LUBLIN STUDIES IN MODERN LANGUAGES AND LITERATURE,
42(1), 2018, HTTP://LSMLL.JOURNALS.UMCS.PL

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Rhotic Phonemes in Semitic Languages – The Case of Classical Arabic and Biblical Hebrew

ABSTRACT
Classical Arabic and Biblical Hebrew represent two opposite directions of the development of Proto-Semitic phonological system. This also refers to the rhotic phonemes /r/ and /ġ/. The comparison of the situation of their respective allophones portrays a different fate of these phonemes in Semitic languages in general. The comparison is based mostly on the description provided by Semitic languages researchers, including the medieval Arabic grammarian Sibawayh. Additionally, it takes into consideration the results of a statistical analysis on the situation of the phoneme /ġ/ in Biblical Hebrew.
Keywords: rhotic phonemes; Semitic languages; Hebrew

1. Introduction

The phonological systems of Classical Arabic and Biblical Hebrew represent two opposite directions of development of Semitic languages. The first one was a lingua franca of secluded nomadic tribes, which dwelled in the Arabian deserts before Islam, and as a result, was utterly conservative in respect to any change (al-Ǧanābī 1981: 14, 23-24). The other was spoken by a society, which lived at the crossroads between Asia, Africa and Europe and as such

DOI: 10.17951/lsmll.2018.42.1.33

underwent significant evolution (Kutscher 1982: 1-2). The two systems are in fact two extreme points of the spectrum of phonological changes present in the Semitic languages. Therefore, their comparison presents the whole range of phenomena, which occurred in the phonological history of the Semitic language family.

The article aims to present an overall comparative study of the history of two phonemes – /r/ and /ġ/ – which might be considered as rhotic sounds, in two Semitic languages. Besides a general description of the characteristics of these phonemes in proto-Semitic, Classical Arabic, and Biblical Hebrew phonological systems, the article contains observations based on a statistical analysis of the occurrences of the phoneme /ġ/ in the corpus of the Hebrew Bible (Pietrzak 2016). As a whole, the study presents different fates of the rhotic sounds in phonological systems of Semitic languages in general.

2. Proto-Semitic phonological system and its Classical Arabic continuation

Without a doubt, Classical Arabic (CA) is the most conservative among Semitic languages. Having been attested in writing for the first time in 7th century AC, it was quite archaic and, at least in regards to phonological system, was almost identical to its hypothetical proto-Semitic ancestor (PS). Supposedly, the PS phonological system consisted of twenty nine consonantal phonemes (Bergsträsser 1983: 3). Among them, only six phonemes did not continue to exist in CA: the voiceless labial stop /*p/ (continued as the voiceless labiodental fricative /f/), the voiced velar stop /*g/ (in CA continued as the voiced palatal fricative /j/), the voiceless emphatic lateral sibilant /*ṣ́/ (continued in CA as voiced emphatic dental stop /ḍ/), the voiceless emphatic interdental fricative /*t̲́/ (continued as the voiced /ḏ̲/), and the voiceless palatal sibilant /*š́/ (merged with the voiceless dental sibilant /s/). The change resulting in the merging of /*š́/ and /*s/ is responsible for the fact that the CA phonological system consisted only with twenty eight phonemes (Kaye 1997: 192). Both rhotic sounds – /r/ and /ġ/ – were present in the PS system and more or less precisely continued in its CA derivation.

2.1. Dental trill /r/

The presence of the dental trill /r/ in the PS phonological system has not been disputed (Bergsträsser 1983: 3, Bennett 2008: 98, Lipiński 1997: 132). Its CA characteristics was elaborated by medieval Arabic grammarian Sibawayh (8th century AC) in his masterpiece *al-Kitāb* ('The Book'). He describes the phoneme as a sound produced by repeating movement of a tongue twist similar to that used to pronounce the phoneme /l/ (Sibawayh 1982: 435). Additionally, he portrays it as a dental phoneme by placing the place of its articulation close to the place of articulation of phonemes /n/ and /l/ (Sibawayh 1982: 433).

