The Digraph اى in the Quranic Consonantal Text and the Identification of a New Letter Shape for Final *Hē* in the 7th to 8th Century Arabic Script*

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Abstract

This paper proposes a hitherto unrecognized orthographic practice in the Quranic consonantal text: use of the digraph ای*, that is,* alif *+ denticle, to represent the noninitial glottal stop, most often adjacent to the high vowels* i/ī *and less commonly in other environments. This feature leads to the identification of a new letter shape for the final* hē *in the early Islamic Arabic hand, originating in the Nabataeo-Arabic script, which in turn can explain a number of previously enigmatic spellings in the Quranic consonantal text.*

1. Introduction

The Quranic consonantal text[1] (henceforth QCT) contains several layers of historical Arabic orthography. Its foundation lies in the orthographic principles of the imperial

* I owe a great debt to Marijn van Putten for his help in locating examples of the orthographic peculiarities discussed in this paper and for finding supporting attestations in the manuscripts he is currently studying. I also thank Hythem Sidky for pointing me toward relevant examples in early Quranic codices. I made a short Facebook post on the identification of the new shape of the final *hē* in a Quranic manuscript on March 30, 2018, and I thank Yüsef Gürsey and Mila Neishtadt for discussing the further applications of this letter shape with me there. All errors are my own.

Linguistic conventions:

* = reconstructed pronunciation
C = consonant; V = vowel
/ / = phonemic transcription

Details of cited pre-Islamic Arabic-script inscriptions are given in an index following the main body of this article.

1. This term refers to the theory that the extant Qurans go back to a single written archetype, conventionally labeled the ʿUthmānic Codex, and that the text was composed in a single dialect of Arabic. For the full elaboration

Aramaic writing tradition,[2] inherited from Arabic's Nabataean forebear. These were followed by a variety of innovative spelling strategies that emerged after the Nabataean script was fully applied to the representation of the Arabic language.[3] These innovations do not necessarily originate in the same place and time. The ever-growing corpus of pre-Islamic Arabic-script inscriptions suggests that the Nabataean Aramaic script did not develop directly into a single Arabic script but rather produced several lineages of Arabic scripts with their own orthographic practices and, sometimes, letter shapes.[4] The establishment of Arabic as the language of an empire in the seventh century produced a homogenizing bottleneck, narrowing much of the variation found in pre-Islamic sources.

Older and newer orthographic practices exist side by side in the QCT and, to a lesser degree, in Classical Arabic orthography. The notation of internal long *ā* illustrates this phenomenon. There is no attempt to indicate the long vowel internally in the extant sixth-century Arabic-script inscriptions, and there was no *mater lectionis* for internal *ā* in the Nabataeo-Arabic and Nabataean scripts that preceded Arabic.[5] The Quran in general agrees with this practice: long *ā* is rarely indicated word-internally, with the exception of words belonging to the CāC pattern.[6] A newer, plene orthographic practice that indicates *ā* with *alif* in other environments seems to have emerged sometime in the seventh century. As van Putten has observed,[7] the use of this new orthographic practice appears to be optional in the QCT: several words are written in both ways, sometimes according to the ancient orthography and other times with the innovative plene spelling. Certain core

of this theory, see the introductions to M. van Putten, "The Development of the Triphthongs in Quranic and Classical Arabic," *Arabian Epigraphic Notes* 3 (2017): 47–74; idem, "The Feminine Ending -at as a Diptote in the Qurʾānic Consonantal Text and Its Implications for Proto-Arabic and Proto-Semitic," *Arabica* 64, nos. 5–6 (2017): 695–705; idem, "'The Grace of God' as Evidence for a Written Uthmanic Archetype: The Importance of Shared Orthographic Idiosyncrasies," *Bulletin of the School of Oriental and African Studies* 82, no. 2 (2019): 271–88.

2. W. Diem, "Untersuchungen zur frühen Geschichte der arabischen Orthographie: I. Die Schreibung der Vokale," *Orientalia*, n.s., 48 (1979): 207–57, at 209–10.

3. This second layer is often called Ḥigāzī–Meccan in the literature; see W. Diem, "Some Glimpses at the Rise and Early Development of Arabic Orthography." *Orientalia*, n.s., 45 (1976): 251–61, at 255. However, as we shall see in the following discussion, the orthographic innovations of this layer do not stem from a single source or period.

4. This idea is developed in A. Al-Jallad, "'Moge God Yazīd de Koning Indachtig Zijn': Nadere Beschouwingen over de Yazīd-Inscriptie en de Ontwikkeling van de Arabische Schriften," in *Mohammad en de Late Oudheid*, ed. J. van den Bent, F. van den Eijnde, and J. Weststeijn, 198–208 (Amsterdam: Verloren, 2018).

5. On the development of the Arabic script from its Nabataean forebear, see L. Nehmé, "A Glimpse of the Development of the Nabataean Script into Arabic Based on Old and New Epigraphic Material," in *The Development of Arabic as a Written Language*, ed. M. C. A. Macdonald, 47–88 (Oxford: Archaeopress, 2010). On Nabataean orthography, see J. Cantineau, *Le Nabatéen* (Osnabrück: Zeller, 1978); and on the orthography of Arabic words, especially those in the inscriptions of Ḥegrā, see J. Healey, *The Nabataean Tomb Inscriptions of Mada'in Saleh* (Oxford: Oxford University Press, 1993).

