A Newly Discovered Letter of the Early Arabic Alphabet: A Distinction between Final ḫīm and Final ḫāʾ and Its Nabataean Origins*

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Abstract
This paper studies the letter shape of the final jīm, ḫāʾ, and khāʾ in seven early Quranic manuscripts. Examination of the shape of these letters in these manuscripts reveals a graphemic distinction between the jīm, which lacks the typical curved tail, and the ḫāʾ and the khāʾ, which do have this tail. This distinction is lost in later Quranic manuscripts. I argue that the distinction between jīm and ḫāʾ/khāʾ is a continuation from the Arabic script’s origins in the Nabataean Aramaic script, which had distinct letter shapes for these signs. Contrary to what has been previously thought, the evidence adduced in this article shows that the merger happened in the Islamic period rather than in the pre-Islamic period.

Introduction
The Arabic script as we know it today can be thought of as an “archigraphemic” system, in which one letter shape may stand for a variety of different signs.¹ In a nonfinal position, for example, the single denticle may stand for bāʾ, tāʾ, thāʾ, nūn, or yāʾ depending on its dotting, though in a final position the nūn and the yāʾ are distinct. In early manuscripts, where the dots are very often not marked, these signs are fully homographic.

Traditionally, the jīm, the ḫāʾ, and the khāʾ have been considered to have a single archigraphemic representation as well. For example, in undotted script zawj ‘spouse’ and ṭūḥ ‘spirit’ are completely homographic:

روح زوج

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* I thank May Shaddel, Fokelien Kootstra, and Benjamin Suchard for providing important feedback on an early draft of this article.

However, close examination of several early Quranic manuscripts shows that this was not always the case. The manuscripts examined in this article clearly use different signs for final ǧīm and for final ḥāʾ/khāʾ. I initially discovered the distinction in the Codex Amrensis 1. I then conducted a systematic search of words that contained a final ǧīm on the Corpus Coranicum website, identifying several additional manuscripts. Finally, I supplemented this step by looking through the manuscripts described by Déroche that belong to the Hijazi, Kufic A, Kufic B, and unclassified categories. I examined Kufic C and D to see whether these display the relevant distinction, but I did not analyze every sample in detail, as a cursory look clearly showed that these latter styles lack the distinction. I will show the presence of this distinction in six early Quranic manuscripts and discuss one further fragment that may also show the distinction, but for which I did not have access to a sufficient number of folios to confirm its presence. I will then point to several examples of manuscripts that have lost this distinction. Finally, I will make the case that the distinction in these early Quranic manuscripts is best understood as a continuation of the distinction between the gimel and the het in the Nabataean Aramaic script, which persists in the transitional Nabataeo-Arabic script and in the pre-Islamic Arabic script proper.

The manuscripts, some of them consisting of multiple, separately held fragments, that I analyze in this article are the following (each listed with the abbreviation subsequently used in the article):

- Codex Amrensis 1 (CA). All images taken from the PDF edition of Cellard, *Codex Amrensis 1*.
- Bibliothèque nationale de France, Arabe 330g (A 330g). All images taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr).
- Chester Beatty Library, Is. 1615 II (B II). All images © The Trustees of the Chester Beatty Library, Dublin. Reproduced by permission.
- Doha Museum of Islamic Art, Ms. 68 (D). All images available on the Google Arts & Culture webpage.
- A private folio published by Marcus Fraser (F). All images taken from Fraser, “Earliest Qur’anic Scripts”.
- Cambridge University Library, Add. 1146 (CUL). All images taken from the Cambridge Digital Library website (cudl.lib.cam.ac.uk).

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• Bibliothèque nationale de France, Arabe 6140b (A 6140b). All images taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr).

• Staatsbibliothek Berlin, Wetzstein II 1913 (W). All images taken from the Corpus Coranicum website (www.corpuscoranicum.de).

• Bibliothèque nationale de France, Arabe 6087 (A 6087). All images taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr).

• Codex Parisino-Petropolitanus, Hand C (CPP). Photographic reproductions taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr); tracings based on images held by Michael Marx.

• Türk ve İslam Eserleri Müzesi, ŞE 118 (ŞE). All images taken from Déroche, Qur’ans of the Umayyads, fig. 7.

In addition, I refer to the following manuscripts in my discussion of paleography:

• Cairo National Library, photos from the Gotthelf Bergsträsser archive, Qāf 47 (Q). All images taken from the Corpus Coranicum website (www.corpuscoranicum.de).

• Bibliothèque nationale de France, Arabe 334a (A 334a). All images taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr).

• Bibliothèque nationale de France, Arabe 325k (A 325k). All images taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr).


• Bibliothèque nationale de France, Arabe 330c (A 330c). All images taken from the Gallica website of the Bibliothèque nationale de France (gallica.bnf.fr).

The Typology of the Jīm/Ḥāʾ/Khāʾ

Fraser has provided a typological description of the letter form of the jīm/ḥāʾ/khāʾ, comparing its shape on coins to that in five different Quranic manuscripts (BL Or. 2165, BnF Arabe 328a, a private folio likely related to the fragment CBL Is. 1615 I, the upper text of the Şanʾāʾ manuscript, and Tareq Rajab Museum, Kuwait, Qur-001-TSR). Within his typology, he focuses on the length of the letter’s horizontal portion and the roundness of the hook. However, he does not comment on the fact that in several of the Quranic manuscripts he

examined the letter has a shape that is fully horizontal, without any hook at all (e.g., Hand B and Hand C in the CPP and the private folio that is part of Is. 1615 I).

Fraser highlights an interesting aspect of the development of the curved shape, which may have a large curve, a short curve, a long horizontal portion with a hook, or a very tight, short curve. His analysis will certainly be useful for further investigation into the typology of the development of the curved form.

For our purposes, however, these subtle differences in the shape are unimportant, and the only difference that matters is that between the straight \( \text{jīm}/\text{ḥāʾ}/\text{khāʾ} \) and the curved one. For the straight shape, the baseline stroke can be variable in length. It is also the shape commonly found in Qurans of the Kufic C style.

1. **Codex Amrensis 1**

The Codex Amrensis 1 (CA), recently edited and published by Cellard, is a Quranic manuscript written in a clear and rather regular style that Cellard identified as Late Hijazi ("Ḥijāzī Tardif") with elements similar to Kufic A.\(^6\) Déroche classifies it as Hijazi I;\(^7\) the Corpus

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*Al-ʿUṣūr al-Wusṭā* 27 (2019)
Coranicum website estimates that this manuscript should be dated to around the first half of the second/eighth century on paleographical grounds. It has a horizontal orientation and regular, equidistant twelve lines per page, set in a horizontal layout. The fragment consists of a total of seventy-five folios. Although Cellard observes that there are two shapes for the jīm/ḥāʾ/khāʾ, she does not connect the variance to a distinction between jīm, on the one hand, and ḥāʾ/khāʾ, on the other. Nevertheless, from the cases available, it is clear that there is a direct correlation: the straight shape is used for jīm and the curved shape is used for ḥāʾ/khāʾ.

The final jīm is attested twenty-four times, and on each occasion, it has the straight shape.

Table 1.1: Example Nos. 1-3 of the Straight Jīm
(for Nos. 4-24, see Appendix 1.1)

| Q9:3 al-ḥajj | Q9:19 al-ḥājj | Q9:46 al-khurūj |

The ḥāʾ, by contrast, appears in nearly all instances (thirty-nine times out of a total of forty) with a curved shape.

Table 1.2: Example Nos. 1-3 of the Curved Ḥāʾ
(for Nos. 4-39, see Appendix 1.2)

| Q8:19 al-fath | Q9:30 al-masīḥ | Q9:31 al-masīḥ |

The ḥāʾ is written with a straight shape only once.

| Q60:10 junāḥ |

The khāʾ appears twice, once with a curve and once without.

| Q9:5 insalakha | Q45:29 nastansikhu |

8. Cellard, Codex Amrensis 1, 6.
Although the distinction is thus not quite absolute, with a single case each of a straight final ḥāʾ and khāʾ, it is clear that the distribution can hardly be due to chance. The statistical procedure known as Fisher’s exact test allows us to calculate the odds of the distribution, as attested above, having occurred by chance, rather than being the result of a distinction between jīm and ḥāʾ/khāʾ. The resulting p value is the probability that the correspondence is due to chance. A p value of .05 is equivalent to a chance of one in twenty (.05 = 1/20). Taking a p value of .05 to indicate a statistically significant correlation, we see that this manuscript (and the others discussed below) demonstrate highly significant correlations. In this case, the p value is smaller than .0001, indicating a highly significant correlation; that is, it is extremely unlikely that the apparently link between the shape and sign in this manuscript is merely coincidental.

