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Hornkohl, Aaron D., and Khan Geoffrey, eds. *New Perspectives in Biblical and Rabbinic Hebrew*. Cambridge Semitic Languages and Cultures 7. Cambridge: University of Cambridge & Open Book Publishers, 2021, <https://doi.org/10.11647/OBP.0250>

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Semitic Languages and Cultures 7.

ISSN (print): 2632-6906

ISSN (digital): 2632-6914

ISBN Paperback: 978-1-80064-164-8

ISBN Hardback: 978-1-80064-165-5

ISBN Digital (PDF): 978-1-80064-166-2

DOI: 10.11647/OBP.0250

Cover image: Genizah fragment of the Hebrew Bible with Babylonian vocalisation (Num. 18.27-28, Cambridge University Library T-S A38.12; courtesy of the Syndics of Cambridge University Library). Genizah fragment of the Mishnah (Ḥallah 1, Cambridge University Library MS Add.470.1; courtesy of the Syndics of Cambridge University Library). Linguistic analysis of Ps. 1.1 (Elizabeth Robar). Images selected by Estara Arrant.

Cover design: Anna Gatti

HISSING, GNASHING, PIERCING, CRACKING: NAMING VOWELS IN MEDIEVAL HEBREW

Nick Posegay

1.0. Introduction

Hebrew scholars have long sought comprehensive explanations for the names of the Tiberian vowels, which are known today mainly as *qameš/qamaš* (/ɔ/), *pataḥ* (/a/), *segol* (/ɛ/), *šere* (/e/), *ḥireq/ḥiriq* (/i/), *ḥolem* (/o/), and *shureq/shuruq/qibbuš/qubbuš* (/u/). Aron Dotan offered a brief treatment of these names, as well as others applied to the Tiberian vowels, in his encyclopaedia article on ‘Masorah’ (Dotan 2007, 634, §5.3.1.3), but his brevity results in a discomfiting amount of speculation and generalisation. Before Dotan, Israel Yeivin summarised the usage of Tiberian vowel names in the terminology section of his *Introduction to the Tiberian Masorah* (Yeivin 1983, 81–114), but this section is only a reference list of the names’ occurrences in the *Masora*. Well before Yeivin, Paul Haupt wrote a short paper titled ‘The Names of the Hebrew Vowels’, in which he theorised a number of explanations for the names based on their lexical definitions in comparison to Arabic (Haupt 1901). Haupt’s paper was likewise not the first attempt to explain the vowel names, and even Gesenius

remarks on them in his *Lehrgebäude der hebräischen Sprache* (1817, §9 I).

Most of these authors addressed vowel names as part of larger projects, and in that context their brevity is not particularly detrimental. A few studies have also explored specific aspects of Tiberian vowel naming in greater detail (notably Dotan 1974; Steiner 2005), but they do not account for the breadth of different naming systems that existed in the early medieval period. Yeivin attributes this breadth to multiple “schools” and “diverse origins” of Masoretic material (Yeivin 1983, 80), and, indeed, the medieval sources reveal a complicated web of overlapping conventions that reflect different strains of phonological thought. The following discussion surveys the different layers of this web between the ninth and eleventh centuries, and shows that the eight modern vowel names ultimately derive from four different naming conventions.

All of these medieval conventions were attempts to supplement the basic relative terminology of earlier Masoretes, who used the contrastive Aramaic active participles פתח ‘opening’ and קמץ ‘contracting, closing’ to compare homographs in the *Masora* (Dotan 1974, 32; 2007, 623–24; Steiner 2005, 379; Posegay 2021, 61–62). In this early system, a homographic word with a relatively open vowel was called *pataḥ*, while its orthographic twin with a relatively closed vowel was called *qameṣ*. These terms are the only ‘modern’ vowel names that appear in the notes of the Tiberian *Masora*, and there they contrast homographs with the vowels /a/ (*pataḥ*) and /ɔ/ (*qameṣ*), as well the pair /ε/ (*pataḥ*) and /e/ (*qameṣ*) (Yeivin 1983, 113–14). Over time, *pataḥ*

and *qameš* stabilised as the exclusive terms for /a/ and /ɔ/, respectively, the two phonemes that they most often referred to, and thus became the first absolute vowel names in the Hebrew tradition.

The four subsequent types of vowel naming all began from this starting pair of *pataḥ* (/a/) and *qameš* (/ɔ/). First, some Masoretes expanded the relative system with additional terms to specify more vowels, including names like *pataḥ qaton* ('small *pataḥ*, i.e., /ɛ/). Second, some writers named the physical graphemes that represented the vowels, variously counting their dots (*shalosh nequdot* 'three dots', /ɛ/), describing their position (*altaḥtoni* 'the lower one', /i/), or likening their shape to another object (*zujj* 'spearpoint', /u/). The most advanced form of this system appears in the *Treatise on the Shewa*. Third, others—notably Saadia Gaon (d. 942)—used terms that described the articulatory processes involved in producing each vowel phoneme (*ḥelem* 'closing firmly', /o/, and *shereq* 'whistling', /u/). Finally, some Masoretes supplemented the early relative terminology with names from the Arabic grammatical tradition (*khafḍa* 'lowering', /i/, and *našba* 'standing upright', /o/).