6. For example, the verb *kāna* is spelled كان more often than it appears, defectively, as كـن. Exceptions do exist: *qāla* is sometimes spelled قل in early manuscripts.

7. For example, we find both عبده (Q 27:59) and عباده (Q 35:28) in the Cairo edition, and even greater variation once we compare spellings with internal *ā* across earlier manuscripts; see M. van Putten, *Quranic Arabic: From its Hijazi Origins to its Classical Reading Traditions* (Leiden: Brill, forthcoming).

vocabulary items of the writing tradition, however, are not affected by the new spelling and continue to be written according to the old orthography, even to the present day; examples include the demonstratives 'this' هـذا /hāḏā/, 'that' ذلـك /ḏālika/, and the divine title رحمـن / raḥmān/.

This paper identifies a hitherto unrecognized orthographic practice in the QCT, which perhaps emerged in the period before the loss of the glottal stop[8] and was phased out by the more phonetic writing principles of the main orthography of the Quran: use of the digraph اى, that is, *alif* + *denticle*, to represent the noninitial glottal stop, most often adjacent to the high vowels *i/ī* and less commonly in other environments. This interpretation leads to the identification of a new letter shape for the *hē* in the early Islamic Arabic hand, originating in the Nabataeo-Arabic script, which in turn may explain a number of previously enigmatic spellings in the QCT.

2. Identifying the اى Digraph

The following table presents all the examples known to me of the use of the digraph in the Cairo Edition and early Quranic manuscripts, along with the pronunciation of the words in which it occurs through various stages of the Arabic language.

Table 1: The Attestations of the Digraph اى in the Cairo Edition & Early Quranic Manuscripts[9]

QCT spelling	Proto-Arabic pronunciation	Classical Arabic pronunciation	Reconstructed QCT pronunciation[10]
جابت[11]	**giʾtu*	*ǧiʾtu*	*ǵīt*
جاي[12]	**gīʾa*	*ǧīʾa*	*ǵī*
شابت[13]	**śiʾtu*	*šiʾtu*	*śīt*
شاى[14]	**śVyʾun*	*šayʾ*	*śī*

8. Classical Nabataean orthography indicated the Arabic glottal stop with *aleph*, ʾ, regardless of the quality of the following vowel. The loss of the use of *alif* to represent the glottal stop, *hamz*, in the QCT results from the loss of that phoneme in its dialect; M. van Putten, "Hamza in the Quranic Consonantal Text," *Orientalia* 86 no. 3 (2018): 93–120. As Diem ("Glimpses," 254) has suggested, there must have been a local writing tradition of Arabic in the Ḥijāz that devised an orthography closer to the pronunciation of the local dialect, without the *hamz*. Nevertheless, these new spellings remained in some cases in competition with the older practice of representing the etymological glottal stop with *alif*. For example, the word *ḍuʿafāʾu* 'weak' (masculine plural) is spelled both according to the old orthography as ضعفا (Q 9:91) with the final etymological glottal stop represented by the *alif* and according to an innovative, phonetic spelling as ضعفوا (Q 14:25; 40:47) with the glide resulting from the loss of the glottal stop in pronunciation represented, /ḍuʿafāw(u)/.

9. Manuscript sigla follow https://corpuscoranicum.de/.

10. This reconstruction is based on van Putten, "'Grace of God.'"

11. Q 19:27, in MS Tübingen, Universitätsbibliothek, Ma VI 165, fol. 12r.

12. Q 39:69; Q 89:23.

13. Q 24:62, in MS Tübingen, Universitätsbibliothek, Ma VI 165, fol. 37v.

14. Q 18:23.

QCT spelling	Proto-Arabic pronunciation	Classical Arabic pronunciation	Reconstructed QCT pronunciation
بابته[15]	*biʾayāti-hu	biʾayāti-hī	biyayātVh
لابتنا[16]	*liʾayāti-nā	li-ʾayāti-nā	liyayāt(V)nā
بابم[17]	*biʾawyāmin	biʾayyāmin	biyayyām
بابى[18]	*biʾayyi	biʾayyi	biyayy
بابد[19]	*biʾaydin	biʾaydin	biyayd
مابه[20]	*miʾata	miʾatin	mīyah
بابكم[21]	*bi-ʾayyi-kum(u)	bi-ʾayyi-kum	biyayyikum
ساى[22]	*suyiʾa (or śīʾa)	sīʾa	sī (or siyy)
سايل[23]	*suʾila	sūʾila	sīla
فاين[24]	*fa-ʾin	fa-ʾin	fayin
ياس[25]	*yīʾasu	yayʾasu	yVyas
تاسوا[26]	*tīʾasū	tayʾasū	tVyasū
السواى[27]	*sūʾan	as-sūʾa	as-sū
رابى[28]	*ruʾyayi-ya	ruʾyā-ya	riyyāy
لايلف[29]	*li-ʾilāfi	li-ʾilāfi (or li-ʾīlāfi)	liyilāfi
ملابهم[31]، ملابه[30]	*malaʾi-hŭ, *malaʾi-hum	malaʾi-hī, malaʾi-him	malayi-h/hum
نباى[32]	*nabaʾi	nabaʾi	nabay(i)