2. BnF Arabe 330g and CBL Is. 1615 II

Déroche has described the manuscript Arabe 330g, found in the collection of Arabic manuscripts in the Bibliothèque nationale de France. The manuscript is written in an unclassified script style, with some features recognizable as Hijazi. George identifies the manuscript as “intermediate between Hijazi and Kufic.” In an as yet unpublished study, Cellard contextualizes the script of the manuscript, noting clear similarities to manuscripts in the A.I style and in what she dubs the LH/A style (Late Hijazi/A.I). She proposes that this transitional style probably dates to the early Umayyad period.

The fragment consists of twenty folios (folios 50–69 in the Arabe 330 collection). According to Cellard, the four folios of CBL Is. 1615 II, the twelve folios of the Saint Petersburg National Library’s Marcel 16, and the six folios of Doha Museum of Islamic Art’s MIA.2013.23 also belong to this manuscript. I am very grateful to the Chester Beatty Library for providing me access to photographs of Is. 1615 II and permission to reproduce sections of these photos. Images from that portion of the manuscript are marked with B II below. I have been unable to examine the portions of the manuscript in Saint Petersburg and Doha. In the examined folios, the respective shapes of the jīm and the ḥāʾ/khāʾ are clearly distinct. The former generally does not curve downward and is somewhat shorter, whereas the latter does curve downward sharply and may even curve across one or several lines of text below it.

In eleven out of twelve instances, the jīm is written with a straight line, which sometimes is dotted and at other times is not. The straight shape occurs regardless of whether it is preceded by a connecting letter.

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There is a single instance of a curved jīm.

\[ Q9:91 \text{kharaja} (66v, l. 13) \]

The final ḥāʾ/khāʾ occurs much more often (thirty-four times) than does the final jīm. Each time it has the curved shape. Given this extremely strong correlation between the two signs, there can be no doubt that they are, in fact, distinctive.

### Table 2.2: Example Nos. 1-3 of the Curved Ḥāʾ/Khāʾ (for Nos. 4-34, see Appendix 2.2)

<table>
<thead>
<tr>
<th>Example</th>
<th>Arabic Word</th>
<th>Page Number</th>
<th>Line Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4:6</td>
<td>al-nikāḥ</td>
<td>50v</td>
<td>l. 12</td>
</tr>
<tr>
<td>Q4:23</td>
<td>junāḥ</td>
<td>51v</td>
<td>l. 11</td>
</tr>
<tr>
<td>Q4:24</td>
<td>junāḥ</td>
<td>51v</td>
<td>l. 16</td>
</tr>
<tr>
<td>Q4:12</td>
<td>ṣakh</td>
<td>51r</td>
<td>l. 10</td>
</tr>
<tr>
<td>Q4:22</td>
<td>nakakha</td>
<td>51v</td>
<td>l. 7</td>
</tr>
<tr>
<td>Q4:23</td>
<td>al-ṣakh</td>
<td>51v</td>
<td>l. 9</td>
</tr>
<tr>
<td>Q7:175</td>
<td>fa-nsalaka</td>
<td>58r</td>
<td>l. 11</td>
</tr>
<tr>
<td>Q9:5</td>
<td>insalaka</td>
<td>62r</td>
<td>l. 13</td>
</tr>
</tbody>
</table>

The khāʾ is not distinct from the ḥāʾ and likewise has a curved shape in each of its five appearances.

For this manuscript, too, the results of Fisher’s exact test show that the correlation is highly significant, with a \( p \) value below .0001.

### 3. CBL Is. 1615 I, Doha Museum of Islamic Art Ms. 68, and a Folio from a Private Collection

The manuscript Is. 1615 I, held at the Chester Beatty Library, displays the same LH/A style as does Arabe 330g. It belongs to the same manuscript as does the single folio published by
Fraser, along with a folio held in the private collection of Vahid Kooros in Houston under the name TR:490-2007 and fourteen other folios in the Museum of Islamic Art in Doha, listed under Ms. 68, 69, 70 and 699. I am very grateful to the Chester Beatty Library for granting me access to photographs of Is. 1615 I and permission to reproduce portions of them. I have included both Ms. 68 (marked with D) and Fraser’s folio (marked with F) in the discussion below. I have not been able to examine the folio kept in Houston nor the folios labelled Ms. 69, 70, or 699 in Doha. This manuscript, too, shows a distinction between jīm and ḥāʾ/ khāʾ, although its distribution is somewhat different from that in the manuscripts discussed above.

In this manuscript, the shape of the jīm varies much more evenly between the straight version (twenty-two occurrences) and the curved one (seventeen). It is clear that in this codex both shapes were acceptable for the jīm.

**Table 3.1: Example Nos. 1-3 of the Straight Jīm**  
(Example Nos. 4-22 in Appendix 3.1)

<table>
<thead>
<tr>
<th>Example</th>
<th>Verse</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Q28:32 takhrju (1v, l. 11)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Q30:19 yakhriju (5r, l. 11)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Q30:19 yakhriju (5r, l. 12)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.2: Example Nos. 1-3 of the Curved Jīm**  
(Example Nos. 4-17 in Appendix 3.2)

<table>
<thead>
<tr>
<th>Example</th>
<th>Verse</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Q30:48 yakhruju (6r, l. 1)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Q31:29 yūlju (7r, l. 2)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Q31:29 yūlju (7r, l. 2)</td>
<td></td>
</tr>
</tbody>
</table>

By contrast, the ḥāʾ appears mostly with the curved shape, forty times out of a total of forty-four.

**Table 3.3: Example Nos. 1-3 of the Curved Ḥāʾ**  
(Example Nos. 4-40 in Appendix 3.3)

<table>
<thead>
<tr>
<th>Example</th>
<th>Verse</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Q28:34 ḍafṣah (1v, l. 14)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Q30:46 al-riyāḥ (5v, l. 21)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Q32:28 al-fath (7v, l. 20)</td>
<td></td>
</tr>
</tbody>
</table>

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A straight ḥāʾ is found only four times.

Q28:76 tafrāḥ (2v, l. 17)  Q30:4 yafrāḥu (4v, l. 22)  Q33:7 nūḥ (8r, l. 10)

Q33:55 junāḥ (9v, l. 21)

The khāʾ occurs seven times, always with a curved shape.

Q36:37 naslakhu (14r, l. 7)  Q36:43 šarīkh (14r, l. 12)  Q36:51 nufikha (14r, l. 20)

Q39:68 nufikha (20r, l. 2)  Q39:68 nufikha (20r, l. 3)  Q45:29 nastansikhu (29r, l. 15)

Q12:77 ʾakh (D, r, l. 6)

Although this manuscript shows more variance in the shape of the jīm, the straight shape nonetheless predominates, and the ḥāʾ and the khāʾ almost never use the straight shape; the distribution remains highly significant, with a p value below .0001. This manuscript seems to represent a transitional stage between manuscripts that keep the two shapes distinct and manuscripts in which they have been merged. The scribe of this manuscript seem to have had a choice regarding the shape to use for the jīm.

4. BnF Arabe 330f

The manuscript Arabe 330f, identified by Déroche as belonging to the Kufic A.I style, is yet another manuscript that, despite its rather limited attestations, points to a distinction between the jīm and the ḥāʾ. The distribution of the shapes of these two letters is similar to that of CBL Is. 1615 I: the jīm may be curved, but the ḥāʾ is always curved.

15. Déroche, Manuscrits, 5, no. 12.
Of the six instances of ǧīm in this manuscript, four are straight and two are curved.

<table>
<thead>
<tr>
<th>Straight</th>
<th>Curved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q33:37 kharaj (47v, l. 10)</td>
<td>Q4:100 yakhrūj (33v, l. 13)</td>
</tr>
<tr>
<td>Q33:50 kharaj (48v, l. 16)</td>
<td>Q9:64 makhrūj (40r, l. 2)</td>
</tr>
</tbody>
</table>

The ḥāʾ appears eleven times, always with a hook.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4:102 junāḥ (34r, l. 12)</td>
<td>Q4:141 fath (36r, l. 6)</td>
</tr>
<tr>
<td>Q5:3 dhubiha (38v, l. 6)</td>
<td>Q5:4 al-jawāriḥ (38v, l. 17)</td>
</tr>
<tr>
<td>Q12:87 rūḥ (45r, l. 2)</td>
<td>Q12:87: [r]ūḥ (45r, l. 3)</td>
</tr>
<tr>
<td>Q34:26 yaftaḥu (49v, l. 5)</td>
<td>Q34:26 al-fattāḥ (49v, l. 5)</td>
</tr>
</tbody>
</table>

The number of examples in this manuscript is rather low in view of the amount of text it contains, but even in this limited sample there is a significant correlation between shape and sound, with a p value of .0063.

