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Why is It Difficult to Date When *qalqala* Became Unintelligible to Qur'ānic Reciters and Grammarians?

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Abstract

Sibawayh describes /q/, /t/, /b/, /ğ/ and /d/ as [+ voiced + stop] phonemes. In pausal position, these phonemes are subject to *qalqala*, which can be described as the addition of a schwa [ə], and whose role is the protection of the [+ voiced] feature of these phonemes. In standard Classical Arabic, the pronunciation of these phonemes have evolved (/q/ and /t/ are now realised as [- voiced], and /ğ/ as [+ affricate]). The consistency of *qalqala* as described by Sibawayh is thus lost, since the Qur'ānic recitation (*tağwīd*) rule for *qalqala* does not fit the current standard pronunciation.

In this study, we trace back a shift in the mere definition of *qalqala* as early as in al-Mubarrad's *Muqtaḍab* that will enable Qur'ānic reciters to later remain blind to the fact that their actual pronunciation of some of these phonemes does not correspond to Sibawayh's written description.

Keywords

Qalqala – Arabic – Arabic grammar – history of Arabic grammar – Arabic phonetics – historical Arabic phonetics – Qur'ānic recitation – *tağwīd* – Sibawayh

Résumé

Sibawayh décrit les phonèmes /q/, /t/, /b/, /ğ/ et /d/ comme étant [+ sonore + occlusif]. À la pause, ces phonèmes sont sujets à la *qalqala*, que l'on peut décrire phonétiquement comme l'addition d'un schwa [ə] dont le rôle est protéger le caractère [+ sonore] de ces phonèmes. En arabe classique standard, la prononciation de ces phonèmes a évolué

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(/q/ et /t̤/ sont aujourd'hui [- sonore], et /ğ/ est [+ affriqué]). La cohérence de la *qalqala* telle que décrite par Sibawayh est donc perdue, puisque la règle de la *qalqala* en récitation coranique (*tağwīd*) ne correspond plus à la prononciation standard.

Dans cette étude, nous décelons un changement dans la définition même de la *qalqala* dès le *Muqtaḍab* d'al-Mubarrad, changement qui permettra aux récitateurs coraniques ultérieurs de ne pas voir que la prononciation de certains de ces phonèmes ne correspond plus à la description de Sibawayh.

Mots clés

Qalqala – langue arabe – grammaire arabe – histoire de la grammaire arabe – phonétique arabe – phonétique arabe historique – récitation coranique – *tağwīd* – Sibawayh

Introduction

Sibawayh¹ (d. ca 180/796) describes the phonemes in Arabic according to quite accurate criteria, which enable a clear representation of their pronunciation, at least for the main features with which this article will deal.² He describes six of these phonemes as being voiced stops (*hamza*), which is a particular case, as we will see below, and five more phonemes that he calls *hurūf al-qalqala* (“unrest letters”):³ /q/, /t̤/, /b/, /ğ/ and /d/⁴ and whose phonetic value he

1 Abū Bišr ‘Amr b. ‘Utmān Sibawayh Sibawayh, *Le livre de Sibawaihi*, ed. Hartwig Derenbourg, Paris, Imprimerie nationale, 1889 (reprint Hildesheim-New York, Georg Olms, 1970), II, p. 310, l. 7-11, in chapter 495.

2 I rely on Abdulmunim Abdulamir al-Nassir, *Sibawayh the Phonologist*, London-New York, Kegan Paul, 1993 for the analysis of Sibawayh's phonetics. Concerning the *qalqala* consonant for example, some authors prefer to challenge Sibawayh's definition of *mahmūs/mağhūr* as [- voiced]/[+ voiced] rather than to consider that the pronunciation of Arabic may not be univocal. We will not enter this ideological discussion.

3 For a detailed account of Sibawayh's description of *qalqala* see al-Nassir, *Sibawayh the Phonologist*, p. 52-54. For a brief account of *qalqala*, see also Antoine-Isaac Silvestre de Sacy, *Grammaire arabe à l'usage des élèves de l'École spéciale des langues orientales vivantes*, Paris, Imprimerie royale, 1810, I, p. 27 (seconde édition corrigée et augmentée, 1831, p. 27); Heinrich Leberecht Fleischer, *Kleinere Schriften*, Leipzig, S. Hirzel, 1885, I/1, p. 13; Henri Fleisch, *Traité de philologie arabe*, Beyrouth, Dar el-machreq, 1990², I, p. 226; and Mortimer S. Howell, *A Grammar of the Classical Arabic Language*, New Delhi, Gyan Publishing House, 1883 (reprint 2003), VII, p. 1733-1734.

4 The order in which the *qalqala* phonemes are quoted by the various authors is always the same as in the *Kitāb*, /q/, /ğ/, /t̤/, /d/ and /b/, with no relation to the mnemonic that is sometimes quoted after, in four different versions: *qtb ġd*, *qd t̤ğ*, *ğd btq*, *t̤q ġd* and *ğd t̤q*.

describes respectively as [g], [dʕ], [b], [j] and [d].⁵ These five phonemes have in common that when pronounced in pausal position⁶ a “small sound” (*ṣuwayt*)⁷ is uttered.⁸

It is thus easy to fathom *qalqala*'s logic in the *Kitāb*, which is to protect the [+voiced] feature of these phonemes. Indeed, when pronounced in pausal position, voiced stops tend to lose their [+voiced] feature, and the “small sound” described by Sibawayh, which can be understood as a schwa [ə], *i.e.* a mid-centered vowel, protects this feature.⁹

Sibawayh does not mention nor focus on Qur'ānic recitation, however, *qalqala* is today one of the phonetic rules that apply to Qur'ānic recitation only. The problem is that in contemporary standard Arabic, as well as in contemporary Qur'ānic recitation, three of these five phonemes are not described as voiced stops.¹⁰ Two of them have lost their [+voiced] feature, if compared to Sibawayh's description: /q/ is realized as [q], not as [g], and /t/ is realized as [tʕ], not as [dʕ]. One of them has lost its [+stop] feature: /ğ/ is realized

Sibawayh does not quote a mnemonic. In his commentary of Ibn al-Ğazari's (d. 833/1429) *Muqaddima*, al-'Awfi is the only one I could find who gives these consonants in a different order: /q/, /t/, /b/, /ğ/ and /d/. See Abū l-Faṭḥ Muḥammad b. Muḥammad al-Mizzī l-'Awfi (d. 906/1501), *al-Fuṣūl al-mu'ayyida li-l-wuṣūl ilā šarḥ al-Muqaddima al-ğazariyya*, ed. Ğamāl al-Sayyid Rifā'ī, Giza, Maktabat awlād al-šayḥ li-l-turāt, 2005, p. 58.

5 Al-Nassir does not use the IPA symbols consistently, probably for technical reasons and also because he considers that in some cases they may not fit Sibawayh's description adequately (al-Nassir, *Sibawayh the Phonologist*, p. 44). This last reason is void, since these symbols represent discriminating features: [g] represents a voiced uvular stop, [dʕ] a voiced pharyngealised alveolar stop, [b] a voiced labial stop, [j] a voiced palatal stop, and [d] a voiced alveolar stop. All these features are described by Sibawayh, as al-Nassir (*Sibawayh the Phonologist*, p. 9-55) himself thoroughly investigates. See a chart of IPA's symbols in The International Phonetic Alphabet (revised to 2005), retrieved on June 19, 2014, URL: [http://www.langsci.ucl.ac.uk/ipa/IPA_chart_\(C\)2005.pdf](http://www.langsci.ucl.ac.uk/ipa/IPA_chart_(C)2005.pdf).

6 In the *Kitāb*, Sibawayh only mentions *qalqala* in pausal position (*waqf*), but in Qur'ānic recitation it also applies within a segment on vowelless phonemes (*sukūn*). See Farġalī Sayyid 'Arabāwī, *Ḥurūf al-qalqala bayna l-qudamā' wa-l-muḥdaṭina wa-bayān aḥṭā' al-qurrā' fi ḥurūf al-qalqala*, Giza, Maktabat awlād al-šayḥ li-l-turāt, 2007, p. 90. 'Arabāwī mentions that in some treatises *waqf* could also refer to *sukūn*. See 'Arabāwī, *Ḥurūf al-qalqala*, p. 93, 117-118. At this point I will not make a distinction between these two cases since I focus on the consonants involved not on the actual realisation of *qalqala*.

7 Sibawayh, *Le livre*, II, p. 310, l. 8.

8 Al-Nassir, *Sibawayh the Phonologist*.

9 *Ibid.*, p. 52.

10 Fleisch, *Traité de philologie arabe*, I, p. 222-223, 228; al-Nassir, *Sibawayh the Phonologist*, p. 37-47.

as a voiced alveolar palatal affricate [dʒ], not as a voiced palatal stop [j].¹¹ In addition to this, the phoneme /d/, which Sībawayh describes as a voiced pharyngealised lateral continuant [ḏ^ʕ] is today realised as a voiced pharyngealised alveolar stop [d^ʕ].

The consistency of *qalqala* is thus lost since it applies to phonemes that are today realised either as [+ voiced] ([b], [dʒ] and [d]) or [- voiced] ([q], [t^ʕ]); [+ stop] ([q], [t^ʕ], [b] and [d]) or [+ affricate] ([dʒ]).

Or, to put it the other way round, if one was to reconsider *qalqala* according to the contemporary pronunciation of Qurʾānic Arabic, it would apply to the following phonemes: /b/, /d/ and /ḏ/, *i.e.* the three and only voiced stops, pronounced [b], [d] and [d^ʕ] respectively.¹²

Although these phonetic phenomena are known and described,¹³ it seems that Qurʾānic reciters ignore them. ‘Arabāwī¹⁴ provides us with a good insight in the points at stake in this issue: it is a religious duty to recite the Qurʾānic text exactly as the Prophet did, so one must rely on the phonetic description of the older treatises. Qurʾānic reciters thus try to hold together the contemporary pronunciation of Qurʾānic Arabic, which by no means they can imagine having evolved, and the descriptions made by the early reciters and grammarians. The result is that *qalqala* has become phonetically unintelligible since it applies to phonemes that do not have phonetic features in common any more.

To be more specific, contemporary reciters accept the idea that the pronunciation of the vowels may have evolved, the “small sound” of *qalqala* in particular. For example, most of ‘Arabāwī’s book deals with the correct pronunciation of the schwa added by *qalqala*, and the author criticises modern reciters, *i.e.*

11 This very point is challenged by Jonathan Owens, “Chapter 504 and modern Arabic dialectology” in *Ingham of Arabia*, ed. Clive Holes, Leiden, Brill, 2013, p. 189: “Sībawayh classifies the *jīm* as a stop (*shadīd*), but is not more specific than this, for instance giving no intimation as to whether it should be interpreted as a simple stop ([j]), or an affricate ([dʒ]). Al-Nassir (*Sibawayh the Phonologist*, p. 42) is not entirely consistent on this issue. On the one hand he says that “Sībawayh and all his successors agree about this form of *Jīm* [voiced palatal affricate]” and on the other hand he says that /ǧ/ is described by Sībawayh as a “voiced plosive” and that “the affrication observed in modern *Jīm* might have developed as a result of a partial shift from *Shadīd* towards *Rikhw*”. Since this point is not central to my demonstration, I will provisionally consider that Sībawayh describes the phoneme /ǧ/ as a voiced palatal stop [j].

12 See Gānim Qaddūrī l-Ḥamad, “Taǧdīd al-taǧwīd fi ḏaw’ al-dars al-ṣawtī l-ḥadīṭ ma’a murāǧa’at aḥkām al-ḏād”, in *Abḥāt ḡadīda fī ‘ilm al-aṣwāt wa-l-taǧwīd*, Amman, Dār ‘ammār, 2011, p. 317-319 on the pronunciation of /ḏ/ with *qalqala*.