2.0. The Expanded Relative System

The expanded relative system is a variation on the earlier Masoretic homograph comparisons, and adds new phonetic information to the original terms *pataḥ* and *qameš*. This system never expanded to include every Tiberian vowel, but instead named only the four vowels not typically represented by a *mater lectionis*

in the biblical text (i.e., /a/, /ɔ/, /ɛ/, and /e/). It appears in numerous anonymous Masoretic notes, as well as in the work of the Tiberian Masorete Aharon ben Asher (d. ca. 960) and the Andalusī grammarian Judah ben David Ḥayyūj (d. ca. 1000).

Steiner (2005, 378) identifies a Masoretic vowel list from the appendices of Baer and Strack's *Diqduqe ha-Ṭe'amim* (1879, 11, lns 23–28) that contains the expanded relative naming system, and demonstrates how this system was insufficient to indicate every Tiberian vowel. He notes that it refers to /a/ and /ɔ/ as *pataḥ* and *qamaṣ*, and then calls /ɛ/ and /e/ *pataḥ qṭanna* (פתח קטנה) 'small opening' and *qamaṣ qṭanna* (קמץ קטנה) 'small closing', respectively. The inclusion of the 'small' descriptor adds another layer of comparison to the original relative terms, maintaining the older classification of /a/ and /ɛ/ as more 'open' (*pataḥ*) than /ɔ/ and /e/, but now also specifying that the two *e*-vowels are 'smaller' (i.e., more closed) than the two *a*-vowels.¹ The list then indicates the other three vowels by describing their graphemes, a phenomenon addressed below.

The same system appears in *Diqduqe ha-Ṭe'amim*, where Aharon ben Asher only applies phonetic vowel descriptors based on the roots *ptḥ* and *qms*. Throughout the text, he indicates /a/ with *pataḥ*, *pataḥ*, or *bi-pataḥ* (Dotan 1967, 131, ln. 5; 133, lns 1–2; 144, ln. 1), and /ɔ/ with *qameṣ*, *qamaṣ*, and *qmoṣ* (Dotan 1967, 119, lns 2–3; 138, ln. 2; 144–45, lns 2–3). He is also familiar with

¹ This description is curiously similar to the vowel terminology of the Syrian bishop Jacob of Edessa (d. 708), who classifies Syriac /e/ as *qatṭin* 'small, narrow' in comparison to /a/ and /ɔ/ (Phillips 1869, ١٤). See also Talmon (2008, 166–67); Posegay (2021, 62–63).

the expanded relative name for /e/, which he calls *qameš qaṭon* at least once (Dotan 1967, 137, ln. 2). Then, just like Steiner's list, Ben Asher indicates the other vowels by describing their graphemes.

Judah ben David Ḥayyūj also uses the expanded relative system in his early work, *Kitāb al-Tanqīt* 'The Book of Pointing' (Nutt 1870, I–XV). This text is short, and mostly in Arabic, but Ḥayyūj uses the Hebrew terms *qameš gadol* 'large *qameš*' and *pataḥ gadol* 'large *pataḥ*' for /ɔ/ and /a/, respectively (Nutt 1870, I, lns 5–7; III, lns 5–6, 12–14). Then, for /e/ and /ɛ/, he says *qameš qaṭon* and *pataḥ qaṭon* (Nutt 1870, VIII, lns 14–22; X, lns 19–21; XI, lns 6–10). This version of the expanded relative system differs from the one in Steiner's list, applying an additional modifier (*gadol*) to explicitly contrast 'big' *a*-vowels with 'small' *e*-vowels. *Gadol* may be a deliberate phonological descriptor to indicate that /a/ and /ɔ/ are more 'open' than /ɛ/ and /e/, but Ḥayyūj may use 'big' simply as a logical contrast to the Masoretic 'small', with no intention to convey additional phonetic information. Interestingly, Ḥayyūj abandons this system for his two later books on irregular verbs (Jastrow 1897). In those texts, while he is certainly aware of other Hebrew vowel names, he employs terms from the Arabic grammatical tradition to describe Hebrew vowels.

3.0. Graphemic Names

Medieval linguists seem to have first supplemented the *pth* and *qmš* vowel names by counting the dots of the Tiberian vowel signs. As such, they often called /i/ (ⱪ) and /o/ (Ⱬ) 'the one dot',

/e/ (⸘) ‘the two dots’, and /ɛ/ (⸚) and /u/ (⸛) ‘the three dots’. However, these numbered names were still insufficient to indicate all of the vowels unambiguously, so some texts applied additional terms related to the position, location, and shape of the signs.

These graphemic descriptions appear in Steiner’s Masoretic vowel list (mentioned above). It names /e/ as *qomṣḳ qṭannḳ*, but also specifies that it occurs with *shṭe nequdot*. It then refers to /o/ as *אחַת לְבַאד מוֹנַחַת* ‘one dot, placed all alone’, and /u/ as *אֶוּ* *הָאֲמֻצְעִית* ‘middle *ʿu*’ (Baer and Strack 1879, 11, lns 23–28), reflecting the position of the intralinear Tiberian vowel point (וּ).