5. CUL Add. 1146 and BnF Arabe 6140b

A fifth manuscript that displays the distinction between ǧīm and ḥāʾ/khāʾ is CUL Add. 1146 (CUL) combined with BnF Arabe 6140b (A 6140b). To my knowledge, the two fragments have not yet been identified as belonging together, but they clearly belong to the same quire, with the bifolios of Arabe 6140b forming the outer bifolios and those of Add. 1146 the inner bifolios (see Table 5.1 on the next page). One bifolio is missing between the two fragments. The original manuscript must have originally consisted of four bifolios with

16. Although the letter here does have a hook, this hook clearly looks very different from the broad hook of the ḥāʾ below, and it seems possible that the hook was added when the text was retraced by a later hand.
flesh facing the hair (assuming that no fifth bifolio surrounded 6140b). The manuscript is written in a clear and stable Kufic B.Ib style.\textsuperscript{17}

Table 5.1: Comparison of the Dimensions and Contents of CUL Add. 1146 and BnF Arabe 6140b

<table>
<thead>
<tr>
<th>Folio</th>
<th>Range</th>
<th>Flesh/hair side</th>
<th>Measurements\textsuperscript{18}</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 6140b, 5r</td>
<td>Q33:10–20</td>
<td>Hair side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>A 6140b, 5v</td>
<td>Q33:21–24</td>
<td>Flesh side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>A 6140b, 6r</td>
<td>Q33:24–33</td>
<td>Hair side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>A 6140b, 6v</td>
<td>Q33:33–37</td>
<td>Flesh side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>[Lost bifolio]</td>
<td>33:37–52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUL, 1r</td>
<td>33:52–57</td>
<td>Hair side</td>
<td>349 × 276 mm</td>
</tr>
<tr>
<td>CUL, 1v</td>
<td>33:57–68</td>
<td>Flesh side</td>
<td>349 × 276 mm</td>
</tr>
<tr>
<td>CUL, 2r</td>
<td>33:68–34:3</td>
<td>Flesh side</td>
<td>349 × 276 mm</td>
</tr>
<tr>
<td>CUL, 2v</td>
<td>34:3–11</td>
<td>Hair side</td>
<td>349 × 276 mm</td>
</tr>
<tr>
<td>[Lost bifolio]</td>
<td>34:11–26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 6140b, 7r</td>
<td>34:26–34</td>
<td>Flesh side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>A 6140b, 7v</td>
<td>34:34–43</td>
<td>Hair side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>A 6140b, 8r</td>
<td>34:43–52</td>
<td>Flesh side</td>
<td>347 × 275 mm</td>
</tr>
<tr>
<td>A 6140b, 8v</td>
<td>34:53–35:6</td>
<td>Hair side</td>
<td>347 × 275 mm</td>
</tr>
</tbody>
</table>

All four occurrences of \(jīm\) have the straight shape.

\textsuperscript{17} Déroche, Manuscrits, 68, no. 17.

\textsuperscript{18} Déroche, Manuscrits, 68, says that the writing surface is 333 × 270 mm. I have been unable to reconstruct how he arrived at these measurements. Taking the dimensions of the page as the measure and then dividing the writing surface (height baseline to baseline; width rightmost stroke to leftmost stroke, ignoring backward-curving \(yā\)), the measurements of the two fragments are almost identical and well within the measure of error one would expect using purely digital means to measure both.
Meanwhile, all three ḥā’s are curved.

Because of the very small number of attestations, the correlation between shape and sound is not quite as significant in this manuscript as it is in the previous cases, but its p value of .0276 still falls well below the significance threshold of .05.

6. Wetzstein II 1913 and BnF Arabe 6087

Put together, the two fragments Wetzstein II 1913 and BnF Arabe 6087 contain about 85% of the Quranic text, and as such the combined manuscript one of the most complete early Quranic manuscripts. It was carbon-dated by the Corpus Coranicum project to 662–765 CE with 2σ (95.4%) probability. Déroche identifies Arabe 6087 as belonging to his Kufic B.1a type. This manuscript has undergone significant retouching on many of its pages. As a result, drawing conclusions regarding the distinction between jīm and ḥā’/khāʾ is somewhat more problematic.

Although the jīm still occurs fairly often with its straight shape, occasionally it features an extended horizontal line with a sharp hook at the end. Such instances of a jīm with a hook are almost certainly products of later retouching; this is quite visible, for example, in Q33:52, ʾazwāj. At other times, however, the distinction is not quite as clear.

Even though the shape of the straight jīm has been corrected toward the general curved form, it is usually possible to distinguish it from the ḥā’/khāʾ, which, in this manuscript, usually has a very tight loop, as, for example, in Q32:28, al-fāṭḥ.

Because the retouching added hooks to many straight shapes, I have decided to classify any final letter in which a significantly long horizontal line ends in a final hook as falling in the straight shape category, whereas final letters with a tight or large loop belong to the curved shape category. This method may mean that letter shapes that were originally straight with a final hook, not merely those that have been retouched to receive a hook, are

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19. Déroche, Manuscrits, 67, no. 16.
counted as straight. The overall result may be to overestimate the proportion of straight letters as opposed to curved ones in both groups (jīm and ḥāʾ/khāʾ). Since the latter group is significantly more numerous, the distortion could have the effect of making the correlation appear weaker than it would have been before retouching. But despite this conservative approach, there is still an extremely strong correlation between the shape of the letter and the sound it represents.

Of the total 153 occurrences of jīm, 139 feature the straight shape.

Table 6.1: Example Nos. 1–3 of the Straight jīm
(Example Nos. 4–139 in Appendix 6.1)

In only fourteen cases does the jīm have an unambiguously curved shape.

Table 6.2: Example Nos. 1–3 of the Curved jīm
(Example Nos. 4–14 in Appendix 6.2)

The ḥāʾ occurs a total of 247 times, of which 237 feature the curved shape.

Table 6.3: Example Nos. 1–3 of the Curved ḥāʾ
(Example Nos. 4–237 in Appendix 6.3)

In ten cases out of 247, the ḥāʾ has a straight shape (which has in some cases evidently been retouched later).

Table 6.4: Example Nos. 1–3 of the Straight ḥāʾ
(Example Nos. 4–10 in Appendix 6.4)
The khāʾ occurs twenty-five times, and twenty-four of these involve the curved shape.

Table 6.5: Example Nos. 1–3 of the Curved Khāʾ
(Example Nos. 4–24 in Appendix 6.5)

<table>
<thead>
<tr>
<th>Example No.</th>
<th>Text</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2:107</td>
<td>nansakh</td>
<td>4v, l. 15</td>
</tr>
<tr>
<td>Q7:77</td>
<td>yā-ṣāliḥ</td>
<td>58v, l. 7</td>
</tr>
<tr>
<td>Q4:22</td>
<td>nakaḥa</td>
<td>27v, l. 6</td>
</tr>
</tbody>
</table>

There is a single instance of a khāʾ with what is likely to have been originally a straight shape.

Q39:68 nufîkha (159r, l. 4)

Because the number of attestations in the manuscript is so large, we can calculate the significance of the shape/sound correlation using the χ² test, which requires a higher sample size, rather than Fisher’s exact test. The distribution is once again highly significant, with a p value below .0001.

7. Codex Parisino-Petropolitanus (Hand C)

The manuscripts examined so far clearly make a distinction between jīm and ḥāʾ/khāʾ. However, this is certainly not the case for all early Quranic manuscripts. Even some very early manuscripts, such as the Hijazi Codex Parisino-Petropolitanus (henceforth CPP), lack the distinction in some of its hands. For example, Hand A of the CPP uses the curved form for both ḥāʾ and jīm.

Q2:282 junāḥ
Q3:27 tūliju
Q3:97 ḥijj
Q3:117 rīḥ

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22. For the identification of the different hands of the CPP, see Déroche, *Transmission*, 31–45.
Hand B, on the other hand, clearly displays the straight shape for both the ḥāʾ and the ḥāʾ. Hand C, however, distinguishes the shape of the ḥāʾ from the shape of the ḥāʾ/khāʾ, as the below overview shows. Part of Hand C belongs to the Saint Petersburg part of the CPP. I was granted access to photographs of these folios by Michael Marx, but I do not have permission to reproduce the photos. Instead, I provide black-and-white tracings of the letter shapes. These images are identified with M.