15. Q 6:35.
16. Saray Medina 1a; Großer Korankodex Q 74 :16.
17. Q 14:5.
18. Passim, Surat al-Raḥmān, MS Paris, BnF, Arabe 331, fol. 48v.
19. Q 51:47.
20. Passim in the Cairo Edition, but sometimes spelled مه in other manuscripts, e.g., Samarqand Q 8:66.
21. Q 68:6.
22. Samarqand Q 11:77; compare with the Cairo Edition: سى.
23. Samarqand Q 2:108; compare with the Cairo Edition: سل.
24. Q 3:144; 21:34.
25. Q 12:87.
26. Q 12:87.
27. Q 30:10.
28. Passim, Q 12:43, 100, MS London, British Library, Or. 2165, fols. 25r, 27r.
29. Q 106:1; for this analysis, see van Putten, "Hamza," 110.
30. Q 7:103; 10:75; 11:97; 23:46; 28:32; 43:46.
31. Q 10:83.
32. Q 6:34.

3. Discussion

This section describes the distribution of digraph اى. Its relatively limited use suggests that it is an orthographic relic rather than a productive feature of the spelling system used to write the earliest Qurans.

3.1. جاىت = **gi'tV*; شاىت = **śi'tV*[33]

The third-person masculine singular of both of these verbs terminates in an *alif* in the QCT, جـا reflecting *ǵā* from **gā'a* and سـا reflecting *śā*, from **śā'a*, respectively. The first/second-person form of these verbs in the synchronic dialect of the Quran, which had lost the glottal stop, must have been realized as *ǵīt* and *śīt*, respectively, as in many modern dialects. The marginal spelling of these verbs with the digraph, however, indicates that the linguistic source of their orthography did not realize them with a simple medial *ī*. I suggest that this spelling emerged at a time when the glottal stop was still pronounced and the sequence اى was used to represent the noninitial glottal stop, in this case following an *i*-vowel.

3.2. ماىه = **mi'ah*

The enigmatic spelling of *mi'ah* has been the subject of much debate, but no consensus has been reached as to what the *alif-yā* sequence is meant to signify.[34] The pronunciations *mā'ah* and *mi'āh*, found in some vocalized Quranic manuscripts, most certainly reflect artificial, secondary vocalizations based on the synchronic interpretation of the word's orthography.[35] There is no etymological basis, from a comparative Semitic perspective or in the modern and ancient dialects of Arabic, for the vocalization of this word as anything other than *mi'ah* and, following the loss of the glottal stop, as *mīyah*. In light of the discussion on جاىت and شاىت above, the most natural explanation for this spelling is that it in fact reflects *mi'ah*, using the اى digraph for the glottal stop following the *i*-vowel.

3.3. *Bi-* and *Li-* before Words Beginning with a Glottal Stop

Several words with an initial glottal stop following the prepositions *bi-* and *li-* are written with the digraph, the same environment as above.[36]

33. These orthographic oddities were first recognized and commented on by Marijn van Putten on Twitter (https://twitter.com/PhDniX/status/976754498151514112), although he attempted no explanation of them.

34. The most widely cited opinion is that of Diem, "Untersuchungen," 102—namely, that the *alif* is preserved as a graphic archaism, and the *yā* following it reflects the contemporary pronunciation, *miyah*. This idea is followed by van Putten ("Hamza"), who terms it a mixed etymological spelling.

35. On these, see H. Sidky, "In Search of Lost Time: A Vocalized Muṣḥaf, Ibn ʕāmir, and the Evolution of the Syrian Reading Tradition," forthcoming.

36. For previous treatments of this spelling, see van Putten, "Hamza," 109–11, and references therein.

Table 2: The Digraph Following Prepositions

بائت	ب	د	ادـ	ب
biʾāyātin	t	y	ʾ	b

بائم	م	د	ادـ	ب
biʾayyāmin	m	y	ʾ	b

بائی		ی	ادـ	ب
bi-ʾayyi		y	ʾ	b

بائد	د	د	ادـ	ب
bi-ʾaydin	d	y	ʾ	b

بائكم	كم	د	ادـ	ب
bi-ʾayyikum	km	y	ʾ	b

As van Putten has pointed out to me (personal communication), it is remarkable that in all such cases, a *y* occurs later in the word. Perhaps this acted as an orthographic conditioning environment for the preservation of this archaic spelling, at least marginally. Alternatively, it is possible that the following *y* blocked the loss of the glottal stop in this position in order to avoid the sequence *yaya*, a sort of dissimilation. If the glottal stop persisted longer in this environment than in others, this spelling would reflect a phonetic reality rather than being merely an instance of historical orthography.

3.4. جاي = *gī*(ʾ); ساى = *sī*(ʾ)

A noninitial glottal stop following the long vowel *ī* is spelled using the digraph in the passives of **gāʾa* 'to come' جـاى **gīʾa*, and of **sāʾa* 'to be evil' ســاى **sīʾa*.