Ben Asher also refers to several vowels according to their dots in *Diqduqe ha-Ṭe’amim*. For example, when comparing different ways that one can vocalise כל (כָּל or כֶּל), he writes: *וְאִם הוּא חָתוּךְ עִם שְׁכֵנּוֹ לֹא פְתוּךְ מִקְמָצָה הוּא רֵשׁ וְנִקּוּדָה אַחַת נִדְרָשׁ* ‘But if it is cut off, not combined with its neighbour, it is free of *qomṣḳ*, and one dot is required’ (Dotan 1967, 119, lns 2–3). That is, /o/ is required. Similarly, he explains of the suffix *-hem* קִמֶץ *הֵם* *בְּכָל מְקוֹם קִמֶץ* ‘is small *qameṣ* in every case, with two dots’ (Dotan 1967, 137, ln. 1), except in the context of a few letters, which *בְּשֵׁלֶשׁ נִקּוּדוֹת מְצוּיִת* ‘occur with three dots’ (Dotan 1967, 137, ln. 2). This language necessitates that the Tiberian vocalisation signs were already in use before Ben Asher wrote this text—not a startling revelation by any stretch—but it does *not* presuppose that the reader already associates the *qameṣ qāṭon* with ‘two dots’. This, in turn, suggests that referring to /e/ either by the number of its dots or as *qameṣ qāṭon* was a recent development in Ben Asher’s time. On the other hand, his redundant phrasing in this

instance may not hold any additional significance, as he might be referring to the vowel /e/ in two different ways in order to fit a particular metre and rhyme. In any case, he is aware of some convention that indicates /o/, /e/, and /ε/ according to the form of their Tiberian graphemes.

These types of vowel names also appear frequently in linguistic texts from the Cairo Geniza. Though the precise age of these references is difficult to determine, certain details suggest that some are from the eleventh century or earlier. For example, T-S NS 301.37, seemingly a fragment of a Karaite grammatical text, explains in Arabic the vocalisation of verbs that contain *al-nuqṭatayn* ‘the two dots’.² It also vocalises *pṭḥ* as an Aramaic active participle (פְּתַח),³ which may indicate that it is relatively old (pre-eleventh century). Similarly, T-S NS 301.48, another fragment of a grammatical text, refers to /e/ and /ε/ as *al-nuqṭatayn* ‘the two dots’ and *al-thalātha* ‘the three’, respectively. It also includes Arabic plural forms of *pataḥ* and *qameṣ*, writing *al-pāṭihāt* (ألفاتحة) and *al-qāmiṣāt* (לקאמצא).⁴ Although Arabic forms,

² Cambridge University Library (CUL), Taylor-Schechter (T-S) New Series (NS) 301.37 recto, ln. 10 and verso ln. 13.

³ CUL T-S NS 301.37 verso, ln. 2.

⁴ CUL T-S NS 301.48, fol. 2 recto, lns 24–25. The transcription here is an approximation. An *ʾalef* represents the first vowel in both words, but the second vowel is unmarked, and it is not clear whether they were pronounced more like the active participles in Aramaic (with /e/ or /a/) or Arabic (with /i/). It is also not clear whether *pāṭihāt* had an initial Hebrew/Aramaic bilabial plosive (/p/) or an Arabic labiodental fricative (/f/).

these, too, are active participles, perhaps translated from an earlier Aramaic source, and again may point to a relatively early date. Besides these linguistic clues, another fragment—T-S Ar.5.8—is both parchment and written in a horizontal book format, two features that indicate an even earlier provenance (ca. tenth century). It refers to /a/ and /e/ as פתח and נוקטתיין.⁵

The most complex version of the graphemic vowel-naming convention comes from the work known as the *Treatise on the Shewa* (Levy 1936), a tenth-century Masoretic treatise on accents and vocalisation. The anonymous author frequently switches between Arabic and Hebrew, likely reflecting the language and earlier source material, and—crucially—they provide their own Arabic translations for certain Hebrew vowel terms. Like most Hebrew linguists, the author indicates /a/ and /ɔ/ with terms from *pṯh* and *qms*,⁶ and supplements those words with additional names.

The author identifies /e/ and /ɛ/ using the Arabic forms *thnatayn* (תנתין) ‘two’ (Levy 1936, כ, ln. 8) and *al-thalātha* (אלתלתה) ‘the three’ (Levy 1936, כ, ln. 8; י, lns 10–11) and then, in another section, as *thnatayn nuqat* (תנתין נקט) ‘two dots’ and *thalātha nuqat* (תלתא תה נקט) ‘three dots’ (Levy 1936, יח, ln. 14; כ, lns 19–20). They also use the dual form *al-nuqtatayn* ‘the two dots’ for /e/ (Levy 1936, כ, ln. 20). There are even places where the author combines Arabic and Hebrew terminology, likely due

⁵ CUL T-S Arabic (Ar.) 5.8, fol. 1 verso, lns 4–5.

⁶ Including multiple variations on these roots, such as *fathā*, *fātiḥ*, *fātiḥa*, *maftūh*, and verbal forms.

to discrepancies in their source materials. For example, when explaining how to pronounce *shewa* in inflections of the verb אָכַל ‘eat’, they write part of the passage in Hebrew, saying: כל לשון אכילה הם בשלושה נקודות ‘every variant of [the lexical class of] ‘eating’, if it is with *shelosha nequdot...*’, indicating /ε/. They continue in Arabic on the same line: ואזא כאן בעד אלשווא נקטין ‘but if *nuqtayn* is after the *shewa...*’, indicating /e/ (Levy 1936, ל, lns. 10–11).

The author includes similar numerical examples for /i/ and /o/. In one instance, they say that a word with /i/ is read with *nuqta wāḥida* ‘one dot’ (Levy 1936, ט, lns 14–15), trusting that the reader can tell from context that they mean a dot below (/i/) rather than a dot above (/o/). In another case, they say that the vowels which have ‘reduced’ (חטף) forms are *pataḥ* (/a/), *qameṣ* (/ɔ/), and *al-thalātha nuqat* ‘three dots’ (/ε/); but not *al-nuqtatayn* ‘the two dots’ (/e/), *wāḥid min fawqa* ‘one above’ (/o/), or [*wāḥid*] *min asfal* ‘[one] below’ (/i/) (Levy 1936, ב, lns 18–21).

