. The Ayt Seghrouchen⁴⁰ variety shows an intermediate form with the *i*- only in the imperfective: *FCiL/FCuL* impf. *ttiFCiL/ttiFCuL*. In the far north of Morocco, Ghomara Berber has replaced almost all of its adjectives and quality verbs with Arabic forms, but retains metathesised *ǧmur* impf. *ttǧmur* ‘grow’ (< ‘get big’), suggesting a situation originally similar to Tamazight. Throughout Tuareg⁴¹, a dialect continuum stretching from the Tassili mountains of the central Sahara south into Mali and Niger, trilateral quality verbs almost always have an aorist of the form *iFCaL*, impf. *tiFCaL*.

Across a vast, mainly inland area centered on the High Plateaus north of the Sahara, both vowels tend to be reduced to *ə* in the aorist, though traces of a former full second vowel can often still be found. Even some Kabyle varieties show signs of such a process (S. Bendjaballah and A. Bedar, p.c.) The early stages of this process can be seen most clearly at the oasis of Ghadames⁴² just north of Tuareg in northwestern Libya. There, most trilateral quality verbs (at least seven) use *əFCəL* (impf. *ttəFCəL*), while remaining entirely distinct from Conjugation I (*ǎFCəL* impf. *FǎCCǎL*). Alongside these, however, we also find cases with all three full vowels in the second position, retained possibly for sound-symbolic reasons: three with *i* quality verbs in *əFCiL* (*əmtit* ‘be small’, *əsdid* ‘be thin’, *əkbib* ‘be liquid’), two with *u/o* (*əmqor* ‘be big’, *əlkuk* ‘be bad’). The single example with final *y*, as in Kabyle, shows *a*: *əmray* ‘be painful’. In almost all of the comparatively close-knit Zenati subgroup of Berber, from eastern Morocco to inland eastern Algeria, the vowels of the trilateral quality verb have been reduced even further, making the aorist, in *əFCəL*, formally identical to Conjugation I due to the usual northern merger of **ǎ* with *ə*. Once again, however, we also find residual cases of inherited trilateral quality verbs with full vowels in the aorist, e.g. Beni Snous⁴³ *irzay* ‘be bitter’, *ufsus* ‘be light’. Moreover, the imperfective of *əFCəL* quality verbs usually remains (*t*)*təFCiL*⁴⁴, suggesting a previous aorist **əFCiL* as directly attested in central Moroccan varieties. In the northern Algerian Sahara⁴⁵ even this imperfective has been lost, resulting in a full merger to Conjugation I, with impf. *FəCCəL*. Biradicals typically preserve the V2 *i* even in the aorist, e.g. ‘sweet’ (Figuig⁴⁶ *zid* impf. *ttizid*). As far as can be determined from the limited data available, this seems to extend to the Tunisian-Libyan coast and even further east: Jerba⁴⁷ (Tunisia) and Siwa⁴⁸ (Egypt) have a perfective *əFCəL*, while Zuara⁴⁹ (Libya) has assimilated inherited trilateral quality verbs to Conjugation I, e.g. *əwrəǧ* ‘be yellow’ impf. *wərrəǧ*.

39 Cf. Mauri (2015: 163) for the Ait Atta; Ait Lemkadem (1986: 168) for the Ayt Ayach; Penchoen (1973: 33, 38) for the Ayt Ndhir; and Willms (1972: 123) for southwestern Morocco in general.

40 (Bentolila 1981: 128).

41 Cf. Prasse (1972: 181–198) for Tamahaq, Heath (2005: 387–392) for Tamasheq.

42 (Lanfry 1968: 285–288).

43 Destaing (1907: 133).

44 Sound trilateral quality verbs are of the form *əFCəL* impf. (*t*)*təFCiL* in eastern Morocco, cf. Beni Iznassen (Amjoun 2004); Figuig (Kossmann 1997: 142); Beni Snous (Destaing 1907: 133, 161); in north-central Algeria, cf. Beni Menacer examples in Destaing (examples in Destaing 1914); and in northeastern Algeria, i.e. Chaoui (Huyghe 1907; Amunzar 2012; F. Chaira, p.c.). In most cases a few such verbs have been transferred to Conjugation I, but the rest remain.