3.5. شاى = *śīʾ*

The reading traditions of the QCT vocalize the word for 'thing' only as *šayʾ*, even when it is spelled ســاى. The modern dialects suggest that a by-form belonging to the *fiʿl* pattern, rather than *faʿl*, existed; the interchange of these two patterns is well attested.[37] In the dialect of Beirut, for example, the diphthong /ay/ remains intact; Proto-Arabic **baytun* produces *bayt*, while the word for 'thing' is realized as *šī*. This must go back to an earlier **śīʾ* rather than **śayʾ*. The Quranic spelling, in light of the previous identifications, suggests that its original dialect also exhibited a reflex of the *fiʿl* form, synchronically pronounced as *śī* and historically as **śīʾ*; the orthographic form ســاى reflects the latter.

37. *Faʿl*/*fiʿl* by-forms are well attested in Arabic; for example, *watrun*, *witrun* 'single'; *kasrun*, *kisrun* 'bone with meat'; *salmun*, *silmun* 'reconciliation.' J. Fox, *Semitic Noun Patterns* (Winona Lake, IN: Eisenbrauns, 2003), 133.

3.6. The Spelling of the Glottal Stop with ای before an I Vowel

Although the most common environment for the spelling of the glottal stop with the digraph is after the vowel *i*, there are a few examples of it spelled as such in a closely related environment, before *i*: سـایل **suʾila*; فایـن /fa-ʾin/; and the case forms ملایـه /malaʾi-hu/ and نبـای /nabaʾi/.

In at least one clear case, the noninitial glottal stop is rendered with ای: *as-sūʾā* is spelled السـوای in Q 30:10, reflecting its complete emancipation from its original conditioning environment. However, one must note that the pronunciation of the *alif maqṣūrah* in the QCT was *ē*, and so the digraph may have been motivated by its proximity to this vowel, which was perhaps felt to be close to *ī*. The spelling of *ruʾyā-ya* with the digraph similarly points to the digraph's use outside of the environment of /i/, although again the contiguous *y* may have played a role.

Also remarkable about the spelling السـوای is the fact that the *y* of the digraph and the *y* of the *alif maqṣūrah* are treated as one, as in words terminating in *y* followed by a *nisba* ending, such as النبیـن for al-nabiyyīna (Q 2:61).

The spellings of the verbs *yayʾasu* and *tayʾasū* as یایـس and تایسـوا, respectively, could also reflect the use of the digraph outside the context of an *i*-vowel. But this is the case only if the vocalization of these verbs followed the Classical Arabic pattern in the dialect of the orthography. Prefix-conjugated verbs with the theme vowel /a/ (the vowel of the verb stem) have an *i*-vowel in the preformative prefix—the so-called Barths-Ginsberg law.[38] If this law was operative in the dialect that gave rise to this spelling, these verbs would have been pronounced as *yīʾas* and *tīʾasū*, the exact environment in which we would expect to encounter this spelling.

4. The Background

The evidence assembled above demonstrates that in the earliest stratum of Quranic orthography scribes had the option to employ the digraph ای to represent the noninitial glottal stop. The digraph was used most often after an *i*-vowel and marginally before one, and perhaps only once outside of that environment. The optional use of an orthographic device has several precedents in the Quran. As noted in the introduction, the representation of internal *ā* with *alif* was almost entirely optional outside of the CāC environment.[39] But in our case, the digraph ای, while certainly an innovation from the Nabataean perspective, must be construed as an archaism with regard to the synchronic dialect of the Quran and its

38. That is, *yafʿulu* and *yafʿilu* but *yifʿalu*. on this law and its distribution in the Central Semitic languages, see J. Huehnergard, "Features of Central Semitic," in *Biblical and Oriental Essays in Memory of William L. Moran*, ed. A. Gianto, 155–203 (Rome: Pontificio Istituto Biblico, 1995). This law is still operative in the Najdi dialects of Arabic today; see B. Ingham, *Najdi Arabic: Central Arabian* (Amsterdam: J. Benjamins, 1994). And it seems to have been operative in the northern Old Arabic dialects as well, as evidenced by the spelling ειραυ for *yirʿaw* in an Arabic inscription written in Greek letters from the Jordanian Ḥarrah; see A. Al-Jallad and A. al-Manaser, "New Epigraphica from Jordan I: A Pre-Islamic Arabic Inscription in Greek Letters and a Greek Inscription from North-Eastern Jordan," *Arabian Epigraphic Notes* 1 (2015): 51–70.

39. A notable exception is the spelling of I-ʾ verbs, which always have the *alif*. I thank Marijn van Putten for pointing this out to me.

primary writing tradition, which had lost the glottal stop. This spelling must therefore stem from an orthographic tradition that, on the one hand, preserved the glottal stop in these environments but, on the other, had lost the means of using *alif* to represent it.

How did this come to be? Digraphs are not a component of Semitic alphabetic writing in general, so this practice was clearly not inherited directly from any antecedent script. I suggest that the digraph emerged in a "script-contact" situation. In order to fully appreciate this phenomenon, however, we should give some attention to the diversity of the Arabic script in the sixth century CE.