2.2. The controversy of the phoneme /ġ/

As long as the dental trill is not controversial at all, the second supposedly rhotic phoneme is quite challenging. Bergsträsser (1983: 4) states that the phoneme "is not entirely certified as proto-Semitic". Some researchers, like Rudolf Růžička, claim that in the PS phonological system there was no place for /ġ/ (Barr 1968: 127). It might have been assumed due to the very peculiar history of the sound and namely, because it wasn't present in most of the Semitic languages sounds systems. Beyond any doubts, /ġ/ was part of the CA phonology which is confirmed by Sibawayh (1982: 432):

> *wa-li-ḥurūfⁱ l-ʿarabīyya sittaᵗᵃ ʿašrᵃ muḫraǧᵃⁿ:*
> *fa-li-l-ḥalqⁱ min-hā ṯalāṯ: fa-ʾaqṣā-hā muḫraǧᵃⁿ: al-hamza wa-l-hāʾ wa-l-ʾalif. wa-min ʾawsaṭᵃ l-ḥalq muḫraǧᵘ l-ʿayn wa-l-ḥāʾ. wa-ʾadnā-hā muḫraǧᵃⁿ mina l-fam: al-ġayn wa-l-ḫāʾ.*
>
> The letters of Arabic has sixteen articulation places.
> Three of them are in the throat. The farthest is the place of articulation of Hamza, Ha and Alif. In the middle of the throat, there is the place of articulation of ʿayn and ḥa. The places of articulation nearest to the mouth are places of articulation of ġayn [/ġ/] and ḫa.

As one can see, the phoneme is described as a companion of /ḫ/ which represents its voiceless version. In general, both phonemes are

fricatives. Unfortunately, the passage doesn't depict the place of articulation of the sound with precision. All in all, one can assume that it is closest to the mouth part of the back of the oral cavity, ergo either velum, or uvula. In another fragment, Sibawayh however describes the place as shared with not only the phoneme /ḫ/, but also with the voiceless velar stop /k/ (Qudūr 2011: 373). It seems then that the phoneme should be considered as voiced velar fricative (IPA: /ɣ/).

The description of Sibawayh cannot be however taken as perfectly precise. It seems that there is some evidence that the phoneme /ġ/ was in fact not velar, but uvular. This consequently means that its characteristics is closer to the voiced uvular fricative (IPA: /ʁ/). Watson (2002: 17) states that the Modern Standard Arabic realization of the phoneme is uvular, however in some Arabic dialects it might be velar. Additionally, taking into consideration the fate of /ġ/ in other Semitic languages, we might add other arguments supporting its uvularity.

First, in most of the Semitic languages one can observe that the phoneme /ġ/ merged with the voiced pharyngeal fricative /ʕ/. Interestingly, both phonemes share the same characteristics, despite the place of articulation – they are voiced and fricative. Having that in mind, it is quite reasonable to claim that the place of the articulation of /ġ/ was in the proximity of that of /ʕ/. The uvula is closer to pharynx than the velum. The shift of the place of articulation was common in the history of Semitic phonological systems and in general, it affected only the places, which were located in the direct proximity. For instance, in Canaanite languages, this was the case of the merger of the voiced interdental fricative /*ḏ/ with its dental companion, the sibilant /z/ (Seanz-Badillos 1996: 36). The merging of the /ġ/ with /ʕ/ occurred in almost all of the Semitic languages (Hebrew, Aramaic, Modern South Arabic, and Maltese). Lipiński (1997: 141) states that this was a part of a more general process of shifting the place of articulation backward – first to the pharynx (/ġ/ > /ʕ/ and /ḫ/ > /ħ/), and finally to the larynx (/ʕ/ > /ʔ/ and /ḥ/ > /h/). Ultimately, the shift resulted in zeroing of the phonemes /ʔ/ and /h/.

Furthermore, in Aramaic, the phoneme seems to be a continuation of the PS emphatic lateral sibilant /*ṣ́/. This might have been deduced based on the evolution of graphic representation of lexemes containing this PS sound. One of them is the PS **ʾarṣ́u* 'a land'. In Imperial Aramaic, it is noted as ʔ-R-ʕ[1] (ergo, *ʾarʿ*). However, in Old Aramaic, it is represented as ʔ-R-Q[2]. The same phenomenon might be also observed to a certain extent in Akkadian (Lipiński 1997: 105). Knowing that the only phoneme, which merged with /ʕ/, was /ġ/, some Semitic languages scholars proposed that the grapheme Q[3] represented the very phoneme /ġ/ (Segert 1997: 119). The grapheme Q represents in general the voiceless uvular stop /q/, so such a writing strategy applied in Old Aramaic might suggest that also the phoneme /ġ/ might have had uvular articulation. Moreover, the grapheme Q used to be realized as the voiced uvular fricative also in some Jewish communities in Yemen (Lipiński 1997: 140).