The ḥāʾ occurs thirteen times, all but once with the straight shape.

Table 7.1: Example Nos. 1-2 of the Straight ḥāʾ (Example Nos. 4-12 in Appendix 7.1)

| Q43:12 al-ʾazwāj (60r, l. 11) | Q45:33 maʿārij (60v, l. 16) | Q65:11 li-yukhrija (67r, l. 20) |
| Q7:69 nūḥ |
| Q7:58 yakhruju |
| Q7:56 al-riyāḥ |

There is a single instance of a curved ḥāʾ.

Q41:47 takhrju (57v, l. 7)

The ḥāʾ appears on twenty-one occasions, of which nineteen feature a curved shape.

Table 7.2: Example Nos. 1-3 of the Curved Ḥāʾ (Example Nos. 4-19 in Appendix 7.2)

| Q42:24 yamḥu (59r, l. 3) | Q42:33 al-rāḥ (59r, l. 16) | Q42:40 ʿašlaḥa (59v, l. 1) |
| Q7:80 nūḥ |
| Q7:97 ḥijj |
| Q3:27 tūliju |
There are two instances of a straight ḥāʾ.

The khāʾ is found twice, both times curved.

In Hand C of the CPP, as in the manuscripts discussed above, the correlation of shape and letter is highly significant, with a p value below .0001.

8. TIEM ŞE 118

I have identified a final potential manuscript that seems to display the distinction between jīm and ḥāʾ. This manuscript, ŞE 118, is housed at Türk ve İslam Eserleri Müzesi (TIEM) in Istanbul. I have not been able to access the complete manuscript and was able to examine only a single page, 6r, which is reproduced by Déroche.23 This page contains an exceptionally high number of final jīms and ḥāʾs for a single page, and their shape corresponds perfectly to the proposed distinction. Still, since the sample remains small in absolute terms, containing only five examples, it is impossible to be sure whether the correspondence is due to chance (Fisher’s exact test yields a p value of .1). Additional folios would have to be examined to prove or disprove the presence of the distinction in the manuscript.

Both of the two jīms are straight.

By contrast, all three ḥāʾs have the curved shape.

Notes on Paleography in Light of the Distinction

Above I have identified several manuscripts that feature a distinction between final jīm versus final ḥāʾ/ḥāʾ. Although the distinction is present in a fair number of relatively early manuscripts, these are nonetheless outnumbered by manuscripts without the distinction. Several paleographical observations can be made about the manuscripts. First, several of the manuscripts I have examined fall into the rather heterogeneous, but nevertheless distinct group of manuscripts written in the A and LH/A scripts and the LH/A-A hybrid style identified by Cellard.24 The Codex Amrensis 1 belongs to the LH/A-A group, Arabe 330g and Is. 1615 I belong to the LH/A group, and Arabe 330f belongs to the A group.

These groups are distinct from each other but clearly share several paleographical similarities. Typical of manuscripts in this style group, for example, is the downward-curving tail on the final and isolated ṭāʾ.25 One might, therefore, speculate that the distinction between jīm and ḥāʾ/ḥāʾ is also typical of this style. But although the distinction seems to be relatively more prevalent in manuscripts of this group, there are still manuscripts within it that clearly lack the distinction. The two other Kufic A.I manuscripts discussed by Déroche,26 Arabe 330d and Arabe 330e, both use only the straight shape regardless of the consonantal value of the jīm/ḥāʾ/khāʾ. Arabe 326b, part of the hybrid LH/A-A style and very close to the Codex Amrensis 1, contains only a single case of jīm and a single case of ḥāʾ, but both have a long, straight shape with a final sharp curve, with no apparent distinction. In the LH/A group, the distinction is not present in Qāf 47 of the Bergsträsser photo archive,27 even though it does employ both shapes:

Hand C of the Codex Parisino-Petropolitanus is so far the only Hijazi hand with the distinction that I have identified, and strikingly none of the other hands in this manuscript maintain the distinction. This is a clear indication that the decision to make or ignore the distinction was up to the scribe.

25. This similarity was already observed by Cellard (Codex Amrensis 1, 7; “Written Transmission”).
27. To this manuscript also belongs Berlin, Staatsbibliothek Ms.or.fol.4313.

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The two manuscripts Wetzstein II 1913/BnF Arabe 6087, written in the B.Ia style, and CUL Add.146/BnF Arabe 6140b, written in the B.Ib style, are to my knowledge the only examples of manuscripts in these two respective styles to display the distinction.

Although the curved shape eventually came to dominate, yielding the modern shape of the jīm/ḥāʾ/khāʾ, both forms continued to coexist for some time. Even after the emergence of the later, calligraphic proportioned Kufic hands, we still see the straight shape in use, which suggests that scribes who did not differentiate between the jīm and the ḥāʾ/khāʾ in terms of shape continued to employ both. In fact, the shape used for the jīm/ḥāʾ/khāʾ is one of the factors that distinguishes the Kufic styles C and D, as Déroche has pointed out. Style C uses the straight jīm shape for both jīm and ḥāʾ/khāʾ whereas style D uses a tightly curved ḥāʾ/khāʾ for both jīm and ḥāʾ/khāʾ. BnF Arabe 334a, an example of a manuscript in style C.Ib, always uses the straight jīm shape:

Q5:17 al-masīḥ (A 334a, 3v, l. 9)
Q35:13 yūlīju (A 334a, 7v, l. 6)

The style identified by Déroche as O.I, exemplified by the early Umayyad Qurans, seems in its ornamentation to have clear affinity with the Dome of the Rock inscription. Manuscripts of this style, such as Marcel 13 and BnF Arabe 330e, likewise consistently have the straight shape for jīm/ḥāʾ/khāʾ, but both shapes are still (indiscriminately) in use, as can be seen in Arabe 330c:

Q15:22 al-riyāḥ (A 330c, 11r, l. 10)
Q15:34 fa-khraj (A 330c, 11r, l. 25)

By contrast, BnF Arabe 325k, a manuscript in style D.I, uses the ḥāʾ/khāʾ shape:

Q12:87 zawj (A 325k, 106r, l. 4)
Q17:24 janāb (A 325k, 110r, l. 6)

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28. F. Déroche, *The Abbasid Tradition: Qur’ans of the 8th to the 10th Centuries AD* (Oxford: Oxford University Press, 1992), 40, 43. This distinction is not absolute: some Quranic manuscripts in the Kufic C style have a curve, but their horizontal portion is still much longer than it is in style D, and thus quite distinct.


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The other very common Kufic style of later manuscripts, the B.II style, likewise exclusively uses the ḥāʾ/khāʾ shape in all environments. See, for example, BnF Arabe 340f:32

Establishing how long the distinction between jīm and ḥāʾ/khāʾ remained in use and when the curved shape superseded the straight one requires further investigation.

The Nabataean Origin of the Distinction

As seen above, the distinction between jīm and ḥāʾ/khāʾ is clearly attested in several early Quranic manuscripts in a variety of styles, but it is permanently lost in later styles such as Kufic C, D, and B.II. The next question, then, is where the distinction between the jīm and the ḥāʾ/khāʾ comes from. It is clear, from the very earliest extant Quran manuscripts, that there were writing traditions that did not distinguish the two signs as well as others that did. There are two possible origins of the distinction. Either there was free variation between two shapes, and some scribes appropriated this free variation to make a distinction between the jīm and the ḥāʾ/khāʾ, or the distinction was carried over from an ancient scribal tradition that was eventually lost.