13 Al-Nassir, *Sibawayh the Phonologist*.

14 ‘Arabāwī, *Ḥurūf al-qalqala*.

according to him, reciters later than the 11th/17th century, who describe *qalqala* as a vowel harmonisation, which is not to be found in earlier treatises.

The Research Question

A legitimate question that the modern researcher can pose is: when has *qalqala* become unintelligible to Qur'ānic reciters and grammarians? This question raises the following methodological issue: since both early and late reciters usually follow Sibawayh's written definition of *qalqala*, one actually has to ask oneself whether they understand what is at stake in this phonetic phenomenon.

This first question immediately raises a second question: until when did the reciters pronounce the *qalqala* consonants as voiced stops? And this second question raises the same methodological issue as the first one: since both early and late reciters and grammarians usually follow Sibawayh's phonetic description, one actually has to ask oneself whether or not they notice a discrepancy between these written descriptions they repeat and the way they actually pronounce these phonemes.

A similar methodological issue has been raised by Owens concerning *imāla* in al-Zamaḥṣārī. Owens writes that "Zamaḥshari in this instance adds little to Sibawaih's observations, and in fact it may be suspected that he based his analyses on written philology rather than on first-hand aural observations, which was a hallmark of Sibawaih's methodology".¹⁵

When studying the phonetic description of Arabic by Arab grammarians, one has to systematically distinguish between two different levels: their philological interpretation of the written grammatical corpora and the actual phonetic values they give to the phonemes they describe. Whereas the former is easily fathomable, the latter largely remains obscure to us.

For example, when authors discuss whether /t/, /k/, /l/, or other phonemes should be added to the list of *qalqala* consonants it is clear that they do not understand the phonetic phenomenon described by Sibawayh anymore. When they try to justify Sibawayh's description of /q/ and /t/ as [+voiced] and their addition to the *qalqala* consonants by the fact that they are stronger stops, it is clear that they have not understood the fact that their own pronunciation of these phonemes differs from that of Sibawayh and that it is because they were actually voiced that they were included in the list. The case of *hamza* is

15 Jonathan Owens, *A linguistic history of Arabic*, Oxford, Oxford University Press, 2006, Appendix 3: "Imala in Zamaḥshari", p. 281.

different, since Sibawayh describes its phonetic realisation as [+ voiced + stop] but he does not include it in the phonemes that are subject to *qalqala*. Thus, the fact that some reciters have questioned this difference of treatment of *hamza* does not reveal a lack of understanding of *qalqala*. It could rather indicate that they understood Sibawayh's point and that they challenge it.

To be sure, all these authors are free to deal with the issue of *qalqala* exactly the way they want, to apply it to Qur'anic recitation as they please. We cannot enter into the investigation of the reasons for the discrepancy between Sibawayh's description and the practice of Qur'anic reciters. Many factors may be involved: historical development of sounds, maintenance of lectal variants from the very days of Sibawayh... My point in this article is simply that once more, Sibawayh is neither understood nor followed, as far as *qalqala* is concerned.

In this article, I will focus on the literary sources of the first ten Islamic centuries, in order to explore the following research question: why is it difficult to date when *qalqala* became unintelligible to Qur'anic reciters and grammarians?

The Findings

One understands the inner consistency of Sibawayh's description of *qalqala* only if one supposes that his phonetic description of the five phonemes /q/, /ğ/, /t/, /d/ and /b/ is accurate, *i.e.* they are the five and only [+ voiced + stop] phonemes in the language. It becomes clear, although Sibawayh does not mention it explicitly, that the logic of *qalqala* is to protect the [+ voiced] feature of these phonemes in pausal position.

Sibawayh describes an additional [+ voiced + stop] phoneme, /ʔ/, but explicitly says that *qalqala* does not apply to it without giving reasons. It is not straightforward to describe /ʔ/ as a [+ voiced + stop] phoneme due to the mere nature of the glottal stop, which consists both in opening and closing the vocal chords, depending on its position in the segment. This mere nature of *hamza* explains its different treatment from other [+ voiced + stop] consonants.

Apparently, there has been a scribal error in some manuscript traditions of the *Kitāb* which has read /b/ as /t/ in the list of the five *qalqala* phonemes. Al-Sīrāfī's (d. 368/979) commentary¹⁶ only knows this erroneous reading and transmits it. He notices that it is not consistent with Sibawayh's description but

¹⁶ Abū Sa'īd al-Ḥasan b. 'Abd Allāh al-Sīrāfī, *Šarḥ Kitāb Sibawayh, al-ğuz' al-sādisa 'ašar*, ed. Aḥmad Ğamal al-Dīn Aḥmad, Cairo, Dār al-kutub wa-l-waṭā'iḳ al-qawmiyya, 2011.

he does not amend it and observes that a “small breath” is emitted after /t/. In Ibn al-Ġazarī’s (d. 833/1429) *Našr*¹⁷ this observation becomes a justification for the inclusion of /t/ to the list. In addition to this, he does not see that the addition of /t/ to the list of the five canonical phonemes would make six *qalqala* phonemes, not five as mentioned by Sibawayh.

Al-Mubarrad’s (d. 285/898) description of *qalqala* in his *Muqtaḍab*¹⁸ ignores Sibawayh’s *Kitāb* completely. He only mentions two phonemes explicitly, /q/ and /k/. He bases his description of *qalqala* on the experience of the speaker that a specific post-release breath is emitted after these two phonemes. This breath is stronger after /q/ than after /k/. The question why al-Mubarrad decided not to rely on Sibawayh’s *Kitāb* for the description of *qalqala* is open. Maybe his pronunciation of these five phonemes was already not consistent any more with Sibawayh’s description and instead of trying to understand Sibawayh’s point, al-Mubarrad chose to keep the terminology of *qalqala* but to change its meaning. Whatever the reason, we observe that instead of referring to a mid-centered vowel that protects the [+voiced] feature of [+voiced + stop] phonemes in pausal position, *qalqala* refers in al-Mubarrad’s *Muqtaḍab* to a post-release breath emitted after stronger stops.

Later authors can be separated in three groups. Authors of the first group seem to understand the inner consistency of Sibawayh’s description. They defend Sibawayh’s opinion and reject the opinion of other scholars who add other phonemes to the initial list of five phonemes. However, we have no means to check whether they notice a change in pronunciation between Sibawayh’s description and their own. Among these authors we count Makkī (d. 437/1045), al-Dānī (d. 444/1052), ‘Abd al-Wahhāb al-Qurṭubī (d. 461/1069), Abū Šāma (d. 665/1267), Ibn Umm Qāsim al-Murādī (d. 749/1348) and Sāğaqī Zādah al-Mar‘ašī (d. 1145/1733).

Authors of the second group give an account of *qalqala* that compares with that of Sibawayh or faithfully transmit his theory, but we have no clue as to whether they really understand the phonetic phenomenon at stake because we could not find passages where they challenge contradicting views on *hurūf al-qalqala*. To this category belong Ibn Ġinnī (d. 392/1001), al-Zamaḥšarī (d. 538/1144), Ibn Abī Maryam (d. 565/1170), al-Hamaḍānī l-‘Aṭṭār (d. 569/1173), Ibn al-Ḥāğīb (d. 646/1249), Rađī l-Dīn al-Astarābādī (d. 688/1289) and

17 Šams al-Dīn Abū l-Ḥayr Muḥammad b. al-Ġazarī, *al-Našr fī l-qirā’at al-‘ašr*, ed. Ġamal al-Dīn Muḥammad Šaraf, Tanta, Dār al-šaḥāba li-l-turāt, 2002.

18 Abū l-‘Abbās Muḥammad b. Yazīd al-Ṭumālī l-Azdī l-Mubarrad al-Mubarrad, *Kitāb al-Muqtaḍab*, ed. Muḥammad ‘Abd al-Ḥāliq ‘Uḍaymah, Cairo, Wizārat al-awqāf-Lağnat ihyā’ al-turāt al-islāmī, 1966-1979.

Ibn al-Wağīh al-Wāsiṭī (d. 740/1340) until new data is provided on their view on *qalqala*.

Authors of the third group belong to al-Mubarrad's approach of *qalqala*. They discuss whether similar post-release breath that they experience after other phonemes can be called *qalqala*. Just like for al-Mubarrad, we suppose that they preferred this approach because their pronunciation of Arabic did not comply with that of Sibawayh anymore. However, none of them refutes Sibawayh's phonetic description of *qalqala*. Rather, they include it into their own theory. This is the case of al-Sirāfi (d. 368/979), Ibn Ya'īš (d. 643/1245), Ibn al-Ġazarī (d. 833/1429) and al-'Awfi (d. 906/1501).

Interpretation of the Findings

It would be easy to consider the authors of the third group as the "bad authors" who were not able to understand Sibawayh's *Kitāb*, but there are two reasons why I will not do this. The first reason is that I have only analysed the passages dealing with *qalqala*, sometimes only a few lines in a whole treatise. A wider inquiry is obviously needed to be able to cast a judgment on their work. The second reason is that we could also see them as the ones who could not follow Sibawayh because his phonetic description was inaccurate at the time they wrote their treatises. However, they were probably unable to admit that the pronunciation of Arabic had changed between Sibawayh and them, so they rather tried to understand the *Kitāb* with their contemporary pronunciations in mind. Al-Mubarrad's frame offered them the possibility to do this. Lastly, the erroneous manuscript tradition of the *Kitāb* carrying the *tā'* reading has certainly encouraged them in this direction because it was almost impossible to fathom Sibawayh's logic with this erroneous reading.

Another direction that some scholars have taken is to consider that there are two different phenomena, the *qalqala* described by grammarians and linguists and the *qalqala* described by Qur'ānic reciters.¹⁹ Modern scholars agree on the fact that both apply to the same five consonants /q/, /ğ/, /t/, /d/ and /b/. But whereas grammarians and linguists only mentioned it in pausal position, reciters pronounce it also when these consonants are vowelless. Reciters do not try to look for a rationale behind this phenomenon, which they have

19 'Arabāwī, *Hurūf al-qalqala*, p. 185-192, 197-199; Ġānim Qaddūrī l-Ĥamad, *al-Dirāsāt al-ṣawṭiyya 'inda 'ulāmā' al-tağwīd*, Baghdad, Maṭba'at al-ḥulūd, 1987 (reprint: Amman, Dār 'Ammār, 2009), p. 260.

received from tradition, whereas grammarians and linguists try to understand its logic.

To put it in a nutshell, we can trace back a shift in the mere definition of *qalqala* as early as in al-Mubarrad's *Muqtaḍab* that will enable Qur'ānic reciters and grammarians to later remain blind to the fact that their actual pronunciation of some of these phonemes does not correspond to Sibawayh's written description.

Authors Adding Phonemes to the Canonical List

Sibawayh

Although Sibawayh's text on *qalqala* is quite straightforward, some authors say that he included *tā'* into *ḥurūf al-qalqala*, just like Ibn al-Ġazarī:

Wa-ḍakara Sibawayh ma'a-hā [ḥurūf al-qalqala l-ḥamsa] l-tā' ma'a annahā l-mahmūsa wa-ḍakara lahā naḥw wa-huwa qawī fī l-iḥtibār.²⁰

Sibawayh mentioned *tā'* with them [the five *qalqala* consonants], although it is not voiced, and he mentioned its breath and the fact that it is strongly experienced.

This allegation of Ibn al-Ġazarī is nowhere to be found in the *Kitāb*. The only place where Sibawayh mentions *qalqala* in the *Kitāb* lies in a few sentences, and *tā'* is not in the list:

Wa-lam anna min al-ḥurūf ḥurūf mušraba duġiṭat min mawāḍi'ihā fa-idā waqafat ḥaraġa ma'ahā min al-fam šuwayt wa-nab'u al-lisān 'an mawḍi'ihī wa-hiya ḥurūf al-qalqala wa-sa-tubayyanu ayḍan fī l-iḍġām in šā'a Llāh. Wa-ḍālika l-qāf wa-l-ġīm wa-l-ṭā' wa-l-dāl wa-l-bā'²¹ wa-l-dalīl 'alā ḍālika annaka taqūlu l-ḥiḍq²² fa-lā tastaṭī'u an taqifa illā ma'a l-šuwayt li-šiddat

20 Ibn al-Ġazarī, *al-Našr fī l-qirā'āt al-ʿašr*, ed. Ġamal al-Dīn Muḥammad Šaraf, Tanta, Dār al-šaḥāba li-l-turāṭ, 2002, I, p. 166, l. 6-7.