The corpus of sixth-century Arabic inscriptions and even earlier Nabataeo-Arabic inscriptions exhibits variation in both letterforms and orthographies. Focusing on just the sixth-century inscriptions, the following variation is attested:

The orthography of the word for 'I': In the Ḥarrān inscription, the first-person pronoun is spelled *ʾnʾ* /ʾanā/, while in the Jebel Usays inscription it is spelled *ʾnh.* This latter spelling is found in an unpublished pre-Islamic Arabic-script inscription from the Tabūk area as well. The spelling *ʾnh* most certainly goes back to the Nabataean rendering of this pronoun in Aramaic, which survives even into the Nabataeo-Arabic period as evidenced by the Thaʿlabah inscription.[40]

The use of wawation: Nabataean orthography marked final triptotic personal names/nouns with a *w*, the so-called wawation. In Nabataeo-Arabic, this was generally retained in personal names, but in the sixth-century (and later) inscriptions, wawation is used differently from text to text. In the early Arabic-script inscriptions from Najrān, wawation is deployed in the expected way, whereas in the Jebel Usays inscription this feature is missing altogether. In the Yazīd inscription, wawation is applied to the diptotic name *Yazīd*, suggesting an expansion of its usage.[41]

Letter shapes: Dots on *dāl*s and lunate *rē*s: The Nabataeo-Arabic inscriptions occasionally added a supralinear dot to the *dāl*, a relic of a phase when the glyphs for *dāl* and *rē* were identical; the *dāl* was distinguished by a dot on top, in contrast to the Syriac tradition, where the dot for the *dālet* was added below. The Yazīd inscription exhibits these dots on the *dāl*s, while other sixth-century Arabic inscriptions do not. Moreover, we find two types of *rē*s in the sixth-century inscriptions: a lunate form, as in the Jebel Usays inscription, and a linear *rē*, as found in the Ḥimà inscriptions and the sixth-century Arabic-script inscription of Dūmat al-Jandal.[42]

These examples of diversity indicate that there was no unified orthography for Arabic in the pre-Islamic period. Different traditions must have evolved locally where the Nabataeo-Arabic script was used. The chancelleries of different oases and tribal rulers could have

40. On this text, see U. Avner, L. Nehmé, and C. Robin, "A Rock Inscription Mentioning Thaʿlaba, an Arab King from Ghassān," *Arabian Archaeology and Epigraphy* 24, no. 2 (2013): 237–59.

41. See Al-Jallad, "Yazīd-Inscriptie," 197–98.

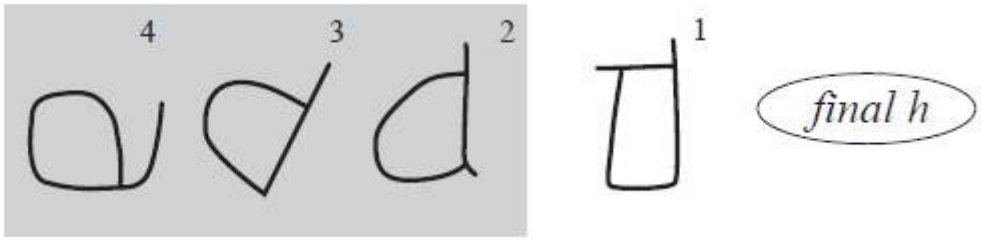
42. Ibid., 199–200.

developed their own particularities of writing, and these coexisted until the emergence of the Umayyad state and the top-down unification of the Arabic script.[43] Script contact must be assumed for this period, as writing was used to send letters not only to one's own kinsmen but also to people from neighboring groups, who may have had slightly different ways of writing Arabic. This situation forms the context for the scenario I develop below to account for the emergence of the digraph اى.

In principle, orthographic developments emerge in an environment that allows for the reanalysis of a fixed, older spelling to produce a new one—a point of diffusion. If we look to the distribution of this digraph in the QCT, it is clear that it was most associated with the sequence *iʾ*, and indeed, the only word that is more often than not written with the digraph, even to this day, is مائـه 'one hundred.' This stability suggests that the spelling of this word was fixed and widely adopted at a very early point in the history of the Arabic script. The number one hundred is our "patient zero," so to speak.

While the number one hundred is most likely to have been the model upon which the spelling of the glottal stop with اى was based, this does not explain *why* the digraph was used to represent the glottal stop in this word to begin with. The numeral is well attested in pre-Islamic Nabataean and Nabataeo-Arabic inscriptions, yet in all cases it is spelled *mʾh/t*, without a denticle, matching its etymology and pronunciation.[44] It is at this point that we should turn our attention to the paleography of the final *hē* in Nabataeo-Arabic. The letter had multiple forms in the Nabataeo-Arabic hand—one form had the denticle of the *h* on top of its loop, while another form had it on the base line to its right.