45 Nouh-Mefnune and Abdessalam (2011) and Delheure (1987), for the Mzab and Ouargla respectively, both record e.g. *əzwəǧ* impf. *zəwwəǧ/zəggəǧ* ‘be/turn red’; *əzdəd* impf. *zəddəd* ‘be/turn thin’; *sməǧ* impf. *səmməǧ* ‘be cold’...

46 Yeou (2022: 700).

47 Ben Maamar (2020: 20, 36) uses *nəmjər* ‘we have grown big’, *təwsər* ‘she has grown old’; Ben Maamar (2013: 79) gives what can only be read as *ta yməll* ‘he will become white’, implying no full vowel between the last two radicals.

48 Cf. Souag (2013: 98–99).

49 Cf. Mitchell (2009: 24), Oomen (2021).

The residual inland varieties of the Tunisia-Libya border zone centred on the Jefara plain variously show close connections with either Zenati or Ghadames, and agree with both in showing *ə* as the first vowel of change-of-state quality verbs. The second vowel here, however, is instead normally *a* – matching both Tuareg and Tunisian Arabic – in both the aorist and the perfective (which in this region has a resultative rather than stative interpretation). This pattern is best documented for Tamezret, but is also clearly attested in the rest of the region: for the verb ‘become red’, the perfective, and aorist where attested, is *əzwaǵ* in Yefren, Jadu, Tamezret, and Zraoua⁵⁰. The imperfective is more variable: *əttəzwaǵa* in Yefren, *(ə)təzwaǵ* in Tamezret, and Zenati-like *əttəzwiǵ* in Zraoua. Unfortunately, the available data is rather limited, so further research may complicate the situation.

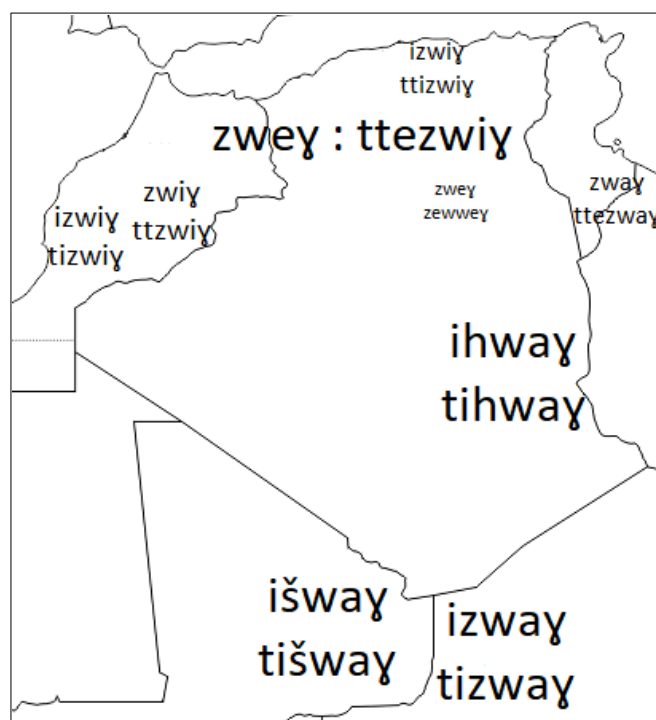


Figure 2: "Become red" (aorist, imperfective)

As seen in Figure 2, all this variation may conveniently be summed up as follows: the second vowel is or shows clear evidence of having been **ī/ū* in most contexts throughout most of Morocco and Algeria, but is **ā* in the inland Jefara, among the Tuareg, and before *y* even in the North. The forms in *a* match well with Maghribi Arabic, and, in the heavily Arabized context of the inland Jefara, one might have been tempted to explain them as borrowings from Arabic. But a contact explanation is untenable for Tuareg, most of whose speakers are not in regular close contact with Arabic speakers and never have been; it is still less plausible as an explanation for the regular alternation between strong *iFCiL* and weak-final *VFCay* across widely separated Northern varieties. Vowel reduction can be motivated by partial analogy with other verb forms, but there is no regular or even reasonably frequent correspondence between Northern Berber high full vowels and Tuareg low ones; the explanation for the latter variation must be morphological rather than phonological. To

50 For Jadu, cf. Provasi (1973: 503); for Tamezret, cf. Ben Mamou (2005). Data kindly contributed by S. Benmaayouf for Yefren, and by L. Douma for Zraoua. In Tamezret, we find inherited forms like *əmlal* ‘turn white’, *əzdaf* ‘turn black’, *əzwaǵ* ‘turn red’, *əwraǵ* ‘turn yellow’ alongside Arabic loans such as *əḍwal* ‘get tall’, *əmlah* ‘become salty’, *əmsas* ‘become bland’.

reconstruct the original vowel pattern of the aorist stem, and to determine that of the perfective, we must turn our attention to the single most divergent Berber variety, ignored in the discussion above: Zenaga.