Identifying /i/ and /o/ both as ‘one dot’ is still ambiguous, so the author adopts other terms related to dot locations in order to define them more precisely. When indicating /o/, the text reads: ואמא סימן העליוני אעני אלנקטה אלפוקא ‘as for the symbol of the upper one, I mean, the upper dot’ (Levy 1936, טז, ln. 15). This sentence includes the Hebrew phrase סימן העליוני ‘the upper symbol’, using an adjectival form based on the Hebrew preposition על ‘over, above’ with the Hebrew definite article. The author clarifies this term with the phrase *al-nuqta al-fawqā* ‘the upper dot’, using an irregular nominalised form of the Arabic preposition

fawqa ‘over, above’.⁷ Similarly, for /i/, they write אלתחתוני ‘the lower one’ (Levy 1936, ו, lns 1–2), again using a nominalised adjective formed from a Hebrew preposition תחת ‘under, below’, but now with the Arabic definite article. Later, they translate these terms as *al-siman al-fawqānī* ‘the upper symbol’ and *al-saflānī* ‘the lower [symbol]’ (Levy 1936, ט, ln. 1).

Finally, the *Treatise on the Shewa* includes multiple ways of indicating the vowel /u/, which is unique in the Tiberian pointing system, in that it has two different graphemes: one dot within the curve of a *mater lectionis waw* (וּ) and three oblique dots below a consonant (ׁ). The author accounts for this fact at the end of one of their vowel lists, describing /u/ as אלתלתה אלתי תכרג באו as אלוג אלדין יסמונהא אלוג ‘the three which are pronounced with *u*, which they call *al-zujj*’ (Levy 1936, ט, lns 1–2). ‘The three’ here refers to the three sublinear dots of the second sign for /u/, but the author explains the phonetic quality of that sign by spelling out the sound, using a *waw* with a single dot (וּׁ). Arabic *zujj* ‘spear-point, piercing’, then, is a term for this dot with *waw*. Most likely, it represents the physical form of the dot, which appears to ‘pierce’ the centre of the *mater lectionis*. This term also occurs for /u/ in eleventh-century Karaite linguistic texts, including *Kitāb al-Uqūd fī Taṣārīf al-Lughā al-Ibrāniyya* ‘The Book of Rules Concerning the Grammatical Inflections of the Hebrew Language’ (Vidro 2013, 395) and *Hidāyat al-Qārī* ‘The Guide for the Reader’ (Khan 2020, II:17).

⁷ *Fawqā* as it appears here is not a Classical Arabic word, but it could be an abbreviation of the more regular *fawqānī* ‘upper’.

An additional name of this type is *segol* ‘a bunch of grapes’, which describes the shape of the three-dot sign for /ε/ (אָ). However, this name is more common in texts that contain phonetic vowel names, and is discussed below.

4.0. Phonetic Names

Four of the modern vowel names—*holem* (/o/), *shureq* (/u/), *šere* (/e/), and *hireq* (/i/)—share a common origin in phonetic terminology of the early tenth century. None of these ‘phonetic’ names describes the aural qualities of their vowels, but rather they are based on Aramaic words related to the articulatory motions required to produce each vowel phoneme. These include: חלם ‘closing firmly’, שרק ‘whistling, hissing’, צרי ‘cracking, splitting’, and חרק ‘gnashing the teeth’. In their original forms, these terms were Aramaic, but they were later interpreted as Hebrew segolates.

The earliest dated list of phonetic vowel names comes from the fifth chapter of Saadia Gaon’s *Kutub al-Lughā* ‘The Books of Language’, titled *Al-Qawl fī al-Naḡham* ‘The Discourse on Melody’ (Skoss 1952, 283), which he wrote sometime between 913 and 931 (Lambert 1891, 76, fn. 1; Malter 1921, 44, fn. 57).⁸ In this chapter, Saadia presents the seven Tiberian vowels by placing them on a ‘scale’, arranging them according to how far back they are articulated in the mouth. He starts with /o/, referring to it as אלהלם,⁹ and proceeds through אלקמץ (/כ/), אלתחה (/a/), אלסגול

⁸ Saadia completed his earliest work (*Ha-Agron*) in 913. He completed his *Commentary on Sefer Yešira*, which refers to *Kutub al-Lughā*, in 931.

⁹ Saadia treats all of these words as if they are Arabic nouns, prefixing them with the Arabic definite article (אל in Judaeo-Arabic).

(/ε/), אלצירי (/e/), אלחרק (/i/), and אלשרק (/u/) (Skoss 1952, 292, lns 7–22).

The text is largely unvocalised Judaeo-Arabic, which makes it difficult to reconstruct the exact pronunciation of all of these terms. אלפתחה stands out as potentially identical to Arabic *al-fathā* ‘opening’, the name for /a/ in the Arabic grammatical tradition. However, it is not clear whether this initial *pe* was fricativised (*fathā*) or not (*pathā*). Saadia also indicates this vowel with פתח (Skoss 1952, 294, ln. 1), which was probably close to the original Aramaic active participial form פתח, but could also be the Arabic grammatical term *fath*. Likewise, קמץ was probably close to its original Aramaic form—קמץ—but Saadia also spells it קמצה (Skoss 1952, 296, ln. 17; 314, ln. 1). This second form may be *qamṣa*, analogous to *fathā* and the other Arabic vowel names.