To sum it up, although the PS and CA characteristics of the place of articulation of the phoneme /ġ/ are still disputed (velum vs. uvula), there is some quite strong indication to consider the phoneme as the voiced uvular fricative (IPA: /ʁ/).

3. Biblical Hebrew

Biblical Hebrew (BH) wasn't in fact a single language, but a group of literature dialects, in which the Hebrew Bible was composed. At least the oldest of the dialects – so called Archaic Biblical Hebrew – functioned as a spoken language in the time before the Babilonian Exile in 6th century BC. Even this oldest stage of the development of BH is phonologically far more distant from the PS ancestor than CA. In fact, many of PS phonemes (e.g., interdentals) merged with others resulting in diminishing the phonological system of BH. Consequently, the BH phonology represents a quite developed version of the Semitic sound system.

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[1] ארע
[2] ארק
[3] ק – the grapheme name is *qōf*.

3.1. Dental trill /r/ in Biblical Hebrew

In general, it is widely accepted that the dental trill /r/ was present in the BH phonological system (Seanz-Badillos 1996: 71). All in all, the phoneme didn't stay untouched and in the later stage of development of Hebrew language, it began to be realized as the voiced uvular fricative /ʁ/. The assumption is based on the writing strategy, which consequently, in respect of gemmination, treated the grapheme ר (*resh*) representing the BH phoneme /r/ similarly to so-called guttural sounds (pharyngeal and laryngeal). This however wasn't the case in BH, which is documented precisely by Greek and Latin transliteration, which proved that in the time of BH, the phoneme used to be geminated (Lipiński 1997: 133).

3.2. The phoneme /ġ/ in Biblical Hebrew

Currently, it is commonly accepted that the phoneme /ġ/ was present in the BH phonological system. The main argument for this claim stems from observations on Greek transliteration of proper names from the Bible present in the text of Septuagint (Steiner 2005: 229). Two different strategies implied in the transliteration of the names containing the BH grapheme ע (*ʿayn*) indicate that at some point, the letter represented two different phonemes[4]. For instance, such a case might be observed on the two proper names from the Bible: the name of prophet Balaam, and the name of the city of Gaza (Pietrzak 2016: 5). The first one, in Hebrew בִּלְעָם (*bilʿām*), was transliterated in Greek as Βαλααμ (*balaʾam*). On the other hand, the name of the city of Gaza was in BH עַזָּה (*ʿāzzā*), but the authors of the Septuagint rendered it as Greek Γαζα (*gaza*). In both lexemes there is the grapheme ע (*ʿayn*), which regularly, represents the voiced pharyngeal fricative /ʕ/[5]. It seems then, that the different transliterational strategy – combination of vowels versus the letter γ (*gamma*), which represents the voiced velar stop /g/ – ought to suggest different phonemes to be indicated by

[4] The position of the letter in the lexemes excludes allophony.
[5] In the transliteration to English, /ʕ/ is rendered as ʿ.

the same grapheme. It was suggested then that besides the realization of the letter ע (*ʿayn*) as the voiced pharyngeal fricative, the grapheme must have represented yet another phoneme, closely related to the pharyngeal /ʕ/ and also somehow connected to the velar stop /g/. Thus, it was assumed that in the phonological system of BH there must have been the phoneme /ġ/ (Kutscher 1982: 17-18) – either as voiced velar, or uvular fricative.

Nevertheless, the differentiation between two phonemes represented by the same grapheme disappeared by the end of 3rd century BC. It seems that the phoneme /ġ/ merged with its pharyngeal companion /ʕ/ (Rendsburg 1997: 73) and thus, the grapheme ע (*ʿayn*) was rendered only as a combination of vowels. This process might be observed also in the case of other Semitic languages (Lipinski 1997: 149), most importantly, in the case of Aramaic, which functioned as the lingua franca of the ancient Middle East and as such, might have triggered, or at least expedited, the process of this merging in BH.