3.2 Zenaga data

Zenaga, a seriously endangered language still spoken in southwestern Mauritania, is one of the very few Berber languages known to have a perfective stem for change-of-state which both does not also express stative quality and does remain formally distinct from the aorist stem. It is, moreover, part of the first subgroup of Berber to have (incompletely) split off from the rest (Souag 2017), and is therefore indispensable for the reconstruction of the proto-Berber situation. For both reasons, it provides our best chance of determining what the original perfective of change-of-state verbs was prior to its replacement in most varieties by what had been a conjugated adjective. The Zenaga vowel system, however, has developed in a rather different direction than the rest of Berber. The reduced vowels *ə and *ǎ have merged phonologically with the full vowels *ā *ī *ū, while synchronic long vowels ā ī ū reflect the loss of a former laryngeal *h < *β (Kossmann 2001). In most but not all contexts, notably next to pharyngealised consonants and velars, *u* can be treated as a predictable allophone of the same phoneme as *i* and *ə* (Cohen & Taine-Cheikh 2000; Kossmann 2020). In accordance with usual practice for Zenaga, verbs will be cited in the 3rd person masculine singular, and thus with the prefix *y-*.

Most originally triliteral change-of-state verbs in Zenaga use a quadrilateral template with gemination of the middle radical, rather than an originally triliteral one: thus e.g. ‘white’ *mālliy* : ‘become white’ 3sg. pfv. *yāmmillāy*, aor. *yimmilliy*, impf. *yātmilliy*, matching quadrilateral ‘blue’ *bāyḍig* : ‘become blue’ 3sg. pfv. *yābbīḍāg*, aor. *yibbīḍig*, impf. *yātbīḍig*. Comparison with the rest of Berber, as outlined above, suggests that such cases represent a secondary development based on the adjective, rather than a retention of the original strategy for change-of-state verbs. Alongside these, however, Taine-Cheikh (2008) attests a number of exceptions (excluding Arabic loans), as summarised in Table 2.

Table 2. Zenaga triliteral change-of-state verbs not using a quadrilateral template.

	adjective	pfv.	aor.	impf.
heavy	<i>aʔZag</i>	<i>yaʔZag / yuʔZig</i>	<i>yuʔZig</i>	<i>yattuʔZig</i>
cold	<i>šamḡud</i>	<i>yāšmaḡ</i>	?	<i>yāttāšmuḡ</i>
small	<i>mazzūg</i>	<i>yamzāg</i>	<i>yumzīg</i>	<i>yāttumzīg</i>
short	<i>kāyīy</i>	<i>yākyāy</i>	<i>yikyīy</i>	<i>yittikyīy</i>
rare	<i>dārīš</i>	<i>yāḍrāš</i>	<i>yāḍrīš</i>	<i>yāttāḍrīš</i>
hot	<i>arġah</i>	<i>yurġah</i>	<i>yarġih</i>	<i>yitturġih</i>
stinking	<i>rašsuḡ</i>	<i>yuršaḡ</i>	<i>yuršuḡ</i>	<i>yātturšuḡ</i>
sour	<i>šāmuḡ</i>	-	-	<i>yāttāšmim</i>
slender	<i>šāḍāḍ</i>	<i>yāštāḍ</i>	<i>yāštīḍ</i>	<i>yittištāḍ</i>
long	<i>oʔZuf</i>	<i>yoʔZuf</i>	<i>yuʔZuf</i>	<i>yattuʔZuf</i>

Taking into account expected *ə/i/u* variation, all but two of these share the aorist pattern *iFCiL* (impf. *əttəFCiL*), matching the usual form across most of northern Berber. Most of them fall into one of two major classes: perfective in *aFCaL*, and perfective in *aFCiL*. The three exceptions, two with an aorist in *aFCiL* and one with a perfective in *iFCaL*, reflect influence from various subclasses of Conjugation I; see discussion below.