The name סגול here represents another Aramaic form: סגול ‘a bunch of grapes’. It is the only vowel name in *Al-Qawl fī al-Nagham* that describes the appearance of a vowel sign, indicating the three-dot sign (⋈). It shares this feature with one of the Hebrew disjunctive accents—also called *segol* or *segolta*—which consist of a similar cluster of dots (⋈). Its origin as a graphemic name is conspicuous in the context of the rest of Saadia’s list, and suggests the term *segol* came into use at a time different from that of his other six names.

The four ‘phonetic’ vowel names here are חלם, צירי, חרק, and שרק. Only צירי appears in *Al-Qawl fī al-Nagham* spelled with a *mater lectionis*, which makes its pronunciation fairly straightforward: *ṣērē*. Then חלם occurs once with vowel signs, indicating that it was read as *ḥelēm* (Skoss 1952, 292, ln. 27; see his footnote). This

vocalisation also occurs occasionally in other Masoretic texts,¹⁰ as does חֶרֶק and שֶׁרֶק for /i/ and /u/, respectively (Khan 2020, 261, 264). If understood solely as a Hebrew noun, *ḥelem* can be interpreted for /o/ as “completeness, i.e. a vowel using the whole mouth” (Dotan 2007, 634), although this could also be said of /כ/ and /א/. Similarly, *ḥereq* could be a ‘squeak’, perhaps indicating the high pitch of /i/. *Shereq* clearly means a ‘whistle’, as whistling and the vowel /u/ require the same lip movement, but *šere* has no Hebrew meaning that can be logically connected to /e/. Dotan glosses over this problem, conceding that rather than all being Hebrew, “some of the names are in Aramaic” (2007, 634), and this caveat allows an interpretation of *šere* as ‘splitting’ between the lips or teeth. Dotan is technically correct, but only because all four of these phonetic names originated as Aramaic terms.

Two tenth-century *muṣawwitāt* ‘vowels’ texts,¹¹ extant in Geniza fragments, use phonetic terminology similar to Saadia’s, but, rather than Hebrew segolates, their vowel names have Aramaic nominal forms. The first text (T-S Ar.53.1) begins in Arabic as follows:

אעלם באן אלמצותאת ז מן סוא אלשוא אלאלול חלמא והו או אלב קמין
 והו אָא אלג פתח והו אָא אלד סגול והו אָי אלה צריא והו אָי אלז חרקא
 והו אָי אלז שרקא והו או ואלשוא והמא אלנקטתאן אלקאימתאן...

¹⁰ For example, CUL T-S NS 301.69 recto, ln. 5. See also, Steiner (2005, 377).

¹¹ A subgenre of late Masoretic treatises, written primarily in Judaeo-Arabic, that deal specifically with vowels and accents (Allony 1964; 1965; Eldar 1986).

Know that the vowels are seven, excluding the שׁוּא. The first is חלמא, and it is ʾo. The second is קְמֶץ, and it is ʾe. The third is פתח, and it is ʾa. The fourth is סגול, and it is ʾe. The fifth is צריא, and it is ʾe. The sixth is חרקא, and it is ʾi. The seventh is שרקא, and it is ʾu. And then the שׁוּא, which is the two standing dots... (Allony and Yeivin 1985, 91, ln. 1 to 92, ln. 9).

Several details stand out in this passage. First, *qameṣ* is vocalised as an active participle, still in its original Aramaic form, and presumably *pataḥ* would have been as well. Second, the author spells out all of the vowel sounds phonetically (ʾa, ʾe, etc.), a practice which predates the naming of any vowels (Dotan 2007, 634). Third, the name for the “two standing dots” is vocalised as either *shəwa* or *shəwə* ‘levelling’, another Aramaic form. Fourth, the author describes the shape of the *shewa* grapheme, but not the vowel signs, suggesting that either the name *shewa* or the sign itself had only recently been introduced, at a time when the vowel points had already been well established (Dotan 2007, 634). Finally, the author gives the four phonetic vowel names as חלמא (/o/), צריא (/e/), חרקא (/i/), and שרקא (/u/). These words all appear to be Aramaic emphatic nouns, probably *ḥelmo*, *ṣeryo*, *ḥerqo*, and *sherqo*, but the text gives no additional hints towards their vocalisation.

The second text (T-S Ar.31.28) provides more information about the vocalisation of these Aramaic terms. It begins with a *lacuna*, but the ensuing discussion addresses the elision of words in the biblical recitation, mentioning: ‘אלאִי אַלְדִּי אַסְמָה חַלְמָא: the ʾo, the name of which is חלמא’, *al-qameṣ* (אַלְקֶמֶץ), *al-faḥa* (אַלפַתְחָה),

and *al-sh[e]rqa* ([אלשרקא]) (Allony and Yeivin 1985, 99, lns 5–9). Later in the fragment, the author lists:

אלו מלוד והם אלחלמא אעני או ואלקמצה אעני א ואלפתחה אעני א
 ואלסגול והו א ואלצריא והו א ואלחרקא והו א ואלשרקא והו א

...the seven vowels, and they are the חלמא, I mean ^ʔo, the קמצה, I mean ^ʔk, the פתחה, I mean ^ʔa, the סגול, I mean ^ʔe, the צריא, I mean ^ʔe, the חרקא, I mean ^ʔi, and the שרקא, I mean ^ʔu (Allony and Yeivin 1985, 102, lns 58–64).