21 Ap. *wa-l-tā'*, H *wa-l-dāl*; puis A, B, D, H *wa-l-tā' wa-l-dāl* etc. (Editor's note. H probably refers to Cairo, Dār al-Kutub, *naḥw* 136, see below for more detail; A refers to BnF, ARABE 3987; B refers to Saint Petersburg, Inst. Vost. Jazykov C-272; and D refers to Vienna, Öst. Nat. 2442, Mixt. 769).

22 L: *al-ḥadq*. (Editor's note. L refers to Escorial, Bib. Real, ar. 1).

ḍağṭ al-ḥarf wa-ba'ḍ al-'Arab ašadd šawt ka-annahum alladīn yarūmūna l-ḥaraka.^{23, 24}

Know that among the consonants some are “saturated” (*mušraba*),²⁵ “pressed” (*ḍuğīṭat*) from their positions, so that if you pause, a small sound exits from the mouth and the tongue withdraws from its position. These are the *qalqala* consonants. They will also be exposed in [the chapter on] assimilation, God willing. They are *qāf*, *ğīm*, *ṭā'*, *dāl*, and *bā'*. The evidence for this is that you say *al-ḥidq*. You cannot pause but with a small sound because of the strong pressure of the consonant. Some Arabs emit a stronger sound, as if they rounded the vowel.

And nothing in the rest of the text of the *Kitāb* could lead to the conclusion that *tā'* is related to *qalqala* in any manner, except for the textual variants found in the critical apparatus. According to Derenbourg, manuscripts *A*, *B*, *D* and *H* carry the *tā'* lesson. However, *D* and *H* actually refer to manuscripts of commentaries of the *Kitāb* (by al-Rummānī and al-Sirāfī, respectively).²⁶ Moreover, according to Humbert,²⁷ the second part of Derenbourg's edition of the *Kitāb* is based on manuscripts *A*, *B* and *L*. This means that the *bā'* lesson is actually carried only by *L*, which is the oldest of the three manuscripts.²⁸

23 *A alladīna yarmūna l-ḥaraka.* (Editor's note. *A* refers to BnF, ARABE 3987).

24 Sibawayh, *Le livre*, II, p. 310, l. 7-11.

25 See below a definition of *mušraba*, in the discussion on *hamza* as a *qalqala* consonant.

26 According to Geneviève Humbert, *Les voies de la transmission du Kitāb de Sibawayhi*, Leiden, Brill, 1995, p. 28, *D* refers to Vienna, Österreichische Nationalbibliothek 2442, Mixt. 769, and *H* probably refers to Cairo, Dār al-kutub, *naḥw* 136.

27 Humbert, *Les voies de la transmission du Kitāb*, p. 27-30.

28 Manuscript *A* refers to BnF ARABE 3987 (Humbert's Ça). It is a modern copy of a medieval Oriental manuscript, which is the base of Derenbourg's edition. It carries the recension of al-Zamaḥṣarī. Manuscript *B* refers to Saint Petersburg, Institut vostocnyx jazykov (Akademija Nauk) C-272 (Humbert's 4G). Humbert describes it as “late and containing many mistakes” (*Les voies de la transmission du Kitāb*, p. 197). *L* refers to Escorial, Biblioteca del Real Monasterio de San Lorenzo, ar. 1 (Humbert's 2O). This medieval Western manuscript is dated 629/1232 and contains the recension of the Andalusian grammarian Abū 'Abd Allāh Muḥammad b. Yaḥyā l-Rabāḥī (d. 358/968). See *Les voies de la transmission du Kitāb*, p. 29, 116.

As shown by al-Nassir,²⁹ the inner consistency of *qalqala* phonemes lies in the fact that Sibawayh describes them all as [+ voiced + stop], which makes it easy to choose between the two lessons, *bā'* versus *tā'*.³⁰

In al-Sīrāfi's recension of the *Kitāb*, *tā'* is chosen over by *bā'*.³¹ But at this point, the commentary of al-Sīrāfi does not help us decide whether it is a conscious choice or whether it is an other scribal error. In his commentary, al-Sīrāfi does not mention the fact that these phonemes have in common that they are [+ voiced + stop] but he invites the reader to perform a simple phonetic "test" (*imtiḥān*):

Qāla Abū Sa'īd [al-Sīrāfi]: yanbaġi idā aradta mtiḥān dālika an tabtadi'a bi-ḥarf min al-ḥurūf, wa-tuṭanniya bi-aḥad hādihī l-ḥurūf al-ḥamsa fa-taqifa 'alayhi; fa-innaka tasma'u ṣuwayt 'inda l-waqf 'alayhi ka-qawlika: aq wa-aġ wa-aṭ wa-ad wa-at, wa-qad tadḥulu fī dālika l-kāf ka-qawlika ak^{32,33}

Abū Sa'īd [al-Sīrāfi] said: if you want to test this [*qalqala*], you have to begin with one of the consonants and then [utter] one of these five consonants in second position and pause on it. Then you hear a small sound when pausing on them, as when you say: *aq, aġ, aṭ, ad, at*. Sometimes *kāf* is also added to these, as when you say *ak*.

However, later in his commentary, al-Sīrāfi makes it clear that [- voiced] *tā'* is really intended:

*Wa-qad dakara l-tā' fī ḥurūf al-qalqala, wa-hiya min al-ḥurūf al-mahmūsa, wa-qad dakara lahā nafḥ.*³⁴

He [Sibawayh] mentioned *tā'* among the *qalqala* consonants although it is not voiced, and he mentioned its breath.

29 Al-Nassir, *Sibawayh the Phonologist*, p. 52-54.

30 In the first edition of his *Grammaire arabe*, Silvestre de Sacy mentions the letter *bā'* (*Grammaire arabe*, 1810, p. 27) but in the second edition he says that it is better to replace it by *tā'* (*Grammaire arabe*, 1831, p. 27). Fleischer (*Kleinere Schriften*, 1/1, p. 13) does not agree on this later correction. Neither Silvestre de Sacy nor Fleischer justify their choice.

31 Al-Sīrāfi, *Šarḥ*, xvi, p. 129, l. 9-11.

32 (Ak) *sāqīṭa min* (T). (Editor's note. T refers to Istanbul, Süleymaniye, Türḳān 103).

33 Al-Sīrāfi, *Šarḥ*, xvi, p. 129, l. 14-16.

34 *Ibid.*, xvi, p. 131, l. 1-2.

Al-Sīrāfi admits here that it is not consistent to consider *tā'*, an unvoiced phoneme, as one of *hurūf al-qalqala* but he does not challenge this position that he attributes to Sībawayh. He seems to be torn between two different logics. He understands that it is not fully consistent to add /t/ to *hurūf al-qalqala* but he does not feel entitled to modify the version of the *Kitāb* he has before his eyes. In the end, he is unable to hierarchise between the two logics, ultimately indicating a degree of insecurity.

The “breath” (*naḥḥ*) that is emitted with *tā'*, and which is found in all [-voiced] phonemes, is not found in any of *hurūf al-qalqala* so it cannot be a justification for the inclusion of *tā'* to the list. However, for Ibn al-Ġazarī it seems to have become an argument for its inclusion in the list, because of its particular strength after the phoneme *tā'*:

*Wa-dakara lahā naḥḥ wa-huwa qawī fī l-iḥtibār.*³⁵

And he [Sībawayh] mentioned its [*tā'*] breath and the fact that it is strongly experienced.

In short, it seems that Ibn al-Ġazarī knows Sībawayh's view on *qalqala* through a recension similar to that of al-Sīrāfi, which has misread *bā'* as *tā'* in the *Kitāb*. He repeats verbatim al-Sīrāfi's remark on the fact that *tā'* is [-voiced] but he understands al-Sīrāfi's note on the “breath” associated to *tā'* as a justification for its inclusion in the list of *hurūf al-qalqala*, as shown by his addition to al-Sīrāfi's commentary that the “breath” in *tā'* is “strongly experienced” (*qawī fī l-iḥtibār*).³⁶

We thus propose the following explanatory sequence: 1) A scribal error happens in Sībawayh's *Kitāb* that reads *bā'* as *tā'*; 2) al-Sīrāfi's commentary carries this scribal error and notes that *tā'*, just like other [-voiced] phonemes, is followed by a “breath”; 3) Ibn al-Ġazarī turns al-Sīrāfi's commentary into a justification for the inclusion of *tā'* to the list: this “breath” after *tā'* is particularly strong.

This sequence clearly shows that neither al-Sīrāfi nor Ibn al-Ġazarī understood the logic of *qalqala* according to Sībawayh's description, otherwise they would have simply amended the recension of the *Kitāb* they had before their eyes.

Sībawayh does not mention *hurūf al-qalqala* in the form of the two-word mnemonic *qaṭaba ḡad* but he lists the five phonemes. In the same manner,

³⁵ Ibn al-Ġazarī, *al-Naṣr*, 1, p. 166, l. 7.

³⁶ *Ibid.*

al-Sirāfi mentions³⁷ five phonemes, adding that some scholars include *kāf* to the list, but he does not mention any form of the mnemonic. As for Ibn al-Ġazarī, he mentions the mnemonic *qaṭaba ġad*,³⁸ and says that Sībawayh adds *tā'* to this list. This is probably an attempt to reconcile two contradicting traditions: al-Sirāfi's commentary on the five phonemes, including *tā'*, according to his reading of Sībawayh's *Kitāb*, and the five-phoneme mnemonic tradition, which is not found in Sībawayh's *Kitāb*.

In doing this, Ibn al-Ġazarī does not see that this would make the *qalqala* phonemes to be six for Sībawayh (the mnemonic plus *tā'*), whereas the *Kitāb* only lists five phonemes, even in al-Sirāfi's recension and whatever lesson, *bā'* or *tā'*, it carried.

In other words, al-Sirāfi misunderstood the consistency of Sībawayh's description and he did not correct *tā'* into *bā'* in his recension of the *Kitāb*, and Ibn al-Ġazarī lets a second error pass unnoticed: he did not realise that whatever the phoneme, *bā'* or *tā'*, Sībawayh only mentions five phonemes not six. Just like al-Sirāfi did not correct *tā'* into *bā'*, Ibn al-Ġazarī did not modify the mnemonic *qaṭaba ġad* to *qaṭata ġad* in order to adapt it to his understanding. Of course one can praise them for their intellectual probity, but when one sees errors pile up as is the case here, the question remains: do these scholars really understand the topics they deal with?

As for 'Arabāwī, he only adds to the confusion by writing³⁹ that Sībawayh did not consider *tā'* a *qalqala* phoneme, although he says the opposite three times elsewhere.⁴⁰

If we go back to earlier authors, we find that Ibn Muġāhid (d. 324/936) is silent on the issue of *qalqala* in his *Kitāb al-Sab'a fī l-qirā'āt*,⁴¹ and that Ibn Ġinnī (d. 392/1001) gives a description of *qalqala* which is very similar to that of Sībawayh, with the *bā'* lesson:

*Wa-'lam*⁴² *anna fī*⁴³ *l-ḥurūf ḥurūf mušraba tuḥfazu fī l-waqf wa-tuḍġatu 'an mawāḍi'ihā, wa-hiya ḥurūf al-qalqala, wa-hiya l-qāf wa-l-ġīm wa-l-tā'*

37 Al-Sirāfi, *Šarḥ*, xvi, p. 129, l. 15.

38 Ibn al-Ġazarī, *al-Našr*, I, p. 166, l. 4.

39 'Arabāwī, *Ḥurūf al-qalqala*, p. 82.