A perfective in *aFCaL* characterises the first four – ‘heavy’, ‘cold’, ‘small’, ‘short’ – as well as ‘rare’. The vowel lengthening in ‘small’, ‘short’, and ‘rare’ must have originally been expressive (cp. English *tiini*); cross-Berber comparative evidence makes it impossible to postulate a lost laryngeal in these words. This pattern is shared with a few non-quality verbs, notably ‘accompany’ (pfv. *yäddäg*, aor. *yiddug*, impf. *yəttuddug*), ‘sit’ (pfv. *yaɫmä*, aor. *yiɫmi*, impf. *yittiɫmi*). ‘Rare’ matches this group in the perfective, but anomalously seems to have adopted the vowel pattern of Conjugation I in the aorist; in accordance with the general principle that *t*-imperfectives have the same vowel pattern as the aorist, it displays V1 *ä* in the imperfective as well. No perfect matches for the resulting hybrid conjugation have been observed; the combination of pfv. *aFCaL* and aor. *aFCiL* is well-attested, but its imperfective is usually *FaCCaL*, e.g. ‘do’ pfv. *yäskär* aor. *yäskär* impf. *yässäkkär*.

A perfective in *aFCiL* characterises only the last two – ‘slender’ and ‘long’. These are members of a much more productive class of “verbs with a constant non-*a* thematic vowel” (Cohen & Taine-Cheikh 2000) cognate to Prasse’s Conjugation II, which matches Conjugation IV in the aorist and imperfective. This class is dominated in Zenaga by quality verbs without corresponding adjectives (Taine-Cheikh 2009b): cp. ‘be/become dry’ (pfv. *yuɫwur*, aor. *yäɫwur*, impf. *yəttiɫwur*). Many verbs in this category have dedicated stative forms (formally identical to the perfective) that differ from adjectives in that they take the regular prefixal subject markers.

The remaining two trilateral change-of-state verbs for which the perfective is attested reflect influence from different subtypes of Conjugation I, characterised in Zenaga by perfectives in *iFCaL* or in *iFCiL*. ‘Become hot’ falls into the same conjugation as a few other intransitive verbs in Zenaga originally belonging to Conjugation I, e.g. ‘get shorter’ pfv. *yugzäm* aor. *yägzüm* impf. *yəttugzüm*, whose imperfective seems to be borrowed from change-of-state verbs. (The aorist and perfective of such verbs are in many cases identical to those of a corresponding transitive verb, here ‘shorten’.) In ‘become stinking’, the perfective shows a V1 *u*, moving it into the same all-high aorist conjugation as Prasse’s Conjugation I.A.8 and allied forms (van Putten fc), e.g. ‘be worn’ (aor. *yumḍih*, impf. *yittumḍih*, pfv. *yumḍäh*.)

Both the dominant patterns found – pfv. *aFCaL* and Conjugation II’s pfv. *aFCiL* – were probably used in pre-Zenaga for different change-of-state verbs. However, the rarity of *aFCiL* for ones with corresponding adjectives suggests that it was used primarily for verbs ambiguous between change of state and stative readings, like ‘dry’. The more frequent middle-radical geminating change-of-state pfv. *aFFiCCaL*, reflecting the influence of the corresponding adjective in *FaCCiL*, matches *aFCaL* better than *aFCiL* in the final syllable. It therefore seems likely that Zenaga trilateral change-of-state verbs with corresponding adjectives originally took pfv. *aFCaL* vs. aor. *iFCiL* (impf. *əttəFCiL*).

3.3 Reconstruction

The disagreement between northern/western Berber (*i*FCiL and Tuareg/Jefara *i*FCaL on the vocalisation of the aorist turns out to be paralleled, among the few varieties that have kept a change-of-state perfective distinct from the aorist, by a similar disagreement on the vocalisation of the perfective: *ǎFCāL (alongside rarer *ǎFCiL) on the Atlantic seaboard with Zenaga, əFCiL (< *ǎFCiL) on the Mediterranean with eastern Kabyle. Together these yield a remarkable spectrum of attested outcomes among varieties with change-of-state perfectives: aor. *i*FCiL, pfv. əFCiL (eastern Kabyle); aor. *iFCiL, pfv. *ǎFCāL (Zenaga); aor. əFCaL, pfv. əFCaL (Jefara); aor. *əFCiL, pfv. *əFCiL (Zenati before reduction). The apparent correspondences between *i* and *a* or *i* and *ə* are not regular, and must be explained through analogy.