Additionally, one should mention that a sound closely related to the phoneme /ġ/ occurred in the BH phonological system as an allophone of the phoneme /g/. This was the result of so called spirantization of non-emphatic stops /b/, /g/, /d/, /k/, /p/, and /t/. These phonemes lost their plosive articulation in the position after a vowel, and kept it in other instances (e. g., /b/ as [v] vs. [b] in: *labō*ʾ > *lavō*ʾ vs. *marbœ*). Consequently, the phoneme /g/ was realized depending on its position either as plosive [g], or as fricative [ɣ]. The variant [ɣ] was similar, or even identical, to the realization of the phoneme /ġ/. The discussion on dating of the spirantization process and on the coexistence of the phoneme /ġ/ and the variant [ɣ] is still ongoing. Some scholars claim that the spirantization might have occurred in two stages, and not until the merging of /ġ/ > /ʕ/ did the velar phoneme /g/ begin to have allophonic realization (Steiner 2005: 258). Others suggest that there is no need for such differentiation and that the phoneme /ġ/ coexisted with the fricative variant of the velar /g/ (Blau 2010: 56).

3.3. Statistical observation on the phoneme /ġ/[6]

The presence of the phoneme /ġ/ in the BH phonological system is still controversial. Therefore, any further analysis might turn out to be quite valuable in investigating the issue. An example of such an analysis is a statistical observation based on comparison with CA (Pietrzak 2016). The analysis took into consideration the relatively high level of phonological conservatism of CA (continuation of the PS /*ġ/) and close relation between BH and CA lexicon.

In the study, derivatives of the BH consonantal roots containing the letter ע (*ʿayn*) were compared with derivatives of the CA roots with letters ع (*ʿayn*) and غ (*ġayn*). The number of analyzed BH roots was 259. 12 of them were excluded from further analysis based on their identification either as Aramaic loans (3), or as synonyms of other analyzed roots (9). 31 roots couldn't be identified as being related to CA roots. The relation between BH and CA roots was established based on the comparison of the meaning of their derivatives. In general, Semitic consonantal roots bear an abstract meaning shared by lexemes derived from them. Therefore, it was possible to recognize the semantic relation of 216 BH roots with their CA equivalents, that is such roots which, historically speaking, were continuations of the same PS roots.

The relation was posited on three levels of certainty. The first level was a situation when the BH lexemes derived from a root covered the same meaning as its CA derivatives. For instance, the BH root √y-ṣ-ʕ was historically speaking related to the CA root √w-ḍ-ʕ (both continued the PS root *√w-ṣ́-ʕ). From the BH root, a verb *hiṣṣīaʿ* (**hiyṣīʿ*) 'he layed' was derived. Its meaning matches perfectly the meaning of CA verb *waḍaʿa* 'he layed' (KBSD: 405). The second level of certainty is a situation when the BH and CA derivatives of a root belong to the same, wide semantic field, like BH *bəʿīr* 'cattle, animals' and CA *baʿīr* 'a camel' (both derived from √b-ʕ-r) (KBSD:

[6] The chapter contains a summary of the statistical findings presented in Pietrzak (2016). It aims to elaborate the characteristics of the BH phoneme /ġ/ and thereby, widens the overall perspective on comparison of the discussed phonemes.

139). The last level indicates a hypothetical relation. Proposing such level stems from the assumption that the meaning of a PS lexeme might have undergone different paths of development in different Semitic languages. An example of the third level of certainty might be the pair of roots BH √y-z-ʕ and CA √w-ḏ-ʕ (both continued the PS *√w-ḏ-ʕ) and their derivatives, BH *zeʿā* 'sweat' and CA *waḏaʿa l-māʾ* 'the water flew/drop down' (KBSD: 383). The ratio of the identification of the 259 roots is presented in the figure below (Fig. 1.).