40 *Ibid.*, p. 84, 113, 212.

41 Abū Bakr Aḥmad b. Mūsā l-Baġdādī b. Muġāhid, *Kitāb al-Sab'a fī l-qirā'āt*, ed. Šawqī Ḍayf, Cairo, Dār al-ma'ārif, 1980².

42 *Wa-'lam: sāqiṭa min Š, wa-maḥalluhā bayāḍ bi-l-ašl.* (Editor's note. Š refers to Cairo, Dār al-kutub, *luġa* 16 š).

43 Š, Z: *min.* (Editor's note. Z refers to Cairo, Azhar 4317, *luġa* 116).

*wa-l-dāl wa-l-bā’; li-annaka lā tastaṭīru l-wuqūf ‘alayhā illā bi-ṣawt. Wa-dālika li-šiddat al-ḥafz wa-l-ḍağt, wa-dālika nahwa lḥaq wa-dḥab wa-ḥliṭ wa-ḥruğ wa-ba‘d al-‘Arab ašadd taşwīt.*⁴⁴

Know that among the consonants some are “saturated” (*muşraba*), they are “pushed” (*tuhfazu*) in pausal position and pressed out of their positions. These are the *qalqala* consonants: *qāf, ġīm, ṭā’, dāl, and bā’*. You cannot pause on them but with a sound, because of the strength of the pushing and the pressure, as in *ilḥaq, idḥab, iḥliṭ, and uḥruğ*. Some Arabs emit a stronger sound.

This, however, does not help us decide whether he understands the phonetic phenomenon at stake.

Al-Mubarrad

Curiously, al-Mubarrad writes very little about *qalqala*, he does not mention the number of the phonemes concerned, and does not provide us with a list. His account of this phonetic phenomenon seems to be independent from that of Sibawayh. Al-Mubarrad only says that “among these [*hurūf al-qalqala*] are *qāf* and *kāf*”.⁴⁵ Here is the complete and only passage about *qalqala* in the *Muqtaḍab*:

Wa-‘lam anna min al-ḥurūf ḥurūf maḥşūra fī mawāḍi‘ihā fa-tasma‘u ‘inda l-waqf ‘alā l-ḥarf minhā nabra tatba‘uhu wa-hiya ḥurūf al-qalqala. Wa-idā tafaqqadat dālika wağadtahu.

*Fa-minhā l-qāf wa-l-kāf, illā annahā dūna l-qāf; li-anna ḥaşr al-qāf ašadd, wa-innamā taşharu hādihi l-nabra fī l-waqf, fa-in waşalta lam yakun, li-annaka aḥrağta l-lisān ‘anhā ilā ṣawt āḥar, fa-ḥulta baynahu wa-bayn al-istiqrār. Wa-hādihi l-muqalqila ba‘duhā ašadd ḥaşr min ba‘d, kamā ḍakartu laka fī l-qāf wa-l-kāf.*⁴⁶

Know that some of the consonants are tightened (*maḥşūra*) in their positions and you hear in pausal position on one of them a tone (*nabra*) that follows them. They are the *qalqala* consonants. If you skip it you feel it.

44 Abū l-Faṭḥ ‘Uṭmān b. Ğinnī l-Mawşūlī, *Sirr şinā‘at al-i‘rāb*, ed. Muştafā l-Saqqā, Muḥammad al-Zafzāf, Ibrāhīm Muştafā and ‘Abd Allāh Amīn, Cairo, Muştafā l-Bābī l-Ḥalabī, 1954, I, p. 73, l. 2-5.

45 Al-Mubarrad, *Kitāb al-Muqtaḍab*, I, p. 332, l. 10.

46 *Ibid.*, I, p. 332, l. 8-13.

Among these are *qāf* and *kāf* although it differs from *qāf* because the tightness of *qāf* is stronger. This tone is realised in pausal position, and if you do not pause, it is not there, because you have pulled the tongue out of it [this tone] to another sound and you prevented it from remaining. Some of these consonants to which *qalqala* applies are more tightened than others, as I mentioned to you for *qāf* and *kāf*.

The mention of *kāf* in these few lines is enough for us to deduce that al-Mubarrad does not understand the phonetic phenomenon of *qalqala* as described by Sībawayh. Instead of considering the fact that *qalqala* protects the [+voiced] feature of [+voiced + stop] phonemes, he believes that *qalqala* is caused by a special strength in some [+stop] phonemes, voiced or voiceless. This clearly indicates a different logic in interpreting *qalqala*. However, it is not possible to elaborate more on al-Mubarrad's view on *qalqala* due to scarcity of data. One can only note that he considers that these two velars epitomise *qalqala* consonants.⁴⁷

Aḥmad b. Abī 'Umar al-Ḥurāsānī (d. 470/1077)

According to al-Ḥamad,⁴⁸ Aḥmad b. Abī 'Umar al-Ḥurāsānī (l-Andarābī l-Muqri' al-Zāhid; d. 470/1077)⁴⁹ considers in his unedited *Īdāh fī l-qirā'āt al-ʿaṣr wa-ḥtiyār Abī 'Ubayd (al-Qāsim b. Sallām) wa-Abī Ḥātim (al-Siġistānī)* that *lām* is among *ḥurūf al-qalqala*. We were not able to confirm this assertion.

Al-Zamaḥṣārī and Ibn Ya'īš

In his *Mufaṣṣal*, al-Zamaḥṣārī gives a brief definition and description of *qalqala*, which does not add new elements to the previous definitions we have come across, except that the mnemonic takes a different shape, *qad ṭabaġa*:

47 See in Appendix a modern version of this type of interpretation in Ġānim Qaddūrī l-Ḥamad, *al-Dirāsāt al-ṣawṭiyya*.

48 *Ibid.*, p. 260.

49 Al-Ḥamad considers that he died after 500/1106-1107. See his notice in 'Abd al-Wāḥid b. 'Alī l-ʿAskarī l-Ḥalabī l-Ṣarīfīnī (d. 641/1243), *Muntaḥab min kitāb al-Siyāq li-tārīḫ Nisābūr li-l-imām 'Abd al-Ġāfir b. Ismā'īl al-Fārisī*, ed. Muḥammad 'Uṭmān, Cairo, Maktabat al-ṭaqāfa al-dīniyya, 2008, p. 103 (read al-Andarābī instead of al-Andarānī).

*Wa-ḥurūf al-qalqala mā fī qawlika qad ṭabaġa wa-l-qalqala mā tuḥissu bihi idā waqafṭa ‘alayhā min šiddat al-ṣawt al-mutaṣa‘id min al-šidr ma‘a l-ḥafz wa-l-ḍaġṭ.*⁵⁰

The *qalqala* consonants are those contained in the expression *qad ṭabaġa*. *Qalqala* is the strong sound rising from your chest that you feel when you pause on them, with the pushing and the pressure.

Al-Zamaḥṣarī says that all the phonemes are [+ voiced], except those gathered in the mnemonic *stšḥtk*⁵¹ and that the [+ stop] phonemes are gathered in the mnemonic *ḡdt ṭbqk*.⁵² It implies that *qalqala* phonemes are [+ voiced + stop] phonemes, except /ʔ/, which is consistent with Sībawayh’s description of *qalqala*. We have, however, no idea as to whether al-Zamaḥṣarī had a clear representation of the phonetic phenomenon at stake. He simply says that the speaker “feels it” when he pauses on these phonemes.

The commentary of Ibn Yaʿīš on al-Zamaḥṣarī’s *Mufaṣṣal* is quite puzzling. It seems that Ibn Yaʿīš heavily relies on al-Mubarrad’s *Muqtaḍab* for his commentary, although he does not mention al-Mubarrad’s name. This is clear from the fact that he adds *kāf* to the list of *qalqala* phonemes in a paraphrase of al-Mubarrad, although he holds the canonical view that *ḥurūf al-qalqala* are five:

Wa-ammā « ḥurūf al-qalqala » fa-hiya ḥamsa l-qāf wa-l-ġīm wa-l-ṭāʾ wa-l-dāl wa-l-bāʾ wa-yaġmaʾuhā « qad ṭabaġa » wa-hiya ḥurūf taḥfī fī l-waqf wa-tuḍġaṭu fī mawāḍiʾihā fa-yusmaʾu ʿinda l-waqf ʿalā l-ḥarf minhā nabra tatbaʾuhu wa-idā šaddadta dālīka waġadtahu fa-minhā l-qāf taqūlu lḥaq wa-minhā l-kāf illā annahā dūna l-qāf li-anna ḥaṣr al-qāf ašadd wa-innamā tazharu hādīhi l-nabra fī l-waqf fa-in waṣalta lam yakun dālīka l-ṣawt li-annaka aḥraġta l-lisān ʿanhā ilā ṣawt āḥar fa-ḥulta bay-nahu wa-bayna l-istiqrār wa-hādīhi l-qalqala baʿḍuhā ašadd ḥaṣr min baʿḍ kamā ḍakarnā fī l-qāf wa-summiyat ḥurūf al-qalqala li-annaka lā tastaṭīʾu

50 Abū l-Qāsim Maḥmūd b. ʿUmar al-Zamaḥṣarī, “Kitāb al-Mufaṣṣal fī l-naḥw”, in *al-Mufaṣṣal, opus de re grammatica arabicum*, ed. Jens Peter Broch, Christiana, Mallingii, 1879², p. 190, l. 10-11; quoted in Muwaffaq al-Dīn Abū l-Baqāʾ Yaʿīš b. ʿAlī l-Asadī l-Mawṣili b. Yaʿīš, *Šarḥ al-Mufaṣṣal*, Cairo, Idārat al-ṭibāʾa l-muniriyya, 1928, x, p. 128, l. 18-20.

51 Al-Zamaḥṣarī, “al-Mufaṣṣal”, p. 189.15-17; quoted in Ibn Yaʿīš, *Šarḥ al-Mufaṣṣal*, x, p. 128, l. 7-9.

52 Al-Zamaḥṣarī, “al-Mufaṣṣal”, p. 189.19-21; quoted in Ibn Yaʿīš, *Šarḥ al-Mufaṣṣal*, x, p. 128, l. 10-11.

l-wuqūf ‘alayhā illā bi-ṣawt wa-dālika li-šiddat al-ḥaṣr wa-l-ḍağt naḥwa lḥaq idhab iḥliṭ uḥruğ wa-ba‘d al-‘Arab ašadd taṣwīt min ba‘d.’⁵³

As for the *qalqala* consonants, they are five: *qāf*, *ğīm*, *ṭā*, *dāl* and *bā*. They are gathered in *qad ṭabağā*. These consonants disappear in pausal position. They are pressed in their positions so that a tone (*nabra*) that follows any of these consonants is heard in pausal position. If you geminate it you feel it. One of them is *qāf*, you say *ilḥaq*. Another one is *kāf*, except that it differs from *qāf* because the tightness (*ḥaṣr*) of *qāf* is stronger. This tone is realised in pausal position and if you do not pause, this sound is not there, because you have pulled the tongue out of it [this tone] to another sound and you prevented it from remaining. Some of these *qalqala* [consonants] are more tightened than others, as we mentioned for *qāf*. They are called *qalqala* consonants because you cannot pause on them but with a sound, and this, for the strength of their tightness and pressure, as in *ilḥaq*, *iḍhab*, *iḥliṭ*, and *uḥruğ*. Some Arabs emit a stronger sound than others.

Ibn Ya‘īš does not seem to see the contradiction between the fact that *ḥurūf al-qalqala* are five (/q/, /ğ/, /ṭ/, /d/ and /b/) and his assertion that /k/ is “one of them” (*wa-minhā*). And since he does not criticise al-Mubarrad’s view that *kāf* is subject to *qalqala* we have no reason to believe that he disagrees with him.