The alternation in the first vowel seen clearly in Ayt Ziyān Kabyle must be old; it matches that found in Prasse’s rather less productive Conjugation II (aor. *i*FCVL pfv. *ǎFCVL; cp. Tashelhiyt aor. *iksud* pfv. *ksud*, Tamahaq aor. *uksad* pfv. *ǎksud* ‘fear’). Similarly, Zenaga pfv. *aFCaL* vs. aor. *iFCiL* (impf. *attəFCiL*) corresponds regularly with the sub-conjugation of Tashelhiyt quality verbs that Sudlow (2021: 95) labels “*izdir/izdur*-type descriptive verbs”⁵¹ – pfv. *FCaL*, aor. *iFCiL* (impf. *ttiFCiL*) – if we assume that these have exceptionally preserved the original perfective rather than replacing it with the corresponding adjective. Comparable forms are widely attested in other varieties, notably for ‘bitter’ (Ayt Atta pfv. *-rzag* aor. *rzig* impf. *trzig*, Kabyle pfv. *rzag* aor. *irzig* impf. *t^sirzig* / *t^sarzag*); they independently stand out among quality verbs for not featuring a geminate in the perfective. This entails a proto-Berber reconstruction of the relevant pattern with a perfective *ǎFCāL. In Zenati and Jefara, the reduced first vowel seems to have been copied from the perfective into the aorist; central Moroccan *FCiL* must reflect the same development, presumably before the conjugated adjective replaced the old perfective.

The second vowel alternates only in one of the attested paradigms: aor. *iFCiL, pfv. *ǎFCaL. If aor. *iFCiL pfv. *ǎFCiL (i.e. Conjugation II), or aor. *iFCāL pfv. *ǎFCāL, were taken to be original, it would be impossible to explain the emergence of such an alternation. Taking the alternation as original, however, all of the attested forms can readily be explained as reflecting harmonisation of the second vowel across the aorist and the perfective: based on the perfective in the Jefara, based on the aorist elsewhere. The perfectives in *FCiL* would have been further reinforced by the closely allied Conjugation II. This pervasive levelling trend is entirely in accordance with the general trend across in northern Berber to use a single form for both the aorist and the perfective in a large and increasing proportion of the total verb inventory (Souag 2013: 184; Chaker 1983: 124; Bentolila 1981: 120).

The Northern Berber aorist in *iFCiL is clearly conservative, given its wide attestation and its match with the Zenaga data. The Tuareg aorist presumably therefore reflects partial levelling in the same direction as in the Jefara, but prior to the replacement of the original perfective by the conjugated adjective. The northern Berber aorists of the form *VFCāy must conversely reflect partial levelling from the perfective, motivated by dissimilatory avoidance of *īy/ūy. Perfective

51 Perfect lexical matches between Zenaga and the rest in this class are, however, rare. ‘Heavy’ is found (Tashelhiyt pfv. *-zday*, aor. *izduy*, pfv. *ttizduy*), but, in general, the Tashelhiyt cognates of the verbs in Table 2 above have perfectives matching the Zenaga adjective, as expected in the context of a general replacement of the perfective by the conjugated adjective. Note that several members listed by Sudlow for this Tashelhiyt class – *idfur* ‘follow’, *izwur* ‘precede’, *iktur* ‘full’ – correspond to all-high Conjugation I verbs elsewhere (van Putten’s Type 2); however, a century earlier in Destaing (1920) these showed no initial *i*, like most of their cognates elsewhere in Berber, indicating that their integration into this class is probably a recent and localised development.

**ǎFCāL* would therefore have been the dominant strategy for change-of-state verbs having corresponding adjectives – like Maghribi Arabic *ǎFCāL*.