Once again, the vowels are spelled out phonetically, and /o/, /e/, /i/, and /u/ are named with Aramaic nominal forms that end in ^ʔalef. However, in contrast to those four vowels, קמצה (/k/) and פתחה (/a/) are notably spelled with final *heh*. This difference makes some sense, as the names of /k/ and /a/ were derived separately based on early relative vowel terminology, and here they seem to be either Arabicised forms (like *fatha*, *kasra*, *damma*) or retain a different style of Aramaic orthography. סגול also stands out in this text, and its initial *shewa* reinforces the fact that it is definitely an Aramaic form. The term from *ṣry* also receives special attention, as it is completely vocalised, giving the form *ṣiryʔ*. It may be possible to extrapolate this vowel pattern onto the other unvocalised names (i.e., *ḥilmʔ*, *ḥirqʔ*, *shirqʔ*), but it is more likely that *ṣiryʔ* was unique in having an initial /i/, while the other names had /e/ or /a/ (i.e., *ḥelmʔ*, *ḥerqʔ*, *sherqʔ*).

The vowel names in these two *muṣawwītāt* texts are almost certainly older than those in *Kutub al-Lughā*. Given that all three of these works were written in tenth-century Judaeo-Arabic, it is not surprising that they contain some Hebrew and Aramaic technical terms. That said, if Saadia's apparent Hebrew segolate terms

(*ḥeḷem*, *šere*, *ḥereq*, *šereq*) were the original forms of the phonetic vowel names, then it would be likely that he or someone shortly before him contrived them during the tenth century as novel Hebraisms to name the Tiberian vowels. If this development occurred, then the authors of the *mušawwītāt* texts (T-S Ar.53.1 and T-S Ar.31.28) would have had to take those Hebrew terms and convert them to Aramaic forms (*ḥelmō*, *širyō*, *ḥerqō*, *šerqō*) for use in otherwise Arabic texts. Much more likely, these Aramaic forms are remnants of an earlier stage of linguistic activity, probably from the second half of the ninth century, when the Masoretes were still writing in Aramaic.

Accordingly, all four of these vowel names are best understood as Aramaic descriptions of articulation: *ḥelmō* ‘closing firmly’, referring to the near-complete closure of the lips when pronouncing /o/; *širyō* ‘cracking, splitting’, indicating the gap that opens between the teeth or lips for /e/; *ḥerqō* ‘gnashing’, denoting the overlapping action of the teeth during /i/; and *šerqō* ‘whistling, hissing’, relating the lip shape of whistling to that of pronouncing /u/. Then, in the first quarter of the tenth century, some linguists (perhaps Saadia was the first) rendered these names with Hebrew segolate forms, creating vowel names like *ḥeḷem*.

Finally, *qubbuš*, the ‘modern’ name for the three-dot sign of /u/, is the last Hebrew vowel term that has its roots in a phonetic description. It is not derived from the same relative terminology as *pataḥ* and *qameš*, nor was it originally an Aramaic term, but rather it is a by-product of contact between the Hebrew and Arabic grammatical traditions.

5.0. Arabic Grammatical Terminology

There is substantial overlap between the Hebrew and Arabic linguistic traditions, beginning before Saadia and intensifying throughout the tenth and eleventh centuries. The following section focuses on one work in particular—another anonymous tenth-century *muṣawwītāt* text—which reveals this contact in its use of Arabic grammatical terminology to name Hebrew vowels (Allony 1964; 1965; 1983; Eldar 1986).¹²

The text's discussion of vowels begins by directly addressing their names, saying in Arabic:

אלמחותאת באסמא לאיקה בהא דאלה עלי מעאניהא בלגה ערביה ליכון
 סהל עלי אלנאטר ובין ללקארי ויהי אלמחותאת סבעה אחדהא אלקמ
 אלכבירה

The vowels have names which are suitable for them, indicating their meanings in the Arabic language, so that they are easy to recognise and clear for the reader. The vowels are seven, and the first of them is *al-qm al-kabira* (Allony 1965, 140, lns 28–30).

The author (or perhaps the copyist) adopts a practice of abbreviating terms from the roots *qmṣ* and *pṭh*, so the first vowel (/כ/) is

¹² Nehemia Allony published the extant fragments of this text (CUL T-S Ar.32.31 and AIU IX.A.24) in 1965, initially claiming that they were part of a treatise called *Kitāb al-Muṣawwītāt*, supposedly written by Moshe ben Asher. Ilan Eldar (1986) has since argued that there is no evidence that the title of this work is actually *Kitāb al-Muṣawwītāt*, nor is it more likely that Moshe ben Asher wrote it than another early medieval author. I treat it as an anonymous work with an unknown title.

called *al-qm al-kabira*. Given the feminine adjective, its full form was probably *al-qamša* (or *al-qāmiša*) *al-kabira* ‘big *qamša*’. This Arabic form is a calque based on the expanded relative naming convention (i.e., *qameš gadol*), and resembles the terminology in Ḥayyūj’s *Kitāb al-Tanqīṭ*. Further, following this convention, the author refers to /e/ as *al-qm al-ṣaghira* ‘small *qamša*’, /a/ as *al-pt al-kabira* ‘large *paṭha/fatḥa*’, and /ε/ as *al-pt al-ṣaghira* ‘small *paṭha/fatḥa*’ (Allony 1965, 140, ln. 35; 142, lns 38–41).