Figure 1: Shapes of the *Hē* in Nabataeo-Arabic[45]



43. On the scenario of the Arabic script evolving gradually from Nabataean at the courts of tribal chiefs in Northwest Arabia, see L. Nehmé, "Epigraphy on the Edges of the Roman Empire: A Study of the Nabataean Inscriptions and Related Material from the Darb Al-Bakrah, Saudi Arabia, 1st–5th Century AD" (Mémoire scientifique d'habilitation à diriger des recherches, École pratique des hautes études, 2013).

44. This evidence is assembled in L. Nehmé, "Aramaic or Arabic? The Nabataeo-Arabic Script and the Language of the Inscriptions Written in This Script," in *Arabic in Context: Celebrating 400 Years of Arabic at Leiden University*, ed. A. Al-Jallad, 75–89 (Leiden: Brill, 2017), 88–90.

45. Nehmé, "Glimpse," 49.

Figure 2: Example of a Denticled *Hē* in Nabataeo-Arabic (with the First Line's Final Word Reading *ʿsylh*)[46]

The latter form survived well into the period of the sixth-century Arabic script, as we find it in the spelling of the word *ʾilāh* at least twice.

Figure 3: Umm al-Jimāl Inscription (with the First Line Reading *ʿbd ʾl-ʾlh*)[47]

Figure 4: Unpublished Graffito from Farīq al-Ṣaḥrā (#5); *ʾlh = ʾilāh*.[48]

46. Nehmé, "Glimpse," UJadh 299.

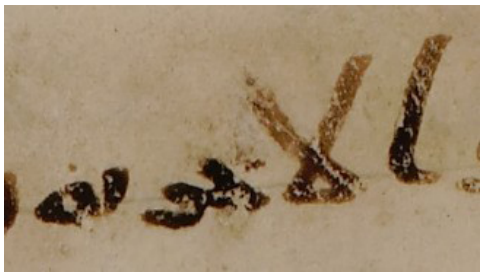
47. L. Nehmé, "New Dated Inscriptions (Nabataean and Pre-Islamic Arabic) from a Site near Al-Jawf, Ancient Dūmah, Saudi Arabia," *Arabian Epigraphic Notes* 3 (2017): 121–64.

48. The original photograph can be found here: https://alsahra.org/2017/09/نقوش-عربية-بلكنة-نبطيــة/ (accessed June 17, 2021).

To most modern eyes, the spelling of *ʾilāh* in the two Arabic inscriptions above looks more like *ʾlyh*, with a denticle before the *h*. Although it may be tempting to argue for *ʾimālah* in these cases—that is, a graphic representation of the *ē* allophone of **ā*—we should note that the particular shape of the *h*, the loop without a tooth on top, prevents us from interpreting the denticle before the loop as a separate letter: it is part of the *h*.

In a lecture I gave on this subject,[49] I hypothesized that such a letterform must have persisted into the Islamic period, for reasons we shall see below. Shortly afterward, van Putten kindly shared with me a fascinating discovery he made while studying the pre–750 CE Quranic manuscript DAM 01-29.1 that confirms my hypothesis. The word *ʾāḫirah* is spelled with a final ـىه, where the *hē* lacks a tooth on top of the loop and is preceded by a denticle. This can only reflect the ancient shape of the *hē* discussed above.

Figure 5: *Al-ʾāḫira*h Spelled with a Denticled *Hē*, الاخرىه
(DAM 01-29.1, fol. 3v, I. 2 [Q 3:45])



I subsequently noticed the denticled *hē* in an early Islamic inscription from the area of Medina.[50] Although this text is undated, its paleography suggests that it was produced sometime after the second Islamic century, indicating that the digraph survived marginally, and was perhaps restricted to certain formulae.

Figure 6: *Malāʾikatu-hū*
(Source: @Mohammed93athar).

49. Delivered at the "Reading the *Rasm*" workshop held at Leiden University on December 3, 2018.

50. This text was posted online by Abū ʿAbd Allāh al-Mughadhdhawī on his famous Twitter account, *Nawādir al-āthār wa-l-nuqūsh* (@Mohammed93athar: https://twitter.com/mohammed93athar/status/1088434910254247936).

5. Scenario

The word "one hundred" was certainly frequent in economic documents and in dating formulae. Since the spelling of this word in pre-Islamic times was always *mʾh*, what if the denticle of the Quranic مائة and that of later Arabic orthography is, at least in origin, no *y* at all? Could we not interpret this word as simply a continuation of the spelling *mʾh*, consisting of three letters? If so, then the final denticle, frozen in Arabic orthography, is not a denticle but part of the final shape of the *h*, similar to the one found in the Umm al-Jimāl inscription and in the Quranic MS DAM 01-29.1. In other words, the shape ـئه is simply one of the various forms of final *h* in the pre-Islamic Arabic scripts that continued, albeit marginally, into the Islamic period.[51] For reasons that are lost to us now, this spelling of "one hundred" gained traction and was frozen graphically as a numerogram, as it is in the orthography of Arabic today. Now, if this gram spread to a writing tradition of Arabic that made use of another form of final *h*, scribes could have easily mistaken the denticle of the final *hē* for a separate letter, misparsing and graphically reinterpreting it as ه ى ا م. And since it was pronounced as *miʾah*, scribes could have inferred that the sequence ای was a way to spell the noninitial glottal stop. The distribution of this spelling suggests that it was always an optional strategy to represent this sound, and that it diffused by analogy to phonetically similar environments, but not exclusively to them. This theory explains the fact that the majority of the digraph's attestations occur in the vicinity of an *i/ī* vowel, and usually in the exact phonetic environment of *iʾ*.[52]