The first possibility has in its favor the fact that there are other letters whose shape in the final position can vary freely. As is well known, Arabic script has two different variants of the final yāʾ: a returning yāʾ and an s-shaped yāʾ. The two shapes seem to have had no apparent functional difference, and they can be found in the same text and even in identical words on a single page. See, for example, the two variant forms of the word fī on a single page (pg. 258) in the Codex Amrensis I:33

If the final yāʾ could vary freely between the two forms with no apparent difference in use, it is easy to imagine that the two shapes of the ḥāʾ might have represented a similar case, with the straight form and the curved form in free variation. However, there are some problems with this theory. First, there is no obvious explanation as to why some

32. Déroche, Manuscripts, 72, no. 34.
33. This variation is already found in Nabataeo-Arabic, although in later texts the returning yāʾ seems thus far more common than the s-shaped yāʾ. 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: Archæopress, 2010), 51.
manuscripts would have appropriated this free variation in order to make a distinction between the jīm and the ḥāʾ/ḵāʾ. If differentiation was truly a concern, one wonders why they did not employ a threefold distinction or, for example, treat jīm and ḥāʾ the same, as opposed to ḵāʾ. Second, all of these manuscripts already use dots, so it is not clear why a differentiated final form would have been necessary to distinguish the letters, as the dots would have served the same function (and in fact, the straight jīm is quite often dotted). Third, there are only very few words that are ambiguous if the jīm and the ḥāʾ/ḵāʾ are not differentiated (only the pair rūḥ and zawj comes to mind). A clear motivation to consciously distinguish these letters therefore seems to be lacking. And finally, there is no precedent of scribes’ using the two variants of final ｙāʾ to make what would be a very sensible distinction—namely, that between final ｉ and final ａ, which are otherwise homographic. Therefore, among early Islamic Arabic scribes, it does not seem to be the case that optional final variants were employed to make specific phonemic distinctions that the Arabic script had lost the ability to make (or that it never had, for that matter).

This brings us to the second possible explanation, the retention of a distinction from pre-Islamic times. Gruendler and Nehmé have shown conclusively that the Arabic script developed from the Nabataean Aramaic script and that we can trace the development of the script from Nabataean toward Arabic as a continuous evolution in the epigraphic record. Therefore, it does not make much sense to speak of Nabataean or Arabic script: Arabic is quite simply the last stage in the development of the Nabataean script.

In the history of the development of the Arabic script, the word-final position seems to be especially prone to retaining graphemic distinctions that are lost in other positions. The ｙāʾ and the ｎūn, which have both merged with ｂāʾ and ｔāʾ/ｔhāʾ in the word-internal position, remain distinct from them in the final position. The same applies to the ｑāʾ and the ｆāʾ, which are distinct in the final position but homographic in the internal position. Both of these word-internal neutralizations can be observed in transitional Nabataean-Arabic inscriptions. It thus seems quite possible that an original distinction between the jīm and the ḥāʾ/ḵāʾ might have been neutralized in the word-internal position but retained in the word-final position, as we find in the manuscripts examined above.

In Classical Nabataean, as in other forms of Aramaic script, the ｇｉｍｅｌ and the ｈｅｔ are distinct. Moreover, the ｈｅｔ is employed in Nabataean to write both the ｈ and ㎞ sounds of Arabic (e.g., <ḥrtt> for hāritha and <ḥlyfw> for khalīf but <ʾbgr> for ʾabjar). If, as I argue here, the distinction between jīm and ḥāʾ/ḵāʾ is inherited from Nabataean, this feature of Nabataean would explain why there is a graphemic distinction between the jīm and the ḥāʾ/ḵāʾ but not between the ḥāʾ and the ḵāʾ.

34. B. Gruendler, The Development of the Arabic Scripts: From the Nabatean Era to the First Islamic Century according to Dated Texts (Atlanta: Scholars Press, 1993); Nehmé, “Glimpse.”
In early forms of Nabataean, the *gimel* and the *ḥet* are fairly clearly differentiated, although both have a variety of forms, ranging from shapes quite close to those used in Imperial Aramaic to shapes quite similar to what we find in the Arabic script today. The image below shows the approximate development over time of the letter shapes attested in Nabataean, from left to right.\(^\text{38}\)

![Nabataean gimel](image1)

![Nabataean ḥet](image2)

Although the most advanced shape of the *ḥet* is identical to the least advanced shape of the *gimel*, the two signs remain distinct in the transitional Nabataean-Arabic inscriptions, since these two stages never co-occur.\(^\text{39}\) Nehmé does not comment specifically on the development of these two signs in the word-final position,\(^\text{40}\) and it is clear that eventually they merge completely in the word-internal position. An examination of their evolution from transitional Nabataean-Arabic into the Arabic script shows that—as far as we can tell from the incomplete epigraphic record—the originally upheld distinction in the final position appears to have developed eventually into the differentiated signs that we find in the manuscripts that I have discussed above.

**Final ḥet**

The final *ḥet* is much better attested than is the final *gimel*. The more or less classical shape of the final *ḥet* can be seen in JSNab 17 (267 CE) and LPNab 41 (3rd c. CE).\(^\text{41}\)

![JSNab 17: b-yrḥ](image3)

![LPNab 41: tnwḥ](image4)

A more advanced form is attested in the inscription published by Stiehl (356 CE), where the shape of the *ḥet* is almost identical to the straight *jīm* in the early Islamic Quran.

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\(^{39}\) Nehmé, “Glimpse,” 49.

\(^{40}\) Nehmé, “Glimpse.”

\(^{41}\) Tracings and photos taken from Nehmé, “Glimpse.”
manuscripts, with the exception that the left leg stands at a somewhat oblique angle to the baseline.\textsuperscript{42}

\textbf{Stiehl inscription: }\textit{b-yrḥ}

When we then consider inscriptions that are recognizably closer to the Arabic script, such as Ḥimā-Sud PalAr 1, published by Robin, al-Ghabbān, and al-Saʿīd and dated to 470 CE,\textsuperscript{43} we again find the phrase \textit{b-yrḥ }’in the month’ with a similarly advanced shape, but here it has a distinct downward curve.\textsuperscript{44}

\textbf{Ḥimā-Sud PalAr 1: }\textit{b-yrḥ}

An even stronger downward curve occurs in the inscription Ḥimā-al-Musammā\textsuperscript{3} PalAr 5, which contains the name \textit{ʿabd al-masīḥ}.\textsuperscript{45}

\textbf{Ḥimā-al-Musammā PalAr 5: }\textit{bdʾlmṣyḥ}

Finally, in an as yet unpublished pre-Islamic Arabic inscription found between Tabuk and Hegra and studied by the amateur epigraphist group Fariq al-Ṣaḥrāʾ,\textsuperscript{46} we find the \textit{ḥāʾ} in its


\textsuperscript{44} Image taken from Robin et al., “Inscriptions antiques,” 1044.

\textsuperscript{45} Robin et al., “Inscriptions antiques,” 1125–1127. As this inscription is undated, it is not completely clear that it is pre-Islamic, but paleographically it seems early.

\textsuperscript{46} It is not absolutely certain that this inscription is pre-Islamic, but the formulae and orthography suggest that it is at least non-Islamic, and very early.

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most advanced form with a clear loop, recognizable from the Islamic-period shape, in an inscription that mentions wa-l-rumḥ ‘and the spear’.47

![Farīq 4: wlrṃḥ](image)

**Final gimel**

The final *gimel* is significantly rarer, as there is no common Nabatean phrase parallel to b-yrḥ ‘in the month’ that would have this letter in the final position. The earliest attestation that I am aware of is once again an inscription found and photographed by the Farīq al-Ṣaḥrāʾ group, which was subsequently deciphered and published by Nehmé as UJadhNab 538.48 The inscription contains the phrase ḥajj al-faṭīr ‘feast of leavened bread’ <ḥg ʾlptyr>. This inscription is written in a clear transitional Nabataeo-Arabic script and dates to 303 CE. In this inscription, we see that the *gimel* lacks the curve found in the transitional Nabataeo-Arabic *ḥet* and instead stands in a straight line parallel to the baseline.49

![UJadhNab 538: ḥg](image)

The next attestation is probably UJadhNab 486, an undated inscription written in the transitional Nabataeo-Arabic script.50 Nehmé suggests that it should be read as ʾlḥzr (or ʾlḥzry). I agree with her observation that it is possible and even probable that the word represents the name al-khazraj and that it is a clear example of the final *gimel* of Nabataeo-Arabic without a curve, as seen in early manuscripts. The *gimel* stands at a fairly sharp angle to the baseline, but it is distinct from the *ḥet* of, for example, the Stiehl inscription, which forms more of an upright triangle shape than do this *gimel* and the *gimel* in UJadhNab 538 above.