The fifth vowel is /u/, which the author calls *al-ḍamma* ‘bringing together, pressing together’ (Allony 1965, 142, ln. 43), using the name for the same vowel in the Arabic grammatical tradition. They make no distinction between the one-dot (◌ِ) and three-dot (◌ُ) signs. In Arabic, *ḍamma* is another phonetic vowel name, and refers to the contraction of the lips during the articulation of /u/. This meaning is similar to that of *qameš* ‘closing, contracting’, although here *ḍamma* is just a noun, rather than a participle. In the eleventh or early twelfth century, Hebrew grammarians calqued this name as the Hebrew noun *qibbuš* ‘bringing together’ (Dotan 2007, 634).¹³

Next is /i/, which the *muṣawwitāt* author explains in greater detail, saying: **ואלסדסה אלכפצה והי אלמנעטפה עלי קאילהא אנעטאפא** ואלסדסה אלכפצה והי אלמנעטפה עלי קאילהא אנעטאפא יקום מקאם אלסדסה ‘The sixth is *al-khafḍa*, which is bent to a degree of inclination according to its speaker. It establishes the role of the noun’ (Allony 1965, 142, lns 45–46). It is unclear precisely what is meant by this sentence. The name *khaḍḍa* is simple enough: it comes from *khaḍḍ* ‘lowering’, an Arabic grammatical

¹³ Dotan notes that this name has been known “since the time of the Kimḥis.” See Khan (2020, 264).

term for the genitive case. In Classical Arabic, nouns in the genitive case are usually marked by final /i/, and *khafḍ* doubled as a name for the phoneme /i/ through at least the first half of the ninth century (Owens 1990, 59; Versteegh 1993, 18–19). The author of this text probably added the feminine suffix *-a* on analogy with the other Arabic vowel names (i.e., *fatha*, *kasra*, *ḍamma*).

The phrase ‘bent to a degree of inclination (*in‘itāf*)’ is more difficult to parse. It at first evokes the phonological concept of *imāla* ‘bending down, inclination’, which Arabic grammarians used to describe the fronting of *a*-vowels towards /i/. In the earliest Arabic tradition, this term was a ‘low’ classification for fronted allophones of /a/ (e.g., /ɛ/, /e/), in contrast to *naṣb* ‘standing upright’, which indicated ‘higher’ allophones produced farther back of the mouth (/a/, /ɑ/) (Posegay 2020, 207–9). An analogy with *imāla* is likely at play here, but the ‘inclination’ that the author indicates with *in‘itāf* probably also refers to the directed movement of air during articulation of /i/. That is, the airflow of /i/ is angled downward in comparison to that of other vowels, and this directionality further corresponds to the lexical meaning of *khafḍ* (Eldar 1983; Posegay 2020, 211–16). The author even calls it אלמנכפצה אעני אי literally ‘the lowered vowel, I mean י’ (Allony 1965, 144, ln. 53). Finally, the line ‘it establishes the role of the noun’ also seems to be connected to Arabic grammar, as only nouns can be in the *khafḍ* (genitive) case.

The seventh vowel is /o/, which the author names *al-naṣba*. They say והי אלואצפה ללאפעאל אלמאציה ואלחאבתה וצפא מנעטפא עלי ‘it is the marker for past verbs,

and it stabilises an inclined characteristic, according to a marker of inclination, establishing the role of the verb' (Allony 1965, 142–44, lns 48–50). In Arabic grammar, *naṣb* 'standing upright' is the name of the accusative case, which is usually marked by final /a/. Prior to the ninth century, *naṣb* was also an Arabic name for the phoneme /a/ (Owens 1990, 59; Versteegh 1993, 18–19), but here it represents /o/.

In opposition to *khafḏ*, the author emphasises the role of *naṣba* as a 'stabiliser' (*thābita*) that nullifies inclination (*in'itāf*). This explanation mirrors the contrastive vowel phonology of *naṣb* and *imāla* in early Arabic grammar, associating front vowels (e.g., /i/) with 'lowness', and back vowels (e.g., /o/) with 'height'. This duality is particularly salient with /o/ and /i/, as they are, respectively, the most- and least-backed Hebrew vowels. They thus occupy the highest and lowest steps on the scale of vowels within the mouth. Moreover, the association of *naṣb* with /o/ suggests that this author perceived the articulation of /o/ as having a 'fixed upright' direction of airflow, in contrast to the bent airstream of /i/. This association matches Saadia's understanding of /o/, which he describes as 'unwavering' (*ghayr ḥā'ida*) in contrast to the other vowels that turn upwards or downwards (Skoss 1952, 292, lns 10–11).

The names for /ɔ/, /e/, /a/, and /ε/ in this text—all based on the expanded relative system—seem to have been well established by the time it was written. By contrast, the terms for /u/, /i/, and /o/ do not have direct tenth-century Hebrew or Aramaic equivalents. The author thus gives lengthier phonological explanations for /i/ and /o/, and spells out ^ʔ*u* and ^ʔ*i*, reverting to the

most basic practice for identifying vowel phonemes. These details reinforce the conclusion that *ḍamma* (/u/), *khafḍa* (/i/), and *naṣba* (/o/) were adopted later, separate from the expanded relative terms. These three Arabic names are the result of this author supplementing the expanded relative system, in the same way that other Masoretes supplemented *pataḥ* and *qameṣ* with graphic and phonetic names. This addition of Arabic case names to fill out a set of Hebrew vowel terms also parallels the Syriac linguistic tradition, where some grammarians adopted calques of *naṣb* (ܙܩܩܘܐ, /o/) and *raf*^c (‘rising’, *massaq*, /o/) to identify their vowels (Posegay 2020, 216–18).