Why would scribes devise a new way of representing the glottal stop if the Nabataean and Nabataeo-Arabic script already had a method to do so with *alif*? The answer, I think, lies in understanding the diffusion of Arabic writing traditions. The main orthographic stratum in the Quran clearly reflects a dialect that lost the glottal stop. What if the Arabic script spread from this starting point to a group that retained the stop? This, in fact, has already happened once in the Islamic period, namely, in writing Classical Arabic with Ḥijāzī orthography. Scribes may have abstracted from the spelling of مائة a plene method of rendering the glottal stop, a sound their language had but that was not represented in Ḥijāzī orthography.

The emergence of a new orthographic practice based on the reinterpretation of a fixed spelling according to synchronic pronunciation finds an exact parallel in the development of another optional spelling strategy, the representation of internal *ā* with *alif*. Diem explains the emergence of the use of the *alif* to spell word-internal *ā* as follows.[53] Words with an etymological glottal stop preceding the short /a/ would have been pronounced as *ā*, leading to the synchronic interpretation that internal *alif* signaled the vowel *ā*. The fact that this spelling in QCT orthography was most consistently applied to CāC nouns seems to imply

51. I thank Mila Neishtadt for pointing out the possible use of the denticled *hē* for the spelling of the word "one hundred" and both her and Marijn van Putten for the rich discussion with me on my Facebook post of March 30, 2018.

52. The fact that we have no reproductions of this spelling in the exact phonetic environment, namely glottal stop + *h*, has probably to do with the rarity of this sequence and the limited corpus available to us.

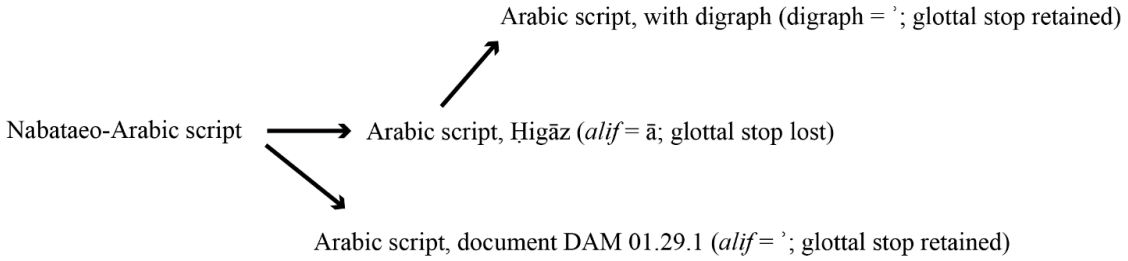
53. Diem, "Glimpses," 258–59.

that the point of diffusion was spellings of CaʾC nouns, from which the practice expanded to represent internal *ā* in all environments.

Original pronunciation: *rảs* || orthographic representation راس: internal *alif* = consonantal ʾ

Loss of glottal stop: *rās* || orthographic representation راس: internal *alif* = *ā*

Figure 7: The Development of the Digraph [54]



The digraph ای appears to be an embryonic attempt to indicate the internal glottal stop in a writing tradition that kept this sound but used Ḥijāzī orthography, which lacked a graphic means of representing it. It is impossible to reconstruct, at the current moment, why it was employed marginally in the writing of the Quranic archetype and later documents. Despite the fact that most later reading traditions had the need to represent the word-internal glottal stop, it is clear that the main tradition of writing Arabic, following the reforms of ʿAbd al-Malik, did not employ the digraph. The occasions on which it was used in the Quranic archetype and other early manuscripts became orthographic relics, similar to the spelling of مائـه today, the purpose of which was no longer understood. Perhaps the introduction of the method of marking the glottal stop with supralinear diacritics finally extinguished any lingering use of the digraph in the writing of Arabic.

6. The Archaic Final *Hē*

The emergence of the digraph was based on the graphic reinterpretation of the archaic final *hē* in the word مائـه. The same archaic form seems to have been frozen graphically in the spelling of the word Torah in Q 3:3 (and passim) as توريـه.[55] The spelling of this word has been the subject of much speculation, with suggested explanations ranging from spontaneous ʾ*imālah* (the raising of *ā* to *ē*) to the contamination of the word *tōrāh* and

54. DAM 01-29.1 is an early Quran manuscript that, as G.-R. Puin observed, spelled the glottal stop on occasion with the ʾ, continuing the older Nabataean practice; see Puin, "Vowel Letters and Ortho-Epic Writing in the Qurʾān," in *New Perspectives on the Qurʾān: The Qurʾān in Its Historical Context 2*, ed. G. S. Reynolds, 147–90 (New York: Routledge, 2011), 170. This is the same document that used the archaic final *hē* in the word a*l-ʾāḫirah*, cited above, further indicating that the *alif* spelling is ancient rather than a later and coincidental development.