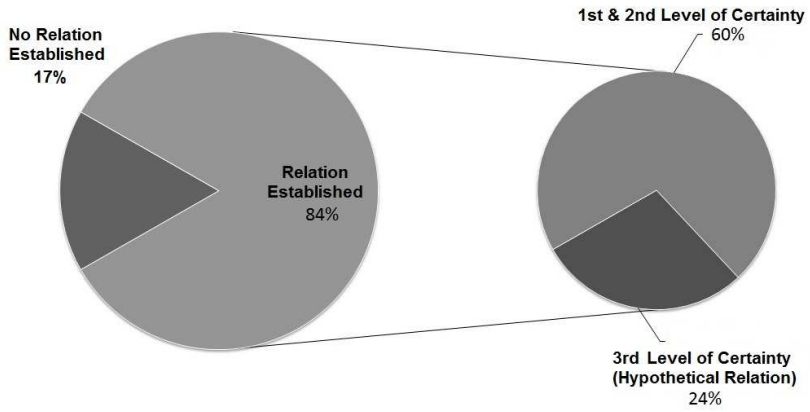

Fig. 1. The ratio of BH roots containing the letter ע (*ʿayn*) identified as related to CA roots (with the levels of certainty of the identification)

In general, 186 roots out of the analyzed 216 were identified as mononymous and the remaining 30 as homonymous. It means that before the merging of /ġ/ > /ʕ/, the 30 homonymous roots were in fact a collections of 60 roots (30 roots containing ע = /ʕ/ and 30 roots containing ע = /ġ/). Such a case was the root √ʕ-w-l, whose derivative – *ʿăwīlīm* – had two typically homonymous meanings: [1.] 'unjust ones', and [2.] 'young boys'. Based on the comparison with CA, a homonymy of the root could have been posited. Thus, the first

meaning is related to the CA root √ġ-w-l, from which a verb *ġāla* ‘he killed, he murdered’ is derived. The second one is close to the verbs ʾaʿwalat ‘she gave birth to children’, and ʿāla ‘i.a., to provide food, to answer needs of the family', which are derived from the CA root √ʕ-w-l. As one can see, the BH root √ʕ-w-l was in fact a continuation of two distinctive roots – √ʕ-w-l and √ġ-w-l[7]. Therefore, before this merging there was a total number of 246 roots containing the letter ע (*ʿayn*) – representing either /ʕ/ or /ġ/ – and possibly related to CA roots.

In general, the analysis revealed a disproportion between the number of roots containing a radical consonant the pharyngeal phoneme /ʕ/ and those containing the phoneme /ġ/. Out of 246 analyzed roots, 76% (187) of them contained the phoneme /ʕ/ and the remaining 24% (59) the phoneme /ġ/ (Fig. 2.).

[7] The dictionary KBSD (746) provides different identification of the relation of the aforementioned BH roots. According to it, the BH meaning [1.] of the word *ʿăwīlīm* is related to CA root √ʕ-w-l (in the dictionary ‘to deviate from [the right path]’), and the meaning [2.] to the CA √ġ-w-l (in the dictionary: ‘breast feeding’). However, the medieval masterpiece of Arabic lexicography *Lisān al-ʿArab* by Ibn Manẓūr doesn’t confirm the identification, at least in the second case. According to Ibn Manẓūr (1968: 507-510), the CA √ġ-w-l is realized in words of the meaning derived from the idea of ‘committing violence’ (eg. *ġūl* ‘anything, which is able to kill a man’, or ‘a type of a vicious demon’; *ġāla* ‘to kill, to murder’), and none of its derivatives refers to ‘breast feeding’. The identification of the relation between the meaning [1.] and the CA root √ʕ-w-l might be find also in *Lisān al-ʿArab* (1968: 481). None the less, the dictionary also supports the identification proposed in the article: BH meaning [2.] related to the meaning of CA words: *ʾaʿwalat* ‘she gave birth to children’, and *ʿāla* ‘i.a., to provide food, to answer needs of the family (Ibn Manẓūr 1968: 486)’. Whichever identification is correct, the overall outcome of analysis presented in Pietrzak (2016) stays untouched, since in the both instances, the homonymous meaning of the word *ʿăwīlīm* is derived from two different BH roots, √ġ-w-l and √ʕ-w-l.