This *muṣawwītāt* text is a useful example of Arabic vowel terminology used in the Hebrew linguistic tradition, but it is by no means representative of all the connections between Arabic and Hebrew in this domain. A more comprehensive study is needed to form a clearer picture of this relationship, especially as it developed into the eleventh century. Such a study ought to include a number of additional sources, such as Saadia’s *Commentary on Sefer Yeṣirah*, Ḥayyūj’s *Kitāb al-ʿAḥad al-Dhawāt Ḥurūf al-Liyn*, Yūsuf ibn Nūḥ’s *Diqduq*, Abū al-Faraj’s *Hidāyat al-Qāriʿ*, and Jonah ibn Janāḥ’s *Kitāb al-Luma*^c, as well as the anonymous works *Kitāb al-ʿUqūd fī Taṣārīf al-Luḡha al-ʿIbrāniyya* and *Kitāb Naḥw al-ʿIbrānī* (to name but a few).

6.0. Conclusion

This paper is not exhaustive, and there are some other Hebrew and Aramaic names that do not appear in any of the sources examined here. For example, Gesenius (1817, §9 I) mentions שְׁבֵרָה

‘breaking’ as another name for /e/, which he presumes is a calque of *kasra*, the Arabic name for /i/ (Khan 2020, 261). Likewise, Dotan (2007, 634) lists *טשפ* ‘simplicity’ as a name for /a/ and /ε/, but it does not occur as a vowel name in our sources.

That said, the present survey is sufficient to conclude that the eight modern Hebrew vowel names descend from four concurrent tenth-century vowel-naming conventions: (1) expanded relative terminology, (2) graphemic descriptions, (3) phonetic descriptions, and (4) Arabic grammatical terminology. *Qameṣ* and *pataḥ* were originally the Aramaic active participles *קמק* ‘contracting, closing’ and *פתח* ‘opening’, respectively, which fossilised as absolute names for /ɔ/ and /a/ with the decline of the early Masoretic practice of relative vocalisation. *Segol* was first the Aramaic noun *לגול*, a name which equated the shape of the three-dot grapheme (ס) for /ε/ with a bunch of grapes. *Ṣere* (/e/), *ḥireq* (/i/), *ḥolem* (/o/), and *shureq* (/u/) began not as Hebrew words, but as the Aramaic nouns *ṣiryɔ* ‘cracking, splitting’, *ḥerqɔ* ‘gnashing’, *ḥelmɔ* ‘closing firmly’, and *sherqɔ* ‘whistling, hissing’, each of which indicates the physical action required to produce its respective phoneme. Finally, *qubbuṣ* is ultimately a calque of *ḍamma* ‘bringing together, pressing together’, the Arabic name for /u/.

The last major development in the history of the vowel names was the addition of ‘symbolic’ vowels. Around the eleventh century, Hebrew linguists started adopting the practice of including a vowel’s sound in its name (Steiner 2005, 380–81; Dotan 2007, 634). This sound symbolism persists to the present day, giving us forms like *ḥolem* and *shureq*, rather than *ḥelem* and

shereq. Over time, most of the graphemic vowel names and Arabic grammatical terms fell out of favour, leaving only the eight modern names that are still in use.

Still, the various conventions raise another question: what was the point of naming vowels at all? It seems that the earliest names evolved as pedagogical instructions for differentiating between the vowels of the /a/–/ɔ/ and /ε/–/e/ pairs. These pairs were generally not distinguished in Jewish Palestinian Aramaic (Fassberg 1990, 28–31, 53; Steiner 2005, 379–80), so new readers of Tiberian Hebrew would have needed the most assistance in learning their sounds. As such, if a Galilean student mistakenly read *ṣ* as 'a, then their Tiberian teacher might have said *l*, 'at *qomeṣ pimmək* 'no, you contract your mouth'. Likewise, if they read *ṽ* for *ṣ*, then a Tiberian teacher would say *l*, 'at *pataḥ pimmək* 'no, you open your mouth' (Steiner 2005, 375–77, 380). The same instructions applied to /e/ ('at *qomeṣ pimmək*) and /ε/ ('at *pataḥ pimmək*). These verbal directions relied on the contrastive principles of early relative vocalisation, and they likely solidified as absolute vowel names (*pataḥ*, *qameṣ*) only after the invention of the Tiberian vowel signs.

The phonetic names *ṣiryṽ*, *ḥerqṽ*, *ḥelmṽ*, and *sherqṽ* can also be interpreted as pedagogical vocabulary, although there is no evidence that they were originally active participles. Each name indicates the proper positioning of the mouth in order to produce /e/, /i/, /o/, or /u/. Perhaps a child would have been instructed to say *ṣ* 'with gnashing' (*b-ḥerqṽ*), or *ṣ* 'with [the shape of] whistling' (*b-sherqṽ*). These absolute names most likely emerged after

the invention of the Tiberian points, but could possibly predate them.

By contrast, the graphemic vowel names necessarily post-date the introduction of the vowel signs. They probably began as shorthand terminology for Masoretes who wanted *written* instructions on how to point a biblical text, rather than as verbal directions for new readers. In every case, then, vowel names aided instructors in explaining the biblical recitation tradition, whether in its oral or written form. This conclusion matches the words of the Masorete from our last *muṣawwitāt* text: “The vowels have names which are suitable for them... so that they are easy to recognise and clear for the reader.”

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