Ibn Abī Maryam

According to ‘Arabāwī,⁵⁴ Ibn Abī Maryam considers the following letters as *ḥurūf al-qalqala*: *dād*, *zāy*, *dāl* and *zā*. However, the quotation of Ibn Abī Maryam’s *Mūdāḥ* that he provides does not support this assertion. Rather, Ibn Abī Maryam says that it is a claim made by some authors. Here is the complete quotation:

Wa-min al-ḥurūf aydan mā yusammā ḥurūf al-qalqala wa-yuqālu l-laqlaqa aydan, wa-hiya ḥurūf muṣraba fī maḥāriğihā illā annahā tuḍğatu ḍağz [hākadā] šadīd, fa-inna lahā aṣwāt ka-l-ḥarakāt tataqalqalu ‘inda ḥurūğihā ay taḍṭaribu, wa-li-hādā summiyat ḥurūf al-qalqala, wa-hiya ḥamsa: l-qāf wa-l-ğīm wa-l-ṭā’ wa-l-dāl wa-l-bā’, wa-hiya mağmū’a fī qawlika: qad ṭabağā, wa-za‘ama ba‘duhum anna l-dād wa-l-zāy wa-l-dāl wa-l-zā’ minhā li-nutuwwihā [hākadā. Iqra’: li-natwihā] wa-ḍağtiḥā fī

53 *Ibid.*, x, p. 129, l. 26-p. 130, l. 3.

54 ‘Arabāwī, *Ḥurūf al-qalqala*, p. 78.

*mawāḍi'ihā, illā annahā wa-in kānat mušraba fī l-mahāriğ fa-innahā ġayr mađğūta ka-ḍağt al-ḥurūf al-ḥamsa llatī dakarnāhā, wa-lākin yaḥruğū 'inda l-wuqūf 'alayhā šibh al-naḥḥ.*⁵⁵

Some of the consonants are also called *qalqala* consonants, or *laqlaqa* consonants. These consonants are “saturated” (*mušraba*) in their places of articulation. Moreover, they are strongly pressed so that vowel-like sounds “stir” (*tataqalqalu*) or shake when they are emitted. This is why they are called “unrest” (*qalqala*) consonants. They are five: *qāf*, *ğīm*, *ṭā*, *dāl*, and *bā*, and are gathered in the expression *qad ṭabağā*. Some people claimed that *dād*, *zāy*, *dāl* and *zā* are among them because of their swelling and pressure in their positions. However, even if they are “saturated” in the places of articulation, they are not pressed as much as the five consonants that we mentioned, although a kind of breath is emitted after them in pausal position.

Ibn Abī Maryam is clear that, although a “kind of breath” (*šibh al-naḥḥ*) is emitted in pausal position after these phonemes, they do not belong to the five *hurūf al-qalqala*. It is difficult, however, to decide whether he has understood the phonetic phenomenon at stake or whether he simply sticks to Sibawayh's explanation literally, including Sibawayh's description of the small sound emitted after *dād*, *zāy*, *dāl* and *zā*.⁵⁶

Al-Hamaḍānī l-'Atṭār

The same can be said of al-Hamaḍānī l-'Atṭār, who has a very similar position as that of Ibn Abī Maryam concerning *dād*, *zāy*, *dāl* and *zā*. The same “kind of breath” (*šibh al-naḥḥ*) can be heard after them in pausal position but that it is not as strong as after *qalqala* phonemes:

*Wa-tusammā ayḍan al-dād wa-l-zāy wa-l-zā' wa-l-dāl mušraba, wa-dāka annahu yaḥruğū ma'ahā 'inda l-waqf 'alayhā šibh al-naḥḥ, ġayr annahā lā tuḍğatu ḍağt ḥurūf al-qalqala.*⁵⁷

55 Abū 'Abd Allāh Naṣr b. 'Alī l-Šīrāzī b. Abī Maryam, *Kitāb al-Mūḍāḥ fī wuğūh al-qirā'āt wa-'ilalihā*, ed. 'Umar Ḥamdān al-Kubaysī, Giza, Maktabat al-taw'īya l-islāmīyya, 2005³ (1st edition: Jeddah, al-Ġama'īyya l-ḥayriyya li-taḥfīz al-Qur'ān, 1993), I, p. 176-177.

56 Sibawayh, *Le livre*, II, p. 310, l. 11-13.

57 Abū l-'Alā' al-Ḥasan b. Aḥmad b. al-Ḥasan al-Hamaḍānī l-'Atṭār, *al-Tamhīd fī ma'rifat al-tağwīd*, ed. Ġānim Qaddūrī l-Ḥamad, Amman, Dār 'ammār, 2000, p. 281.

Ḍād, *zāy*, *zā'* and *dāl* are also called “saturated” (*mušraba*) because a kind of breath is emitted with them in pausal position, but they are not pressed as much as the *qalqala* consonants.

Sāḡaqlī Zādah al-Mar'ašī

Sāḡaqlī Zādah al-Mar'ašī gives a detailed presentation of *qalqala* in his *Ġuḥd al-muqill*.⁵⁸ He refutes the idea that *kāf* and *tā'* belong to *hurūf al-qalqala* by saying that it is true that an additional sound can be heard when these letters are pronounced but it is a [-voiced] sound that cannot compare to *qalqala*:

Fa-lam yu'adda l-kāf wa-l-tā' al-muṭannā [l-fawqiyya] min ḥurūf al-qalqala ma'a anna fihimā ṣawt zā'id ḥadaṭa 'inda nfitāḥ maḥraḡayhimā, li-anna dālīka l-ṣawt fihimā yulābisu ḡary nafas, fa-ḥuwa ṣawt hams ḍa'if, wa-li-dā' uddā' šadīdayn mahmūsayn, fa-law lam yulābis dālīka l-ṣawt fihimā bi-ḡary nafas la-kāna qalqala wa-la-kāna⁵⁹ l-tā' dāl.⁶⁰

Kāf and [upper] two-dotted *tā'* do not belong to *qalqala* consonants, although an additional sound happens at the opening of their place of articulation, because this sound associate to the flowing of breath, it is the sound of a weak whisper (*hams*). For this reason, they are considered non-voiced (*mahmūs*) stops. If this sound did not associate with the flowing of breath in these two consonants, it would be *qalqala* and *tā'* would become *dāl*.

Sāḡaqlī Zādah adds that if al-Mubarrad considered *kāf* to be a *qalqala* letter, as reported by Abū Šāma, he should also have considered *tā'* to be one because it shares the same phonetic characteristics as *kāf*.⁶¹

He also adds that some reciters sometimes pronounce *qalqala* with *fā'* or *lām* in order to protect them from being assimilated, but this is a mistake (*lahn*).⁶²

In all this, Sāḡaqlī Zādah seems to have understood Sibawayh's point.

58 Muḥammad b. Abī Bakr Sāḡaqlī Zādah al-Mar'ašī, *Ġuḥd al-muqill*, ed. Sālim Qaddūrī l-Ḥamad, Amman, Dār 'ammār, 2001, p. 148, l. 13-p. 151, l. 2.

59 (B): « *la-kāf ḥarf al-tā'* ». (Editor's note. B refers to Bagdad, Markaz Šaddām, 12928).

60 Sāḡaqlī Zādah al-Mar'ašī, *Ġuḥd al-muqill*, p. 149, l. 1-5.

61 *Ibid*, p. 149, l. 6-8.

62 *Ibid*, p. 150, l. 5-8.

/q/ as the “Origin” of qalqala

Some authors have developed the idea that *qāf* is the “origin” (*aṣl*) of *qalqala*.

We have seen above that al-Mubarrad mentions explicitly only two *qalqala* phonemes, /q/ and /k/. The reason he gives is that *qalqala* is particularly salient in these two phonemes, and even more in /q/. Here probably lies the origin of the idea that /q/ exemplifies best what *qalqala* is.

Makkī b. Abī Ṭālib al-Qaysī

Makkī b. Abī Ṭālib al-Qaysī considers that the origin (*aṣl*) of *qalqala* is *qāf* because of its “strong pressure” (*šiddat dağt*) and “raising” (*isti‘lā*), and thus attributed secondarily in its “sisters” (*aḥawāt*). He mentioned above⁶³ the mnemonic *ğad baṭaqa*, from which we understand what these “sisters” are:

*Wa-qīla: aṣl hādīhi l-šifa li-l-qāf, li-annahū ḥarf ḍuğīṭa ‘an mawḍi‘ihi fa-lā yuqdaru ‘alā l-waqf ‘alayhi, illā ma‘a ṣawt zā‘id li-šiddat dağtihi wa-sti‘lā‘ihi, wa-yušbihuhu⁶⁴ fī dālīka aḥawātuhu l-madkūrāt ma‘ahu. [...] Wa-uḍīfa ilayhā [l-qāf] aḥawātuhā li-mā fihinna min dālīka l-ṣawt al-zā‘id ‘inda l-waqf ‘alayhinna, wa-« l-qāf » abyanuhā ṣawt fī l-waqf li-qurbihā min al-ḥalq, wa-quwwatihā fī l-isti‘lā’.*⁶⁵

They say: the origin of this characteristic [*qalqala*] is *qāf*, because this consonant is pressed out of its position so that it is impossible to pause on it but with an additional sound, because of its strong pressure and raising (*isti‘lā*). Its sisters mentioned with it are similar to it. [...] Its sisters were added to it [*qāf*] in virtue of this additional sound in pausal position. *Qāf* has a more obvious sound in pausal position because it is closer to throat and because of its strong raising.

Abū Šāma

Commenting on a verse by al-Šāṭibī (d. 590/1194) that deals with *kāf* and *qāf* as *ḥurūf al-qalqala*, Abū Šāma quotes Abū l-Ḥasan (al-Saḥāwī?; d. 643/1245) on

63 Abū Muḥammad Makkī b. Abī Ṭālib al-Qaysī, *al-Ri‘āya li-tağwīd al-qirā’a wa-taḥqīq lafẓ al-tilāwa bi-‘ilm marātib al-ḥurūf wa-maḥārīğihā wa-šifātihā wa-alqābihā wa-tafsīr ma‘ānīhā wa-ta‘līlīhā wa-bayān al-ḥarakāt allatī talzimuhā*, ed. Aḥmad Ḥasan Farahāt, Amman, Dār ‘ammār, 2008⁵, p. 124, l. 12.

64 *Fī « M »: wa-štabaha, wa-fī « R »: wa-ašbahahu*. (Editor’s note. M refers to Makka, Quds 2, Qirā‘āt; R refers to Rabat, Kaḏāna ‘amma, Awqāf 956).

65 Makkī b. Abī Ṭālib, *al-Ri‘āya*, p. 124, l. 14-p. 125, l. 5.

the fact that some scholars say that “the origin of *qalqala* is *qāf*” (*aṣl al-qalqala li-l-qāf*).⁶⁶

Ibn al-Wağīh al-Wāsiṭī

The same idea is also found in Ibn al-Wağīh al-Wāsiṭī’s *Kanz*:

*Wa-qila: aṣl hādīhi l-ṣifa [al-qalqala] li-l-qāf wa-ṣubbiha bihi aḥawātuhu.*⁶⁷

They say: the origin of this characteristic [*qalqala*] is *qāf* and its sisters are compared to it.

According to him, *qāf* is the “origin” of *qalqala*, and its “sisters” share this feature by resemblance. However, his definition of *qalqala* does not help us decide whether he understands the phonetic phenomenon at stake.

Ibn al-Ġazarī

The interpretation of Ibn al-Ġazarī is that it is impossible to pronounce *qāf* in pausal position without emitting a sound because *qāf* is “strongly raised”. One cannot be further from the [+voiced + stop] rationale:

*Wa-aṣl hādīhi l-ḥurūf [ḥurūf al-qalqala] l-qāf li-annahū lā yuqdaru an yuṭā bihi sākin illā ma’a ṣawt zā’id li-šiddat isti’lā’ihī.*⁶⁸

The origin of these consonants [the *qalqala* consonants] is *qāf* because it is impossible to pronounce it vowelless except with an additional sound, because of its strong raising.