![UJadhNab 486: ʾlhzrg](image)

49. All images taken from Nehmé, *Darb al-Bakrah*.
This name al-khazraj is attested two more times in pre-Islamic inscriptions written in Arabic in a script that can be called the Arabic script proper, rather than a transitional script. In one of the two inscriptions the rāʾ and the zāy have a clear lunate shape typical of the Islamic period, suggesting that this inscription was produced fairly close to the Islamic era, likely in the sixth century CE. These inscriptions also lack the distinct downward or even backward curve that we find in the ḥet in inscriptions from approximately the same period. These Arabic inscriptions, too, were discovered and photographed by the Farīq al-Ṣaḥrāʾ group and are reproduced below.\(^\text{51}\)

![Farīq 5: ʿlhzrg](image1)

![Farīq 6: ʿlhzrg](image2)

It is clear from the examples I have presented, then, that the jīm and the ḥāʾ/khāʾ were still graphemically distinct from each other in the pre-Islamic Nabataean-Arabic script, and we can see a clear development toward the modern shapes. The pre-Islamic contrast between these two signs had simply not yet been lost in the early Islamic period, and traces of it can be found in the manuscripts that I have examined above. A schematic development of the letter shapes of the ḥet toward the ḥāʾ/khāʾ and those of the gimel toward the jīm is presented below with the ḥet/ḥāʾ on the top line and the gimel/jīm on the bottom one, running from the most archaic form on the right to the most advanced form on the left.

![Schematic development](image3)

**Conclusion**

The examples above show clearly that while the shapes of the letters ḥāʾ, khāʾ, and jīm merged in the word-internal position, throughout the pre-Islamic history of the Arabic script, from its Nabataean Aramaic beginnings until the early Islamic period, the word-final ḥāʾ/khāʾ and the word-final jīm remained distinct graphemes, at least within certain scribal traditions. Even in traditions that did not observe the distinction, the script continued to use both forms well into the second if not third century CE, as the use of the two forms is one of the features that distinguishes the Kufic C and D styles. Given the proven presence of

the distinction in early Quranic manuscripts, it seems unlikely that this spelling convention would be limited exclusively to Quranic writing. Future research should certainly be undertaken to examine the use of straight and curved ḥāʾ/khāʾ/jīm shapes in early papyri and inscriptions to establish whether they are used to distinguish these two signs.

It is also worth investigating how the distinction should be understood for palaeographical dating of Quranic manuscripts. Although it is clear that scribes who distinguished the two letters coexisted with scribes who did not (especially in view of the Codex Parisino-Petropolitanus), eventually the distinction was lost in most styles in which it appears (A.I, B.Ia, B.Ib, LH/A). It seems that manuscripts that retained this pre-Islamic contrast are likely to be earlier examples of these styles compared to manuscripts that no longer show the distinction. Determining how far we can take this conclusion and what it can tell us about the relative chronology of such early manuscripts will require further work.
Appendix 1.1: Codex Amrensis 1, Example Nos. 4-24 of the Straight Jīm

Q9:64 mukhrij
Q9:83 li-l-khurūj
Q9:91 ḥaraj

Q10:22 al-mawj
Q10:31 yukhraj
Q10:31 yukhraju

Q10:103 nunji
Q11:42 mawj
Q14:32 fa-ʾakhraja

Q15:34 fa-ʾakhraja
Q41:47 takhruju
Q43:12 al-ʿazwāj

Q46:17 ḫukhraja
Q47:29 yukhrija
Q48:17 [al-ʿ]raj

Q48:17 ḥaraj
Q48:29 [a]khraja
Q50:5 [marî]j

Q50:42 al-khurūj
Q57:20 yahiju
Q59:2 ʿakhraja
Appendix 1.2: Codex Amrensis 1,  
Example Nos. 4-39 of the Curved Ḥāʾ

Q9:70 nūḥ  
Q9:120 ṣāliḥ  
Q10:17 yuflīḥ

Q10:22 [rīḥ]  
Q10:22 bi-rīḥ  
Q10:71 nūḥ

Q10:77 yuflīḥu  
Q10:81 yuṣliḥu  
Q11:10 la-farḥ

Q11:32 yā-nūḥ  
Q11:34 ʿansaḥa  
Q11:36 nūḥ

Q11:42 nūḥ  
Q11:45 nūḥ  
Q11:36 yā-nūḥ

Q11:36 ṣāliḥ  
Q11:38 yā-nūḥ  
Q11:62 yā-ṣāliḥ

Q11:81 al-ṣubḥ  
Q11:81 [a]l-ṣubḥ  
Q11:8 al-ʾiṣlāḥ

Q14:18 al-rīḥ  
Q15:22 al-rīḥ  
Q15:22 lawāqiḥ

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* Note that this word is missing a denticle. One would have expected مصىىــح .
Appendix 2.1: BnF Arabe 330g and CBL Is. 1615 II, Example Nos. 4-11 of the Straight Jīm

- Q9:3 al-ḥajj (62r, l. 9)
- Q9:13 bi-ʾikhrāj (62v, l. 9)
- Q9:19 al-ḥājj (62v, l. 19)
- Q9:46 al-khurūj (64r, l. 14)
- Q9:64 mukhrij (65r, l. 3)
- Q10:22 al-mawj (69v, l. 2)
- Q86:7 yakhruju (B II, 1r, l. 12)
- Q87:4 ʾakhraja (B II, 1r, l. 18)
Appendix 2.2: BnF Arabe 330g and CBL Is. 1615 II,
Example Nos. 4-34 of the Curved Ḥāʾ/Khāʾ

Q4:25 yankiḥa (51v, l. 17)
Q4:101 junāḥ (53r, l. 13)
Q4:102 junāḥ (53r, l. 19)
Q4:114 ʾyślāḥ (53v, l. 18)
Q4:128 junāḥ (54r, l. 17)
Q4:128 al-ṣulḥ (54r, l. 17)
Q4:128 al-shuḥḥ (54r, l. s18)
Q4:141 fath (54v, l. 16)
Q4:157 al-masih (55r, l. 19)
Q4:163 nūḥ (55v, l. 7)
Q4:171 al-masih (55v, l. 19)
Q4:171 [r]ūḥ (55v, l. 20)
Q7:142 ʿaṣlīḥ (56v, l. 4)
Q7:145 al-ʿalwāḥ (56v, l. 9)
Q7:150 al-ʿalwāḥ (57r, l. 1)
Q7:154 al-ʿalwāḥ (57r, l. 7)
Q8:19 al-fath (59v, l. 18)
Q8:61 fa-njaḥ (61v, l. 1)
Q9:30 al-masih (63v, l. 2)
Q9:31 al-masih (63v, l. 4)

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Q9:70 nūḥ (65r, l. 14)
Q9:81 fariḥa (66r, l. 16)
Q9:120 șāliḥ (68r, l. 11)
Q10:17 yuflīhu (69r, l. 12)
Q10:22 bi-rīḥ (69v, l. 1)
Q10:22 rīḥ (69v, l. 2)
Q86:22 lawḥ (B II, 1r, l. 9)
Q87:1 sabbīḥ (B II, 1r, l. 17)
Q87:14 ʿaflaḥa (B II, 1v, l. 4)
Q91:9 ʿaflaḥa (B II, 2v, l. 3)
Q94:1 nashraḥ (B II, 3r, l. 1)
Q97:4 al-rūḥ (B II, 3r, l. 19)
Q110:1 al-fatḥ (B II, 4v, l. 18)
Appendix 3.1: CBL Is. 1615 I, Doha Museum of Islamic Art Ms. 68, and Folio from the Vahid Kooros Collection, Example Nos. 4-22 of the Straight جيم

Q31:32 mawj (7r, l. 6)  Q32:5 ya’ruju (7r, l. 18)  Q32:27 fa-nukhriju (7v, l. 10)

Q33:37 ‘azwāj (9r, l. 14)  Q33:38 ḥaraj (9r, l. 15)  Q33:52 ‘azwāj (9v, l. 13)

Q34:2 ya’ruju (10v, l. 3)  Q36:36 al-‘azwāj (14r, l. 5)  Q38:77 fa-khraj (18r, l. 7)

Q40:11 khurūj (20v, l. 6)  Q43:12 al-‘azwāj (26r, l. 1)  Q46:17 ṭukhrāja (30r, l. 4)

Q47:29 yuhkrija (31v, l. 14)  Q47:37 yuhkrij (32r, l. 3)  Q48:17 ḥaraj (32v, l. 10)

Q48:17 al-‘araj (32v, l. 10)  Q48:17 ḥaraj (32v, l. 10)  Q48:17 ḥaraj (32v, l. 11)

Q15:34 fa-khraj (F, v, l. 10)
Appendix 3.2: CBL Is. 1615 I, Doha Museum of Islamic Art Ms. 68, and Folio from the Vahid Kooros Collection, Example Nos. 4-17 of the Curved ǧīm.
Appendix 3.3: CBL Is. 1615 I, Doha Museum of Islamic Art Ms. 68, and Folio from the Vahid Kooros Collection, Example Nos. 4-40 of the Curved Ḥāʾ²