55. I thank Yüsef Gursey for suggesting the possible application of the allograph of final *hē* to this word in a Facebook post of March 30, 2018.

ʾorayṯā;[56] both of these are wholly unconvincing, and the latter especially strains credulity. A simpler solution presents itself in light of the interpretation of the word ماىه: the spelling of *tōrāh* consists of four letters and not five, the final denticle and loop being simply the archaic form of the *hē*. This produces the expected spelling of /tōrāh/, *twrh*.

ه	ر	و	ت
h	*r*	*w*	*t*

While this spelling made its way into the Quranic archetype, another rather common spelling that did not lends itself to a similar interpretation. A number of times, the word for "god," *ʾilāh*, is spelled in early manuscripts as الىه.[57] This has usually been interpreted as a plene spelling of *ʾimālah*, reflecting the pronunciation of **ā* as *ē*.[58] Although this explanation is in theory plausible,[59] it is striking that such a spelling occurs with any frequency only in this word. This suggests to me that we most likely have another example of the archaic *hē* graphically frozen in the high-frequency word *ʾilāh*, mirroring the pre-Islamic examples identified above.

In contrast to الله, there are two examples provided by Puin of the denticle's representing a long *ā*: in the word *riǧāl*, spelled رجىل in Q 72:6 in DAM 01-28.1 and DAM 01-29.1,[60] and in the word *ʿibād*, spelled عبىد in Q 40:31 in DAM 01-29.1. The latter occurs in a rhyme position, where the rhyme is formed with the syllable āC#. Given that both of these spellings occur very infrequently, and never in the pre-Islamic period, there is no reason to assume that they reflect an ancient practice. They could have emerged in the scribal milieu of Quranic copying, perhaps being the innovation of a small group. In any case, I do not believe they are related to the denticled *hē*. Their interpretation lies in the phenomenon of orthographic reanalysis in the wake of language contact.

The original language of the QCT had a distinct reflex of the triphthong **ayV*: it was pronounced as *ē* and rhymed separately from the *alif mamdūdah*.[61] However, by the time Qurans were being copied, the text was read in dialects that realized the reflex of **aya* as *ā*. The orthographic mismatch allowed for the emergence of a new orthographic convention. But let us first illustrate the scenario:

سىها = QCT original: *banē-hā*

سىها = some late seventh/eighth century readings: *banā-hā*

56. For a complete discussion of the opinions on this subject, see Diem, "Untersuchungen," 248–50.

57. Puin, "Vowel Letters," 168.

58. Ibid.; but F. Deroche, in *La transmission écrite du Coran dans les débuts de l'islam: Le codex Parisino-Petropolitanus* (Leiden: Brill, 2008), views it simply as a *mater lectionis* for *ā*.

59. Puin also cites the spelling of Q 4:3 طىاب in the Cairo Edition as طيىب in the Samarkand codex, but this may be explained by a different reflex—the collapse of the medial triphthongs; see van Putten, "Triphthongs," 49–50, 69. It is reported that in the ancient Ḥijāzī dialect, this very verb was realized as *ṭēba*. Nevertheless, the scenario developed for the spelling of *ā* with the denticle could account for the pronunciation *ṭāba* even here.

60. The latter attestation was recently identified by van Putten.

61. On the outcome of the triphthongs in the QCT, see van Putten, "Triphthongs."

Just as one could extrapolate from the spelling مائـه that the *alif-denticle* combination represented ʾ, it is possible to deduce from such QCT spellings that word-internal *ā* could be spelled with a denticle—but only in a dialect that had *no ʾimālah*; in other words, a dialect that did not realize the reflex of the triphthong as *ē*. If this innovation indeed emerged in such a scribal context, it never truly took off, and the practice was quickly marginalized by the internal *alif* spelling.

7. Concluding Remarks

I hope to have shown that an archaic strand of Quranic orthography made use of the digraph ای to represent the glottal stop in a noninitial position. This peculiar method of spelling emerged in a situation of script contact, where the graphically frozen spelling of the word "one hundred," مائـه, with the archaic denticled *hē*, ـبـه, was reinterpreted as consisting of four letters, م ا ی ه, with ا ی representing the glottal stop. From this point, the use of the digraph spread to the representation of this sound in similar environments. Moreover, relics of the archaic final *hē* explain the enigmatic spelling of the word *tōrāh* and the supposedly *ʾimālah*'ed spelling of the word *ʾilāh* in several early manuscripts.

This study brings into relief an important issue in the study of the language of the Quran: its layered orthography. Although the text is generally consistent in its spellings, the significant variation on its margins harkens back to a period before Arabic orthography was standardized.[62] For this reason, the desire to devise rules to account for every spelling in the Quran is perhaps misguided; only a historically informed approach, with due consideration of the diversity of Arabic scripts and spelling strategies in the pre-Islamic period, can fully explain its many orthographic enigmas.

62. For a discussion on the possible timing of the standardization of Arabic orthography as we know it, see C. Robin, "La réforme de l'écriture arabe à l'époque du califat médinois," *Mélanges de l'Université Saint-Joseph* 59 (2006): 319–64.

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