Ibn al-Ġazarī does not mention the [+stop] feature of *qāf* but only its pharyngealisation. He does not see any problem in the fact that /q/ and /ṭ/ are the only pharyngealised phonemes among *ḥurūf al-qalqala* and that it is not obvious to associate the three other phonemes (/ğ/, /d/ and /b/) on this single base.

66 Šihāb al-Dīn ‘Abd al-Raḥmān b. Ismā’īl Abū Šāma, *Ibrāz al-ma’ānī min Ḥirz al-amālī fī l-qirā’āt al-sab’ li-l-imām al-Šāṭibī*, ed. Ibrāhīm ‘Aṭwa ‘Iwaḍ, Cairo, Muṣṭafā l-Bābī l-Ḥalabī, 1982, p. 755, l. 18-20.

67 Tāğ al-Dīn / Nağm al-Dīn Abū Muḥammad ‘Abd Allāh al-Tāğīr al-Wāsiṭī, *al-Kanz fī l-qirā’āt al-aṣr*, ed. Ḥālīd Aḥmad al-Mašhadānī, Cairo, Maktabat al-ṭaqāfa l-dīniyya, 2004, I, p. 169, l. 16.

68 Ibn al-Ġazarī, *al-Naṣr*, I, p. 166, l. 11-12.

Al-'Awfī

In his commentary on Ibn al-Ġazarī's *Muqaddima*, al-'Awfī mentions the same five consonants but he does not mention the fact that they are voiced stops. Instead he focuses only on the "pressure" that accompanies these phonemes. He says that this is particularly true of *qāf* and that everybody agrees on its pronunciation with *qalqala*:

Wa-innamā wuṣīfat bi-dālīka [l-qalqala] li-annahā idā waqafa 'alayhā l-qārī' taqalqala l-mahraġ hattā yusma' lahu nātra qawiyya wa-huwa luġa: al-taharruk, wa-ašharuhā l-qāf fa-innahu mā ḥtalafa aḥad fī qalaqatihā [hākaḏā. Iqra': qalqalatihā] wa-li-annaka idā qulta raḥīq wa-waqafat 'alayhā yataqalqalu bihā l-lisān yusma' lahu nabra wa-quwwa 'inda ḥurūġihā naḥwa l-ḥaqq wa-l-šatt fa-lā yumkinu l-waqf 'alayhā illā bi-ṣawt yalḥiquhā li-ḏaġtihā.⁶⁹

They [these phonemes] have been so described [*qalqala*] because if the reciter pauses on them, the place of articulation stirs (*taqalqala*) and a strong bark (*nātra*) is heard, which is a word for "vocalisation". The most famous of them is *qāf* and no one has disagreed on its *qalqala*. If you say *raḥīq* and pause on it, it makes the tongue stir and a tone (*nabra*) is heard, a strength at its emission, as in *al-ḥaqq* and *al-šatt*. It is impossible to pause on them, except with a sound that follows them, because of their pressure.

One can probably infer from the example he gives (*al-šatt*, "the shore") that the next phoneme after /q/ in terms of "pressure" is /t/ not /k/. In all cases, he never mentions the fact that their *qalqala* is related to their [+voiced + stop] feature.

Authors Discussing /ʔ/

Hamza refers to a [+stop] phoneme, however assigning either a [+voiced] or a [-voiced] feature to this glottal stop is not straightforward since it consists either in opening or closing the vocal chords, depending on its location in the segment. Sībawayh considers *hamza* to be a [+voiced] phoneme, which makes it a [+voiced + stop] phoneme, just like the other *qalqala* phonemes. To distinguish the five *qalqala* phonemes from *hamza*, Sībawayh uses the category

69 Al-'Awfī, *al-Fuṣūl*, p. 58, l. 8-12.

of *mušraba* “saturated” phonemes, which gather all the voiced phonemes except *hamza* (which Sībawayh considers to be voiced).⁷⁰ The definition that al-Nassir⁷¹ gives for *mušraba* is the following: “An element that has acquired a quality of another element.” This point remains obscure in the *Kitāb*.

A legitimate question that one can pose is why /ʔ/ is not subject to *qalqala* if it gathers the same features as the other [+voiced + stop] phonemes, except that it is not *mušraba* “saturated”.

Ibn al-Ġazarī

In his *Našr*, Ibn al-Ġazarī presents the position of some scholars who include /ʔ/ to the list of *qalqala* phonemes, for it is a [+voiced + stop]:

Wa-aḍāfa baʿduhum ilayhā [ḥurūf al-qalqala] l-hamza li-annahā maġhūra šadīda wa-innamā lam yadkurhā l-ġumhūr limā yadḥuluhā min al-tahfīf ḥālat al-sukūn fa-fāraqat aḥawātuhā wa-limā yaʿtarīhā min al-iʿlāl [hākaḍā. Iqraʾ: al-aʿlāl].⁷²

Some of them have added *hamza* to them [the *qalqala* consonants] because it is voiced and plosive, however the majority did not mention it because of its softening when it is vowelless. Thus, it is different from its sisters because of the illnesses that afflict it.

ʿArabāwī⁷³ does not mention an earlier reference to a discussion about *hamza* as a *qalqala* phoneme. Sībawayh describes /ʔ/ as a [+voiced + stop], but he does not include it in *ḥurūf al-qalqala* and he does not justify his choice. The justification of Ibn al-Ġazarī is that unlike its “sisters” (*i.e.* the other [+voiced + stop] phonemes?), *hamza* is “softened” in pausal position and is “afflicted by illnesses”.

Sāġaqlī Zādah al-Marʿašī

The other scholar who is said by ʿArabāwī⁷⁴ to have tackled the issue of *hamza* as *ḥarf al-qalqala* is Sāġaqlī Zādah al-Marʿašī. He deals twice with this issue in his *Ġuhd al-muqill*. In a passage devoted to *qalqala* in general,⁷⁵ where he

70 Al-Nassir, *Sibawayh the Phonologist*, p. 51-52.

71 *Ibid.*, p. 121.

72 Ibn al-Ġazarī, *al-Našr*, 1, p. 166, l. 5-6.

73 ʿArabāwī, *Ḥurūf al-qalqala*.

74 *Ibid.*

75 Sāġaqlī Zādah al-Marʿašī, *Ġuhd al-muqill*, p. 147, l. 13-p. 151, l. 2.

briefly gives his opinion that *hamza* is subject to *qalqala*.⁷⁶ In a passage dealing more in detail with the pronunciation of *hamza* in pausal position,⁷⁷ he comments on Makkī's assertion in his *Ri'āya* that the reader should "lengthen" the pronunciation of *hamza* in pausal position.

However, this passage is problematic. In Makkī's *Ri'āya*, the text reads: *an yaṭluba l-lafẓ bihā* (the reader should "try to obtain its pronunciation").⁷⁸ But this is a correction of the modern editor, Aḥmad Ḥ. Faraḥāt, who notes in the apparatus that the manuscript (*fī l-aṣl*) has: *an yaṭluba l-luṭf bihā* (he should "try to be kind to it").

The quotation of Makkī's *Ri'āya* by Sāḡaqlī Zādah reads as follows: *an yuṭila l-lafẓ bihā* (he should "lengthen its pronunciation").⁷⁹ However, the modern editor of *Ġuḥd al-muqill*, Sālīm Q. al-Ḥamad, proposes in a footnote to correct both *yaṭluba* and *yuṭila* by *yulattifa* (he should "soften its pronunciation"), which he says would solve the problem of interpreting how *hamza* could be "lengthened", which al-Mar'aṣī (Sāḡaqlī Zādah) faces. Al-Ḥamad does not seem to know the lesson *an yaṭluba l-luṭf bihā*.

The commentary of Sāḡaqlī Zādah is that the only possibility to lengthen this [+ stop] is to pronounce it with *qalqala*:

Fa-laysa l-murād min taṭwīl al-lafẓ bihā [l-hamza] illā iẓhār qalqalatihā,⁸⁰ id bi-l-qalqala yaṭūlu l-ṣawt.⁸¹

What is intended by the lengthening of its [*hamza*] pronunciation is nothing but the realisation of *qalqala*, since sound is lengthened by *qalqala*.

Sāḡaqlī Zādah adds that *hamza* genuinely (*fī l-aṣl*) belongs to *hurūf al-qalqala* in its quality [+ voiced + stop] phoneme, but scholars prefer to avoid the pronunciation of *qalqala* with *hamza* because it would lead to a sound similar to "vomiting and coughing" (*al-tahawwu' wa-l-su'la*),⁸² according to Makkī's own

76 *Ibid.*, p. 150, l. 9-p. 151, l. 2.

77 *Ibid.*, p. 281, l. 3-p. 282, l. 9.

78 Makkī b. Abī Ṭālib, *al-Ri'āya*, p. 151, l. 1.

79 Sāḡaqlī Zādah al-Mar'aṣī, *Ġuḥd al-muqill*, p. 281, l. 5.

80 « *Qalqalatihā* » *sāqīta min* (Ṭ). (Editor's note. Ṭ refers to Rabat, *Ḳazāna 'amma*, 2813).

81 Sāḡaqlī Zādah al-Mar'aṣī, *Ġuḥd al-muqill*, p. 281, l. 10.

82 *Ibid.*, p. 281, l. 13.

description of this phoneme.⁸³ Sāḡaqlī Zādah considers that this reason is void since “necessity allows what is forbidden” (*al-ḍarūrāt tubīhu l-maḥzūrāt*):⁸⁴

*Wa-lammā ḥīfa ‘alayhā [l-hamza] l-naqḍ ‘inda sukūnihā waḡaba l-takalluf li-iḡhārihā ‘inda l-waqf bi-taqwiyat šiddatihā wa-iḡhār qalqalatihā, wa-in lazima ṣawt yuṣbihu l-tahawwu‘ wa-l-su‘la, li-anna l-ḍarūrāt tubīhu l-maḥzūrāt.*⁸⁵

Since they feared that it [*hamza*] faded when it is vowelless, it was necessary to realise it carefully in pausal position by strengthening its plosiveness and the realisation of its *qalqala*, even if it implied a sound similar to vomiting and coughing because necessity allows what is forbidden.

Sāḡaqlī Zādah thus teaches that *hamza* should be pronounced with *qalqala* when it is vowelless.

Authors for Which It is More Difficult to Decide Whether They Understood Sībawayh

Some grammarians, including the prominent Ibn al-Sarrāḡ (d. 316/928) in his *Uṣūl*, have not dealt with *qalqala* in the first place.⁸⁶ But even with grammarians who have written on *qalqala* it is not easy to decide whether they understood the issue at stake in the *Kitāb*.

We have already mentioned above the positions of Ibn Ğinnī and of al-Zamaḡṣarī. Since they give a description of *qalqala* which is very similar to that of Sībawayh, with no other comment, it is impossible to decide whether they really understand Sībawayh’s position.

The case of Ibn al-Ġazarī presented above is slightly different from that of Ibn Ğinnī and al-Zamaḡṣarī since he seems to be simply compiling others, namely Sībawayh, including *tā’* among *ḥurūf al-qalqala*, and al-Mubarrad, including *kāf*. The mere fact that he does not express a judgment on these positions is not enough to decide whether he understands the issue or whether he noticed a change in the pronunciation of *qalqala* phonemes.

83 Makkī b. Abī Ṭālib, *al-Ri‘āya*, p. 134, l. 2-3.

84 Sāḡaqlī Zādah al-Mar‘ašī, *Ġuhd al-muqill*, p. 282, l. 3.

85 *Ibid.*, p. 282, l. 1-3.

86 Abū Bakr Muḡammad b. al-Sarī l-Baḡdādī b. al-Sarrāḡ, *al-Uṣūl fī l-naḡw*, ed. ‘Abd al-Ḥusayn al-Fatli, Beirut, Mu‘assasat al-risāla, 1996³.