Q32:29 *al-fāth* (7v, l. 21)  
Q33:5 *junāḥ* (8r, l. 6)  
Q33:71 *yuṣliḥ* (10r, l. 18)

Q34:12 *al-rīḥ* (10v, l. 16)  
Q34:26 *yaftaḥu* (11r, l. 12)  
Q34:26 *al-fattāḥ* (11r, l. 13)

Q35:2 *yaftaḥ* (12r, l. 3)  
Q35:9 *al-riyāḥ* (12r, l. 13)  
Q35:10 *al-ṣāliḥ* (12r, l. 15)

Q35:12 *milḥ* (12r, l. 20)  
Q37:75 *nūḥ* (15v, l. 13)  
Q37:79 *nūḥ* (15v, l. 15)

Q37:107 *bi-dhibḥ* (16r, l. 5)  
Q37:177 *ṣabāḥ* (16v, l. 13)  
Q38:12 *nūḥ* (17r, l. 1)

Q38:36 *al-rīḥ* (17v, l. 3)  
Q39:22 *sharaḥa* (18v, l. 19)  
Q40:8 *ṣalaḥa* (20v, l. 2)

Q40:15 *al-rūḥ* (20v, l. 10)  
Q40:31 *nūḥ* (21r, l. 10)  
Q40:55 *sabbiḥ* (21v, l. 16)
Appendix 6.1: Wetzstein II 1913 and BnF Arabe 6087, Example Nos. 4-139 of the Straight Ġim

Q2:196 al-ḥajj (8v, l. 8)  
Q2:197 al-ḥajj (8v, l. 14)  
Q2:197 al-ḥajj (8v, l. 19)  
Q2:217 [ʾikhrāj] (10r, l. 2)  
Q2:258 ḥājj (13r, l. 14)

Q3:15 ʾazwāj (16r, l. 14)  
Q3:27 tūlīju (16v, l. 17)  
Q3:27 tūlīju (16v, l. 18)  
Q3:97 hijj (20r, l. 18)

Q4:20 zawj (27v, l. 2)  
Q4:57 ʾazwāj (29v, l. 24)  
Q4:78 burūj (31r, l. 15)

Q4:100 yakhruj (33r, l. 1)  
Q5:6 kharaja (38r, l. 21)  
Q5:110 tukhrīju (45r, l. 7)

Q6:95 yuhkhrij (50r, l. 19)  
Q6:95 mukhrij (50r, l. 20)  
Q6:99 nukhriju (50v, l. 5)

Q6:122 bi-khārij (51r, l. 17)  
Q7:2 ḥaraj (54v, l. 15)  
Q7:13 fa-khruj (55r, l. 9)

Q7:18 ukhruj (55r, l. 14)  
Q7:27 ʾakhraja (55v, l. 10)  
Q7:32 ʾakhraja (55v, l. 24)

Q7:40 yalija (56v, l. 5)  
Q7:57 nukhriju (57v, l. 7)  
Q7:58 yakhruju (57v, l. 8)

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Q7:58 yakhruju (57v, l. 9)  
Q9:3 al-ḥajj (69r, l. 4)  
Q9:13 bi-ʾikhrāj (69v, l. 10)

Q9:19 al-ḥājj (70r, l. 2)  
Q9:45 al-khurūj (71v, l. 20)  
Q9:46 mukhrij (72v, l. 20)

Q9:83 ʾi-i-khurūj (74r, l. 7)  
Q10:22 al-mawj (78r, l. 22)  
Q10:31 yukhriju (79r, l. 3)

Q10:31 yukhriju (79r, l. 3)  
Q10:103 nunji (82r, l. 20)  
Q11:42 mawj (84v, l. 21)

Q11:43 al-mawj (85r, l. 3)  
Q12:31 ukhraj (90r, l. 6)  
Q12:42 nāj (90v, l. 13)

Q14:1 ʾi-tukhrija (96v, l. 11)  
Q14:5 ʾakhrij (96v, l. 21)  
Q14:32 ʾa-ʾakhraja (98v, l. 23)

Q16:69 yakhruju (104r, l. 17)  
Q17:80 mukhrij (110v, l. 3)  
Q18:5 takhrusu (111r, l. 1)

Q18:94 yaʾjūj (116r, l. 1)  
Q18:94 maʾjūj (116r, l. 2)  
Q18:99 yamūju (116r, l. 12)

Q19:11[fa-khara]ja (116v, l. 23)  
Q19:66 ʾukhraju (118v, l. 8)  
Q20:88 ʾa-ʾakhraja (121v, l. 18)

Q20:108 ʾiwaja (122r, l. 23)  
Q21:96 yaʾjūj (126v, l. 4)  
Q21:96 [maʾ]jūj (126v, l. 5)
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Q38:58 ʾazwāj (155r, l. 12)
Q38:59 fawj (155r, l. 12)
Q38:77 fa-khruj (155v, l. 9)
Q39:6 ʾazwāj (156r, l. 9)
Q39:31 yuhīju (157r, l. 1)
Q39:28 ʿawīja (157r, l. 18)
Q40:11 khurūj (160r, l. 1)
Q41:47 takhrūju (165v, l. 1)
Q43:12 al-ʾazwāj (168v, l. 20)
Q43:33 maʾārij (169v, l. 10)
Q46:17 ʿukhraja (175r, l. 2)
Q47:29 yuhrijia (177v, l. 6)
Q47:37 yuhrij (177v, l. 24)
Q48:17 ḥaraj (179r, l. 2)
Q48:17 ḥaraįj (179r, l. 3)
Q48:29 ʾakhrāja (179v, l. 20)
Q49:5 takhrūju (180r, l. 11)
Q50:5 maćrij (181r, l. 14)
Q50:6 furūj (181r, l. 16)
Q50:7 zawj (181r, l. 18)
Q50:7 bahīj (181r, l. 18)
Q50:11 [al-khur]ūj (181r, l. 23)
Q50:42 al-khurūj (182r, l. 13)
Q55:15 mārij (188r, l. 6)
Q55:19 maraj (188r, l. 8)
Q55:22 yakhrūju (188r, l. 10)
Q57:4 yaʿrju (190v, l. 6)
Q57:4 yaljiyu (190v, l. 5)
Q57:6 yūlīju (190v, l. 9)
Q57:6 yūlīju (190v, l. 10)
Appendix 6.2: Wetzstein II 1913 and BnF Arabe 6087,
Example Nos. 4-14 of the Curved ʕim

Q2:197 al-ḥajj (8v, l. 18)
Q3:27 tukhrīju (16v, l. 19)
Q17:13 nukhrīju (107v, l. 12)
Q33:33 tabarruṣa (A 6087, 4r, l. 24)

Q2:240 ʕikhrāj (11v, l. 23)
Q9:91 kharaj (74v, l. 4)
Q20:22 takhrūj (119v, l. 24)
Q39:31 yukhrīju (156v, l. 24)

Q57:20 yahīju (191v, l. 8)
Q67:8 fawj (201r, l. 20)
Q79:29 ʕakhrāja (207v, l. 2)
Q87:4 ʕakhrāja (209v, l. 23)

Q59:2 ʕakhrāja (193v, l. 23)
Q70:3 al-маʿārij (204r, l. 1.3)
Q79:31 ʕakhrāja (207v, l. 3)
Q86:7 yakhruṣa (209v, l. 15)

Q65:11 li-yukhrīja (200r, l. 4)
Q70:4 taʿruṣa (204r, l. 3)
Q79:91 ʕazwāj (53r, l. 8)
Q87:4 ʕazwāj (209v, l. 23)

Q79:29 ʕazwāj (A 6087, 4r, l. 24)
Q86:7 ʕazwāj (156v, l. 24)
Appendix 6.3: Wetzstein II 1913 and BnF Arabe 6087, Example Nos. 4-237 of the Curved Ḥāʾ
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Q6:135 yufliḥu (52v, l. 5)
Q7:57 al-riyāḥ (57v, l. 4)
Q7:69 nūḥ (58r, l. 7)
Q7:145 al-ʾalwāḥ (61v, l. 2)
Q8:19 al-fatḥ (65r, l. 22)
Q9:31 al-masīḥ (70v, l. 17)
Q9:120 šāliḥ (76v, l. 5)
Q10:22 rīḥ (78r, l. 22)
Q10:81 yufliḥu (81r, l. 17)
Q11:34 ʾanṣaḥa (84v, l. 4)
Q11:45 nūḥ (85r, l. 7)