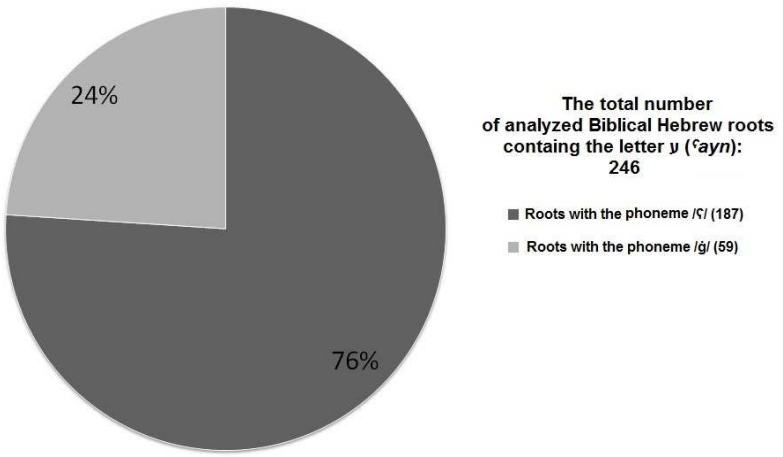

Fig. 2. The ratio of the BH roots containing the phoneme /ʕ/ and phoneme /ġ/

What is more interesting, the lexemes derived from the roots hypothetically containing the phoneme /ġ/ are significantly rare in the corpus of BH. Their number is only 98. Moreover, most of them occurred in the corpus less than 10 times and 33% of them occurred only once (Fig. 3.).

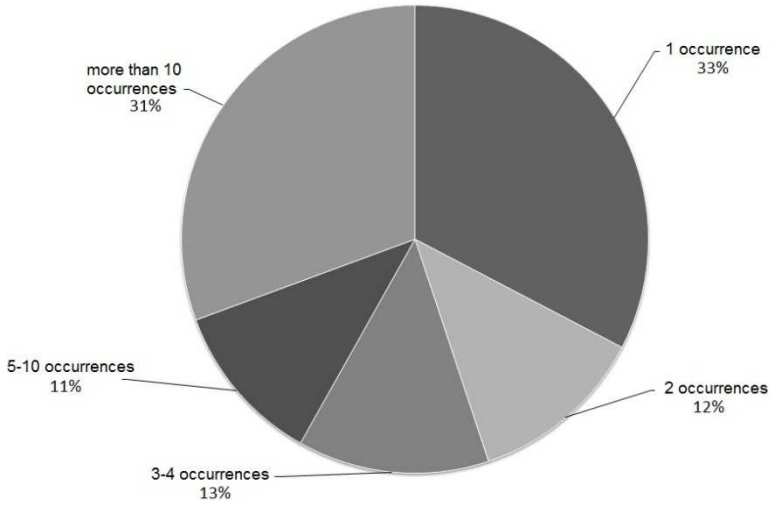

Fig. 3. The occurrences of the lexemes containing the phoneme /ġ/ in the corpus of Biblical Hebrew

Additionally, most of the lexemes containing the phoneme /ġ/ (73% of them) are located in just 16 Biblical books (Fig. 4.), most of which were composed after the Babilonian Exile (after 6th century BC).

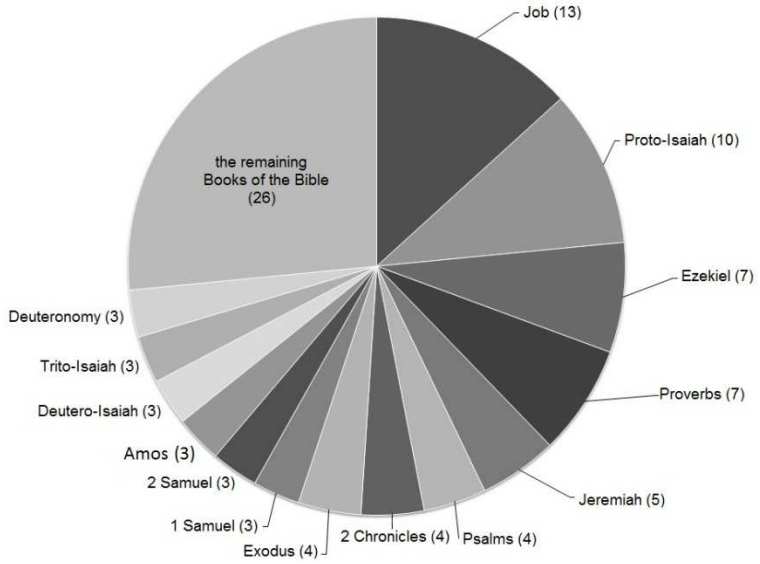

Fig. 4. The distribution (number of occurrences) of the lexemes containing the phoneme /ġ/ in the Hebrew Bible