Makkī b. Abī Ṭālib al-Qaysī

We have already mentioned above the fact that Makkī considers *qalqala* to be “genuine” (*aṣl*) in *qāf*. Except for this point, and for the mention of a mnemonic, Makkī’s description of *qalqala* is very similar to that of Sībawayh in the *Kitāb*, such as the “pressure” (*dağt*) put on their “position” (*mawḍiʿ*).

Ḥurūf al-qalqala: wa-yuqālu: l-laqlaqa: wa-hiya ḥamsat aḥruf; yağmaʿuhā hiğāʿ qawluka: «ğad baṭaqa» wa-innamā summiyat⁸⁷ bi-dālika li-zuhūr ṣawt yuṣbiḥu l-nabra ʿinda l-waqf ʿalayhinna, wa-irādat itmām al-nuṭq bihinna, fa-dālika l-ṣawt fī l-waqf ʿalayhinna abyān minhu fī l-waṣl bihinna.⁸⁸

Qalqala consonants, also called *laqlaqa*. They are five consonants, gathered in the letters of the expression *ğad baṭaqa*. They are so called because of the realisation of a sound similar to a tone (*nabra*) when pronounced in pausal position and the will to complete their pronunciation. This sound is more obvious in pausal position on them [these consonants] than when they are connected.

Makkī describes⁸⁹ the same [+voiced] and [-voiced], [+stop] and [-stop] phonemes as Sībawayh, which means that according to him, and just like Sībawayh, *ḥurūf al-qalqala* gather the [+voiced + stop] phonemes, except *hamza*. Makkī does not mention this fact explicitly, but since he writes that *qalqala* expresses “the will to complete their pronunciation [of these phonemes]” (*irādat itmām al-nuṭq bihinna*)⁹⁰ we can probably assume that he understands the phonetic phenomenon at stake, *i.e.* the protection of their [+voiced] feature.

However, he does not mention any discrepancy between his actual pronunciation and that of any of *ḥurūf al-qalqala*.

Al-Dānī

Al-Dānī’s presentation of *qalqala* is almost identical to that of Sībawayh, with the *bāʿ* lesson:

Wa-min al-ḥurūf ḥurūf muṣraba duğiṭat min mawāḍiʿihā, fa-idā wuqifa ʿalayhā ḥarağa maʿahā min al-fam ṣuwayt wa-nabā l-lisān ʿan mawāḍiʿihi, wa-hiya ḥamsat aḥruf; yağmaʿuhā qawluka (ğad baṭaqa) al-qāf wa-l-ğīm

87 Fī «R»: *summīna*. (Editor’s note. R refers to Rabat, Ḳazāna ʿamma, Awqāf 956).

88 Makkī b. Abī Ṭālib, *al-Riʿāya*, p. 124, l. 11-14.

89 *Ibid.*, p. 116-117.

90 *Ibid.*, p. 124, l. 13.

*wa-l-ṭā' wa-l-dāl wa-l-bā', wa-tusammā hadīhi l-hurūf hurūf al-qalqala, li-annahu idā wuqifa 'alayhā lam yustaṭa' anyūqafa dūna l-ṣuwayt, wa-dālika qawluka: al-ḥarq wa-qatṭ wa-šibhuhu.*⁹¹

Among the consonants, some are “saturated” (*mušraba*), “pressed” (*duḡitat*) from their positions, so that if you pause on them, a small sound exits from the mouth and the tongue withdraws from its positions. They are five consonants, gathered in the expression *ḡad baṭaqa, qāf, ḡim, ṭā', dāl, and bā'*. These consonants are called *qalqala* consonants because if you pause on them you cannot pause without the small sound, as when you say *al-ḥarq, qatṭ*, and similar [words].

The only elements which are not found in the *Kitāb* are the explicit number of phonemes, five, and the mnemonic, in the version given by Makkī,⁹² *ḡad baṭaqa*. Instead of Sibawayh's example *al-ḥidq* (or *al-ḥadq* in other versions), al-Dānī gives *al-ḥarq* and adds *qatṭ*. Just like Makkī, al-Dānī⁹³ describes the same [+ voiced] and [- voiced], [+ stop] and [- stop] phonemes as Sibawayh.

'Abd al-Wahhāb al-Qurṭubī

The presentation of 'Abd al-Wahhāb al-Qurṭubī is also very similar to that of Sibawayh, except that he mentions a mnemonic, in a different version from that of Makkī and al-Dānī, *ṭabaqa ḡad*:

*Wa-'lam anna fī l-hurūf huruf tuḥfazu fī l-waqf wa-tuḡaṭu min mawādi'ihā, wa-hiya hurūf al-qalqala, wa-hiya l-qāf wa-l-ḡim wa-l-ṭā' wa-l-dāl wa-l-bā', li-annaka lā tastaṭīru l-waqf 'alayhā illā bi-ṣawt yanbū ma'ahu l-lisān 'an mawdi'ihī, wa-dālika li-šiddat al-ḥafz wa-l-ḡaḡt, naḥwa: lḥaq, wa-dhab, wa-ḥliṭ, wa-ḥruḡ, wa-šdud. Wa-ba'ḍ al-'Arab ašadd taṣwīt bihā, wa-yaḡma'uhā qawluka: ṭabaqa ḡad. Wa-ba'ḍuhum yuḍṭifu l-kāf ilā hurūf al-qalqala. Wa-lā yan'addu minhā illā anna l-kāf dūna l-qāf fī l-ḥaṣr.*⁹⁴

Know that among the consonants are consonants that are pushed (*tuḥfazu*) in pausal position and that are pressed from their positions,

91 Abū 'Amr 'Uṭmān b. Sa'īd al-Dānī, *al-Taḥdīd fī l-itqān wa-l-taḡwīd*, ed. Ġānim Qaddūrī l-Ḥamad, Amman, Dār 'ammār, 2010², p. 108, l. 4-7.

92 Makkī b. Abī Ṭālib, *al-Ri'āya*, p. 124.

93 Al-Dānī, *al-Taḥdīd*, p. 104-105.

94 Al-Qurṭubī, *al-Muwaddīḥ fī l-taḡwīd*, ed. Ġānim Qaddūrī l-Ḥamad, al-Kuwayt, Ma'had al-maḥṭūṭāt al-'arabiyya, 1990, p. 93, l. 1-7.

they are the *qalqala* consonants: *qāf*, *ǧīm*, *ṭā*, *dāl*, and *bā*. You cannot pause on them but with a sound with which the tongue withdraws from its position, because of the strength of the pushing and the pressure, as in *ilḥaq*, *idḥab*, *iḥlit*, *uḥruġ*, and *uṣḍud*. Some Arab emit a stronger sound. They are gathered in the expression *ṭabaqa ḡaq*. Some of them add *kāf* to the *qalqala* consonants, but it is not one of them because *kāf* is not like *qāf* in terms of tightness (*ḥaṣr*).

The other difference with Makkī and al-Dānī is that he mentions the fact that other scholars erroneously add *kāf* to the list, but he does not mention al-Mubarrad explicitly. However, he does not mention the fact that if *kāf* is not included, it is because it is [-voiced]. He also does not mention the fact that *tā* is sometimes added to the list.

As was the case with al-Dānī, it is not possible to decide whether al-Qurṭubī fully understands the phonetic phenomenon at stake in *qalqala*. He simply repeats Sibawayh's description of *qalqala* and phonetic description of [+voiced + stop] phonemes.⁹⁵

ʿAlam al-Dīn al-Saḥāwī (d. 643/1245)

ʿAlam al-Dīn al-Saḥāwī authored a book in Qurʾānic readings, *Ġamāl al-qurrāʾ wa-kamāl al-iqrāʾ*, in which he lists many variant readings sorted by sura. At the end of the treatise is a section devoted to the rules of *taġwīd*.⁹⁶ Curiously, however, although he describes many of the phonetic rules that apply to Qurʾānic recitation, he does not mention *qalqala*.

Abū Šāma

We already mentioned Abū Šāma above on the fact that *qalqala* is genuine in the phoneme *qāf*. In his commentary on an other verse by al-Šāṭibī that deals with *qalqala*, Abū Šāma first quotes authorities, Makkī and al-Dānī explicitly, and "others", and then states his own opinion on this phonetic phenomenon which he understands as follows:

Wa-innamā ḥaṣala laḥā [ḥurūf al-qalqala] dālīka li-ttifāq kaw[nih]ā šadīda maġhūra fa-l-ġahr yamnaʿu l-naḥas an yaġriya maʿahā wa-l-šidda tamnaʿu an yaġriya sawtuhā fa-lammā ġtamaʿa laḥā ḥādān al-waṣfān wa-huwa mtināʿ ġary al-naḥas maʿahā wa-mtināʿ ġary sawtihā ḥtāġat

⁹⁵ *Ibid.*, p. 88, l. 1-5; p. 89, l. 4-9.

⁹⁶ ʿAlam al-Dīn ʿAlī b. Muḥammad al-Saḥāwī, *Ġamāl al-qurrāʾ wa-kamāl al-iqrāʾ*, ed. ʿAlī Ḥusayn al-Bawwāb, Mecca, Maktabat al-turāṭ, 1987, II, p. 525-543.

*ilā l-takalluf fī bayānihā fa-li-dālika yaḥṣulu min al-ḍağṭ li-l-mutakallim
‘inda l-nuṭq bihā sākina ḥattā takādu taḥruḡu ilā šibh taḥarrukihā li-qaṣd
bayānihā id lawlā dālika lam yatabayyanu li-annahu idā mtana‘a l-naḥas
wa-l-ṣawṭ taqdiru bayānahā mā lam yatakallaf bi-izhār amrihā ‘alā l-wağh
al-madkūr.⁹⁷*

It is agreed that they [the *qalqala* consonants] are plosive and voiced. Voicedness prevents breath to flow with them and plosiveness prevents their voice to flow, so that when these two characteristics are gathered, *i.e.* prevention of breath to flow with them and prevention of their voice to flow, they need to be carefully realised, this is why some pressure happens to the speaker when he pronounces them vowelless, until a pseudo vowel is almost emitted, in order to realise them, otherwise they are not realised, because if you prevent breath and voice you can realise them only if you produce them carefully in the way that is described.

This description of the [+ stop] and [+ voiced] features heavily depends on Sibawayh’s *Kitāb*, as is clear from the two quotations below:

*Fa-l-mağhūra ḥarf ušbi‘a l-i‘timād fī mawḍi‘ihi wa-mana‘a l-naḥas an
yağriya ma‘ahu ḥattā yanqadiya l-i‘timād ‘alayhi⁹⁸ wa-yağriya l-ṣawṭ.⁹⁹*

A voiced consonant is one whose base is filled in its position and that prevents breath to flow with it until its base is completed and sound flows.

Wa-min al-ḥurūf al-šadīd wa-huwa lladī yamna‘u l-ṣawṭ an yağriya fihi.¹⁰⁰

Among the consonants is the plosive, which prevents sound to flow in it.

In a [+ voiced] phoneme, breath is barred from flowing with it and in a [+ stop] phoneme voice is barred from flowing through it. This means that in [+ voiced + stop] phonemes both breath and voiced are barred. Abū Šāma then says that the realisation of these phonemes needs to be taken care of (*iḥtāğat ilā*

97 Abū Šāma, *Ibrāz al-ma‘ānī*, p. 755, l. 4-8.

98 *B, L*, sans ‘*alayhi*. (Editor’s note. B refers to Saint Petersburg, Inst. Vost. Jazykov C-272; L refers to Escorial, Bib. Real, ar. 1).

99 Sibawayh, *Le livre*, II, p. 453, l. 21-22.

100 *Ibid*, II, p. 454, l. 6.

l-takalluf fi bayānihā).¹⁰¹ This then leads the speaker to pronounce something close to a vowel (*ḥattā takāda taḥruḡu ilā šibh taḥarrukihā li-qaṣd bayānihā*).¹⁰²

At the difference of Sībawayh, Abū Šāma explicitly uses these two definitions to explain *qalqala*. By doing this he shows that he understands the phonetic phenomenon at stake: without *qalqala* the complete [+voiced + stop] feature of these phonemes cannot be preserved. However, it is impossible to tell whether he noticed that the pronunciation of *qalqala* phonemes had changed since Sībawayh's time or whether he simply explains Sībawayh's position. This last possibility would already be remarkable, if compared to other scholars who did not understand Sībawayh's *Kitāb* in the first place.