Q7:35 ʿaslaha (56r, l. 10)
Q7:62 ʾanṣaḥu (57v, l. 16)
Q7:142 ʿaslīḥ (61r, l. 16)
Q7:89 ʾanṣaḥa (59r, l. 10)
Q7:70 nūḥ (59r, l. 7)
Q7:150 al-ʾalwāḥ (61v, l. 19)
Q9:30 al-masīḥ (70v, l. 13)
Q9:101 la-farḥ (83r, l. 13)
Q11:32 yā-nūḥ (84r, l. 23)
Q11:45 nūḥ (85r, l. 7)

Q7:40 yuffattahu (56v, l. 3)
Q7:68 nāṣīḥ (58r, l. 4)
Q7:154 al-ʾalwāḥ (62r, l. 6)
Q7:90 iftah (59r, l. 5)
Q7:81 al-ʾalwāḥ (62v, l. 18)
Q7:154 al-ʾalwāḥ (62v, l. 19)
Q7:154 al-ʾalwāḥ (62v, l. 20)
Q9:31 al-masīḥ (70v, l. 17)
Q9:70 nūḥ (73r, l. 14)
Q9:81 fariḥa (73v, l. 24)
Q9:101 la-farḥ (83r, l. 13)
Q11:32 yā-nūḥ (84r, l. 23)
Q11:45 nūḥ (85r, l. 7)

Q10:17 yufliḥu (78r, l. 7)
Q10:71 nūḥ (80v, l. 17)
Q10:77 yufliḥu (81r, l. 11)
Q11:10 la-farḥ (83r, l. 13)
Q11:32 yā-nūḥ (84r, l. 23)
Q11:45 nūḥ (85r, l. 7)

Q10:22 bi-rīḥ (78r, l. 21)
Q10:77 yufliḥu (81r, l. 11)
Q11:32 yā-nūḥ (84r, l. 23)
Q11:46 šāliḥ (85r, l. 10)
A Newly Discovered Letter of the Early Arabic Alphabet • 156

Q18:41 yuṣbiḥa (113v, l. 18)
Q18:42 fa-ʾaṣbaḥa (113r, l. 19)
Q18:35 fa-ʾaṣbaḥa (114r, l. 2)
Q18:60 ʿabraḥu (114v, l. 17)
Q20:25 ishraḥ (120r, l. 3)
Q20:64 ʾaflaḥa (120v, l. 24)
Q20:69 yufliḥ (121r, l. 6)
Q20:130 fa-sabbiḥ (123r, l. 11)
Q21:81 al-rīḥ (126r, l. 3)
Q22:42 [nūḥ] (128r, l. 13)
Q22:63 fa-tuṣbiḥu (129r, l. 6)
Q23:1 ʿafliḥa (129v, l. 22)
Q23:104 taflaḥu (132v, l. 12)
Q23:117 yuflīḥu (133r, l. 5)
Q24:3 yankiḥu (133r, l. 14)
Q24:29 junāḥ (134v, l. 2)
Q24:58 junāḥ (135r, l. 25)
Q25:60 junāḥ (135v, l. 6)
Q25:61 junāḥ (135v, l. 16)
Q25:37 nūḥ (137v, l. 2)
Q25:48 al-riyāḥ (137v, l. 20)
Q25:53 milḥ (138r, l. 4)
Q25:58 sabbiḥ (138r, l. 12)
Q26:105 nūḥ (140v, l. 18)
Q26:106 nūḥ (140v, l. 19)
Q26:116 yā-nūḥ (141r, l. 2)
Q26:118 fa-ṭaḥ (141r, l. 3)
Q26:142 ẓāliḥ (141r, l. 23)
Q26:193 al-rūḥ (142r, l. 19)
Q27:44 al-ṣarḥ (144v, l. 5)
Q27:44 ẓarḥ (144v, l. 6)
Q32:28 al-faṭḥ (A 6087, 2v, l. 7)
Q32:28 al-fatḥ (A 6087, 2v, l. 8)
Q33:5 junāḥ (A 6087, 2v, l. 22)
Q33:7 nūḥ (A 6087, 3r, l. 5)
Q33:51 junāḥa (A 6087, 5v, l. 5)
Q33:55 junāḥa (A 6087, 5v, l. 22)
Q33:71 yuṣliḥ (A 6087, 6v, l. 2)
Q35:2 yaftah (146r, l. 17)
Q35:9 al-riyāḥ (146v, l. 9)
Q35:10 al-ṣāliḥ (146v, l. 13)
Q35:12 milḥ (146v, l. 20)
Q37:75 nūḥ (151v, l. 24)
Q37:79 nūḥ (152r, l. 3)
Q37:177 šabāḥ (153r, l. 23)
Q38:12 nūḥ (153v, l. 19)
Q38:36 al-riḥ (154v, l. 12)
Q40:5 nūḥ (159v, l. 7)
Q40:8 šalaḥa (159v, l. 18)
Q40:15 al-riḥ (160r, l. 8)
Q40:31 nūḥ (160v, l. 23)
Q40:55 sabbīḥ (162r, l. 3)
Q41:12 bi-maṣābīḥ (163v, l. 18)
Q42:24 yamḥu (167r, l. 13)
Q42:33 al-riḥ (167v, l. 6)
Q42:40 [ʾa]ṣlaḥa (167v, l. 19)
Q42:48 fariḥa (168r, l. 15)
Q43:89 fa-ṣfaḥ (171r, l. 17)
Q45:5 al-riyāḥ (172v, l. 7)
Q45:29 nastansikhu (173v, l. 10)
Q46:24 riḥ (175r, l. 24)
Q47:2 ʿaṣlaḥa (176r, l. 13)
Q47:5 yuṣliḥu (176r, l. 24)
Q50:12 nūḥ (181r, l. 23)
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Appendix 6.4: Wetzstein II 1913 and BnF Arabe 6087, Example Nos. 4–10 of the Straight Ḥā’

Q19:58 nūḥ (118r, l. 16)  
Q20:130 sabbīḥ (123r, l. 10)  
Q27:63 al-riyāḥ (144v, l. 17)  
Q37:107 bi-dhibḥ (152r, l. 24)  
Q78:38 al-rūḥ (207r, l. 4)

Q81:17 al-ṣubḥ (208r, l. 15)  
Q84:7 kādīḥ (209v, l. 9)  
Q85:22 lawḥ (209v, l. 11)  
Q87:1 sabbīḥa (209v, l. 21)  
Q87:14 ‘aflāha (210r, l. 3)  
Q56:29 ṭalḥ (189r, l. 24)
Appendix 6.5: Wetzstein II 1913 and BnF Arabe 6087, Example Nos. 4-24 of the Curved Khāʾ

Q4:12 [ʾa]kh (26v, l. 24)  Q4:23 al-ʾakh (27v, l. 10)  Q5:110 fa-ṭanfukhu (45r, l. 5)

Q6:73 yunfakhu (49r, l. 9)  Q7:175 fa-nṣalakha (63v, l. 8)  Q9:5 insalakha (69r, l. 11)

Q12:59 bi-ʾakh (91v, l. 2)  Q12:77 ʾakh (92r, l. 20)  Q18:99 nufikha (116r, l. 12)

Q20:102 yunfakhu (122r, l. 16)  Q22:52 fa-yansakhu (128v, l. 7)  Q23:100 barzakh (132v, l. 8)

Q23:101 nufikha (132v, l. 8)  Q32:9 nafakha (A 1v, l. 18)  Q36:37 naslakhu (149r, l. 24)

Q36:43 ṣarīkh (149v, l. 7)  Q36:51 nufikha (149v, l. 18)  Q39:68 nufikha (159r, l. 2)

Q50:20 nufikha (181v, l. 9)  Q55:20 barzakh (188r, l. 9)  Q69:13 nufikha (203r, l. 20)
Appendix 7.1: Codex Parisino-Petropolitanus (Hand C),
Example Nos. 4-12 of the Straight $j$im

Q57:4 yalıju (M, 45v, l. 9)  
Q57:4 yakhruju (M, 45v, l. 10)  
Q57:4 ya’ruju (M, 45v, l. 10)

Q57:6 yūliju (M, 45v, l. 13)  
Q57:6 yūliju (M, 45v, l. 13)  
Q57:20 yahiju (M, 46v, l. 6)

Q67:8 fawj (68v, l. 1)  
Q70:3 al-ma‘ārij (69v, l. 11)  
Q70:4 ta’ruju (69v, l. 11)
## Appendix 7.2: Codex Parisino-Petropolitanus (Hand C), Example Nos. 4-19 of the Curved Ḥāʾ

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<td>fa-ṣfaḥ</td>
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Bibliography


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