Further details of the reconstruction are not vital here. The key implication of these findings is that the *ǎFCaL* forms used today in the inland Berber varieties spoken around the Jefara – our best available proxy for those of medieval Ifriqiyah – fit well into the broader Berber picture, and must at least in part reflect inheritance from proto-Berber, rather than just contact with Tunisian Arabic. On any plausible scenario, their pre-Islamic ancestor would at least have had change-of-state perfectives in **ǎFCāL*, and very likely also partly levelled aorists in **ǎFCāL* or **iFCāL*. The conditions would thus have been propitious for the form **ǎFCāL* – perceived by Arabic speakers as *iFCāL* – to be adopted by proto-Maghribi Arabic. Before this conclusion can be accepted, however, it is necessary to propose a more concrete scenario for how this abstract morphological pattern could have been transferred from Berber into Arabic.

4. Berber-Arabic contact

Contact between Berber and Arabic in North Africa has been a continuing process since the 7th century, with significant effects in both directions (Kossmann 2013; Souag 2019). The distribution of change-of-state *FǎaL* within Arabic, however, is so consistent across North Africa and adjacent parts of Europe as to imply an origin during the first few centuries of the Islamic era. It can most easily be understood as a founder effect, in which an innovation generalised early on when Arabic speakers in North Africa formed a relatively small and close-knit network concentrated in a prestigious location was maintained later as Arabic spread across the region.

This appears consistent with the sociolinguistic situation that must have been prevalent in the first *'amsār*, such as Qayrawān. In such settlements, Arab soldiers would have lived alongside Berber soldiers (al-Zaidan 1978), and would presumably often have taken Berber wives. At the same time, Arabic remained the language of the Umayyad state and of the upper hierarchy of the army, providing a powerful incentive for Berber recruits in such a situation to learn Arabic, and for parents in linguistically mixed marriages to bring their children up as Arabic speakers. A large part of the Arabic-speaking population of such settlements – probably a majority at some points – would have been second language speakers of Arabic. This would result in a substrate situation, where the numerical dominance of Berber-dominant speakers would be sufficient to allow non-target-like features to become entrenched. In such situations, we typically see significant levels of pattern borrowing accompanied by little or no material borrowing (Thomason & Kaufman 1988; Van Coetsem 1988); material borrowing is more accessible to conscious monitoring, and as such tends to be avoided.

It may safely be assumed that Form IX was used by at least some of the first-language Arabic speakers of these settlements, given that this form remains in use all through the northern Mashriq. It is possible, though less certain, that even Form XI was still present in some colloquials at the time. However, the frequency of both forms would undoubtedly have been very low, given their restriction to colours and handicaps. Specifically, it would have been far lower than the frequency within Berber of Conjugation IV, which extends beyond colours and handicaps to cover qualities of all kinds. The formal and functional similarity between the two, however, would have been apparent to bilingual speakers: the most likely 3m.sg. impf. colloquial Arabic form, *yiFǎaLL*, would have differed from the regional Berber 3m.sg. pf./aor. **yǎFCāL* only in the perceived length of the last

two segments (recall that Berber *a* is normally perceived as Arabic *ā*), and both would have been readily applicable in the context of changes of colour. These similarities would have been adopted as a pivot (Matras & Sakel 2007) for (mis)identifying the former with the latter, permitting the Berber aorist form to be adopted into Arabic complete with its lack of gemination and its greater productivity. This greater productivity would in turn have ensured that the next generation of speakers would have grown up hearing *Fʕāl* more often than *FʕaLL*, allowing the former to usurp the position of the latter.

The productive borrowing of nonconcatenative morphological patterns is well attested between pairs of languages both of which already have root-and-pattern morphology, including from Arabic into Berber (Souag 2020); it can be facilitated by accidental similarities, which (so to speak) give it a foot in the door (Souag 2021). A borrowing from Berber into Arabic along the lines suggested therefore appears typologically plausible.

5. Conclusion

The quite productive Western Arabic verb form *Fʕāl*, marking changes of state, is not a sufficiently good match for Classical Arabic Form IX/XI in its form or in its lexical distribution, and does not derive directly from Form IX/XI. Formally and functionally, it is a better match for proto-Berber's Conjugation IV, and primarily reflects the latter; it was introduced to Arabic by L1 Berber speakers, building upon Conjugation IV's partial similarities with Form IX/XI. This in turn explains its uniquely Western distribution, spread across almost all of the Maghrib as well as Andalus and Malta, but unattested anywhere in the Mashriq or the Eastern Sudanic zone.

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