Furthermore, in the entire text of the Hebrew Bible, there is only one pair of homonyms based on the merging of /ġ/ > /ʕ/. They are two lexemes: *ʿăwīlīm* from the Book of Job (Job 19:18 vs. Job 16:11[8]) and *ʿāḏ* from the Book of Isaiah (Is 33:23 vs. Is 47:7[9]). The first has been already discussed above. The second has two meanings [1.] ‘a prey’,

[8] גַּם־עֲוִילִים מָאֲסוּ בִי
gam-ʿăwīlīm māʾăsū ḇī
‘Yea, young children despised me (Job 19:18a)’
יַסְגִּירֵנִי אֵל אֶל עֲוִילִים
yasgīr-ɛnī ʾɛl ʾel ʿăwīlīm
‘The God (…) turned me over into the hands of the wicked (Job 16:11a)’

[9] אָז חֻלַּק עַד־שָׁלָל מַרְבֶּה
ʾāz ḥullaq ʿaḏ-šālāl marbe
„then is the prey of a great spoil divided (Is 33:23b)”
בִּטְחוּ בַיהוָה עֲדֵי־עַד
biṭḥū ḇa-YHWH ʿăḏɛ-ʿaḏ
„Trust ye in the LORD for ever (Is 26:4a)”

and [2.] ‘perpetuity’ (KBSD: 736). It’s quite peculiar that despite the fact that 30 roots containing letter ע (*ʿayn*) might be described as homonymous, derivatives of only two of them (√ʕ-w-l, and √ʕ-d-y) are actual homonyms.

This all suggests that one should reexamine the status of the phoneme /ġ/ in the BH phonological system. There might be a few explanations for the statistical peculiarities presented above.

First, perhaps, the original, archaic BH phonological system didn’t posses the phoneme /ġ/ at all. It would be quite reasonable, taking into consideration that in Phoenician, a language closely related to Hebrew (both developed from dialects of the Canaanite language), the phoneme didn’t exist. Evidence for this includes the Phoenician alphabet, which as a Phoenician invention was precisely designed to fit the language and in which there was no letter indicating the phoneme /ġ/[10]. Therefore, the occurrence of the words related to CA lexemes containing phoneme /ġ/ might have been a result of tremendous influence of Aramaic on BH in time after the Babilonian Exile. This could be supported by the fact that most of the Books in which the lexemes containing the phoneme /ġ/ appears were composed in this period.

Another explanation might be that the text of the Hebrew Bible underwent several editions before it has been transmitted into the text known today (Blau 2010: 6, 37). Perhaps, after the merging of /ġ/ > /ʕ/ a significant number of homonyms required to be removed for the sake of keeping the text as intelligible as possible. Obsolete and confusing words were replaced, which might be the reason why there are so few homonyms based on this merging.

Of course, one cannot deny that the corpus of BH is limited only to one book composed over centuries by people who spoke different Semitic dialects. Therefore, there is a possibility that such distribution of the phonemes /ġ/ and /ʕ/ might be simply a coincident.

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[10] Israelites adopted the original Phoenician alphabet. That is why one Hebrew letter – ע (*ʿayn*) – was used to represent two phonemes, /ʕ/ and /ġ/.

4. Conclusions

PS phonemes /r/ and /ġ/ didn't share the same fate in the history of the phonological systems of Semitic languages, especially in those of the BH and CA. All in all, the dental trill /r/ was present in them without any doubt and its characteristics are quite precisely agreed on. The phoneme /ġ/ is far more disputable in many respects. First, not every Semitic languages scholar agrees that the phoneme should be counted as a PS one. The phoneme wasn't present in all of the Semitic phonological systems. Supposedly, this was a result of its merging with the pharyngeal phoneme /ʕ/. Moreover, the characteristics of the articulation of the phoneme /ġ/ haven't been clearly defined yet. The evidence suggests that it was either velar or uvular. The second option might be supported by the history of the merging with the pharyngeal /ʕ/.

That is the history of this merging, which seems to warrant a closer look. A study on the nature of the merging of the phoneme /ġ/ with the pharyngeal /ʕ/ and on the factors involved in it might turn out to be quite revealing for the question of the characteristics of the phoneme /ġ/ and for the understanding of the phonology of Semitic languages in general.

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