Abū Šāma also refutes al-Mubarrad's inclusion of *kāf* to *ḥurūf al-qalqala*. He quotes Ibn (Abī) Maryam al-Širāzī's definition of *qalqala* and mentions his refutation of the inclusion by some scholars of the following phonemes to the list: /ḏ/, /z/, /ḏ/ and /z/.¹⁰³ In all this, Abū Šāma's position is consistent with Sībawayh's description, which he clearly has understood.

Ibn al-Ḥāḡib and al-Astarābādī

In his *Šāfiya*, as quoted by its commentator Raḏī l-Dīn al-Astarābādī, Ibn al-Ḥāḡib gives this definition of *qalqala*:

*Wa-ḥurūf al-qalqala mā yaḏammu ilā l-šadda fihā ḏaḡṭ fi l-waqf, (wa-yaḡma'uhā qad ṭubiḡa).*¹⁰⁴

The *qalqala* consonants are those that associate plosiveness with pressure in pausal position, they are gathered in *qad ṭubiḡa*.

In this definition, Ibn al-Ḥāḡib does not mention the [+voiced] feature of the *qalqala* consonants but only the "pressure" (*ḏaḡṭ*) in pausal position. Thus the *qalqala* consonants are not the voiced stops but stops that are pronounced with "pressure" in pausal position. By changing the definition of the *qalqala* consonants, Ibn al-Ḥāḡib clearly breaks with the grammatical tradition. However, since he describes¹⁰⁵ exactly the same [+voiced] and [-voiced] phonemes

¹⁰¹ Abū Šāma, *Ibrāz al-ma'ānī*, p. 755, l. 6.

¹⁰² *Ibid.*, p. 755, l. 7.

¹⁰³ The edition reads *tā'* but it is obviously a typing mistake, for it is already included in the list of *qalqala* consonants.

¹⁰⁴ Raḏī l-Dīn Muḥammad b. al-Ḥasan al-Astarābādī, *Šarḥ Šāfiyat Ibn al-Ḥāḡib*, Beirut, Dār al-fikr al-'arabī, 1975, III, p. 258, l. 9-10.

¹⁰⁵ *Al-Šāfiya*, as quoted in al-Astarābādī, *Šarḥ al-Šāfiyat*, III, p. 257-258.

as Sibawayh, it is impossible to tell whether Ibn al-Ḥāğib had understood the impact of his new definition.

Rađī l-Dīn al-Astarābādī who comments this text gives an account of *qalqala* which fully complies with that of Sibawayh. He does not explicitly mention the [+voiced] feature as a distinctive feature of these phonemes but he clearly says that one has to pronounce them with *qalqala* in order to make them clear to the listener:

Qawluhu «wa-ḥurūf al-qalqala» innamā summiyat ḥurūf al-qalqala li-annahā yaşḥabuhā dağt al-lisān fī maḥrağihā fī l-waqf ma'a šiddat al-şawt al-muţsa'id min al-şidr, wa-hādā l-dağt al-tāmm yamna'u ḥurūğ dālika l-şawt, fa-idā aradta bayānahā li-l-muḥāṭab ihtağta ilā qalqalat al-lisān wa-taḥrikihā 'an mawđi'thi ḥattā yaḥruğa şawtahā fa-yusma'a.¹⁰⁶

He says: the *qalqala* consonants. They are called *qalqala* consonants because a pressure of the tongue accompanies them in their place of articulation in pausal position, with the strength of the voice that rises from the chest. This complete pressure prevents this sound to exit. If you want to make it clear to the hearer, you need to stir (*qalqala*) the tongue and move it from its position until its sound exits and it is heard.

Rađī l-Dīn al-Astarābādī does not mention the [+voiced] feature of the *qalqala* phonemes. The only clue we have that he might understand what is at stake in this phonetic phenomenon is the fact that he mentions the emission of a sound (*şawt*), not a breath, which is the case with voiced phonemes.

Ibn Umm Qāsim

Ḥasan b. Umm Qāsim al-Murādī authored a commentary of a treatise written in verse by 'Alam al-Dīn al-Saḥāwī entitled *'Umdat al-muğīd fī l-naẓm wa-l-tağwīd*.¹⁰⁷ In his commentary called *al-Muğīd* Ibn Umm Qāsim is quite specific about the phonetic phenomenon of *qalqala*, which he describes as follows:

¹⁰⁶ *Ibid.*, III, p. 263, l. 2-5.

¹⁰⁷ The edition of another commentary of this poem by Ibrāhīm b. Ğibāra Abū Ishāq al-Saḥāwī (7th/13th c.) entitles the poem of 'Alam al-Dīn al-Saḥāwī as *'Umdat al-muğīd wa-'uddat al-muğīd fī ma'rīfat al-tağwīd*. See Abū Ishāq Ibrāhīm al-Saḥāwī, *Şarḥ Nūniyyat al-Saḥāwī fī l-tağwīd*, ed. Fargālī Sayyid 'Arabāwī, Giza, Maktabat awlād al-şayḥ li-l-turāt, 2010. Instead of *'Umdat al-muğīd fī l-naẓm wa-l-tağwīd* Brockelmann mentions *'Umdat al-muğīd fī l-naẓm wa-l-tağrīd*, but this is probably a misspell (Carl Brockelmann, *Geschichte der arabischen Literatur*, Leiden, Brill, 1943-1949/1996, 51, p. 728).

Wa-l-qalqala qāla l-Ḥalīl šiddat al-ṣawt wa-hurūf al-qalqala 'inda Sībawayh wa-l-muḥaqqiqīn ḥamsa yağma'uhā (qaṭaba ġad)¹⁰⁸ summīyat bi-dālika li-šiddat dağṭ al-ṣawt 'inda l-waqf li-anna hādīhi l-aḥruf mağhūra šadīda fa-l-ğahr yamna'u l-nafas an yağriya ma'ahā wa-l-šidda tamna'u l-ṣawt an yağriya bihā fa-htāğat ilā l-ta'ammul fī bayānihā fa-li-dālika¹⁰⁹ yağşulu fihā li-l-mutakallim mā yağşulu min dağṭ al-ṣawt ḥattā takāda taqrubu min al-ḥaraka. Qāla l-Mubarrad wa-ba'ḍuhā ašadd qalqalatan min ba'ḍ.¹¹⁰

Concerning *qalqala*, al-Ḥalīl mentioned the strength of the voice. For Sībawayh and the reciters, *qalqala* consonants are five, gathered in *qaṭaba ġad*. They are so called because of the strong pressure of the voice in pausal position. These consonants are voiced and plosive. Voicedness prevents breath to flow with them and plosiveness prevents voice to flow through them. They need to be carefully realised, this is why some pressure of the voice happens to the speaker, until a vowel is almost reached. Al-Mubarrad said that some of them are stronger in terms of *qalqala*.

He makes exactly the same link as Abū Šāma between Sībawayh's description of *qalqala* and the [+ voiced] and [+ stop] features. His text seems to depend directly on Abū Šāma's, and just as for Abū Šāma it is impossible to decide with certainty whether Ibn Umm Qāsim had noticed any discrepancy in the pronunciation of *qalqala* phonemes with Sībawayh's description.

Conclusion

Obviously, much more research is needed in order to thoroughly explore the phonological views of these authors. This is especially true of their terminology, which we tend to understand through that of their predecessors, although each author may have a slightly different understanding of the technical terms they use.

108 *Fī Ṭ qaṭabağad mawşūla*. (Editor's note. Ṭ refers to the printed edition by 'Alī Ḥusayn al-Bawwāb, al-Zarqā', Maktabat al-manār, 1407 AH).

109 *Fī l-nuṣṣa* (D), (Z) *fa-dālika*. (Editor's note. D refers to Cairo, Dār al-kutub, Qirā'āt 638; Z refers to Cairo, Dār al-kutub, Muṣawwarāt ḥāriğ al-Dār, m 2).

110 Badr al-Dīn/Šams al-Dīn Abū Muḥammad Ḥasan b. Qāsim b. Umm Qāsim, *al-Mufīd fī šarḥ 'Umdat al-muğīd fī l-naẓm wa-l-tağwīd*, ed. Ğamāl al-Sayyid Rifā'ī, Giza, Maktabatawlād al-šayḥ li-l-turāt, 2001, p. 65, l. 10-p. 66, l. 3.

Sibawayh is not always followed in his approach to *qalqala*. If he is not even understood, it is most probably because later authors would have a different pronunciation of Arabic, which would make Sibawayh's explanations obscure.

As shown by Owens,¹¹¹ there are two histories of Arabic, that of the literary language and that of the spoken one. *Qalqala* sits at the junction of these two histories because it is both described by grammarians of literary Arabic and performed by Qur'anic reciters. We have only explored here the literary history of *qalqala*.

I hope this paper encourages more research into historical phonetics of Arabic and a better understanding of the refined views of Classical grammarians, in order to unify the two histories of Arabic described by Owens, based on linguistically sound arguments.

Appendix

The main shift in the interpretation of *qalqala* can be described as follows: from protecting the [+ voiced] feature of [+ voiced + stop] phonemes to a mere description of a special sound caused by the "strength" in some [+ stop] phonemes, voiced or voiceless. The latter view is predominant among modern reciters, as described by al-Ḥamad.¹¹² Modern reciters of the Qur'an insist on emitting the *qalqala* sound after *qāf* and *ṭā'*, although they are not voiced anymore in contemporary Arabic, because they are stronger stops and because they are emphatic (primarily or secondarily):

*Wa-yu'addu l-ṭā' wa-l-qāf min al-aṣwāt al-mahmūsa fī nuṭq al-arabiyya l-fuṣṣḥā l-mu'āṣir, wa-min ṭamma taḥlifū fīhimā aḥad šarṭay al-qalqala, wa-huwa l-ğahr; wa-lākin nulāḥiẓu anna qurrā' al-Qur'an wa-nāṭiqī l-arabiyya yaḥriṣūna 'alā itbā' hādāyn al-ṣawtayn 'inda l-waqf bi-ṣuwayt al-qalqala, wa-huwa amr yasūğuhu kaww al-ṣawtayn šadīdayn (infiğāriyayn), fa-yatba'uhumā 'inda l-waqf ṣawt miṭl ṣawt al-kāf, lākinnaḥu ma'ahumā ašadd, li-faḥāmat al-ṭā' bi-l-iṭbāq, wa-šiddat infiṣāl al-ṣawtayn fī nuṭq al-qāf, ma'a kawwihī ṣawt musta'li.*¹¹³

111 Jonathan Owens, "History" in *The Oxford handbook of Arabic linguistics*, ed. Jonathan Owens, Oxford, Oxford University Press, 2013, p. 452.

112 Ġānim Qaddūrī l-Ḥamad, *al-Dirāsāt al-ṣawtiyya*.

113 *Ibid.*, p. 260.

Ṭā' and *qāf* are considered non voiced phonemes in contemporary literary Arabic, so that they break one of the two conditions for *qalqala*, which is voicedness. However, we observe that the Qur'ānic readers and Arabic speakers are keen on pronouncing the small sound of *qalqala* after these two phonemes in pausal position. This is made possible by the fact that these two phonemes are "strong" (plosive), so that a sound is emitted after them in pausal position, just like after *kāf*, only that it is stronger after these two because of the emphasis (*faḥāma*) of *ṭā'* through velarisation (*iṭbāq*), and the strength of the opening of the two organs in the pronunciation of *qāf* together with the fact that it is a raised (*musta'lin*) phoneme.

This type of explanation shows a shift in the practical definition of *qalqala*, from a protection of the [+ voiced] feature of the [+ voiced + stop] phonemes in pausal position to a sound emitted after stronger stops, voiced or voiceless.