

## Chapter 2

# Loss of emphatic and guttural consonants: From medieval to contemporary Maltese

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Medieval Maltese inherited a set of three contrastive ‘emphatic’ obstruents from Arabic: *t*, *q*, *ṣ*, completed by sonorant *r*. It also inherited a set of ‘gutturals’: plosive *q*, fricatives *χ* and *ħ*, sonorants *γ* and *ʕ*, and laryngeal *h*. In late medieval Maltese, the contrast between emphatic and plain consonants was lost, while stem vowels took over relevant lexical contrasts. In the eighteenth century, Maltese grammarians took note of ongoing changes in gutturals: weakness of *h*, loss of *χ* merged with *ħ*, and of *γ* merged with *ʕ*. In the nineteenth century, the set of distinctive gutturals was reduced to three consonants in most dialects: voiceless stop *q*, or its modern reflex *ʔ*, voiceless fricative *ħ*, and sonorant *ʕ*. The latter triggered complex processes of vowel diphthongization and pharyngealization. In modern Maltese, *ʕ* and vowel pharyngealization were lost. In contemporary Maltese, the allophonic realization [h], without pharyngeal constriction, gains ground over [ħ]. In Element Theory (ET), consonants share melodic elements {I}, {U} and {A} with vowels. Element{A}, which characterized the whole set of medieval emphatic and guttural consonants, is only involved in contemporary Maltese for /ʔ/ and /ħ/, corresponding to orthographic *q* and *ħ* respectively. I also propose a version of ET in which the element {C} characterizes surfacing consonants; the position is left empty if the consonant is lost. Empty positions are part of the phonological word structure and contribute to determining syllabic structure and stress assignment.

## 1 Introduction

The earliest attestation of written Maltese is a poem which came down to us through a copy unexpectedly found among notarial documents dating back from 1585, but composed in the mid-fifteenth century. The text, in Latin script, has



been established by the poem’s discoverers in a seminal publication: *Peter Caxaro’s Cantilena, a Poem in Medieval Maltese* (Wettinger & Fsadni 1968). Philological variants have been proposed by these authors in 1983. Cohen & Vanhove (1991) undertook a linguistic analysis of the Cantilena and suggested alternative philological variants.

Furthermore, in his book on *The Jews of Malta in the Late Middle Ages*, Wettinger (1985) published notarial documents written in Hebrew script. According to the author, these texts deserve to be called ”Judaeo-Maltese”. They attest the use of three Hebrew letters for emphatic consonants not only in Arabic words but also in words of Romance origin:

Table 1: Hebrew letters for emphatic consonants

Hebrew	Arabic	Transcription	Examples	Modern Maltese	Gloss
ט	ط	ṭ	quntinṭ nṭr juḡṭi	<i>kuntent</i> <i>nutar</i> <i>jagħti</i>	satisfied notary he gives
צ	ص	ṣ	nṣf ṣħh	<i>nofs</i> <i>saħħa</i>	half strength
צ	ض	ḍ	ajḍa ḥḍrh	= ukoll <i>ħadra</i>	also green

Even before such *prima facie* evidence was published, Cowan (1966), among others, had postulated the emphatic consonants mentioned in Table 1, and *r*, for medieval Maltese by internal reconstruction. After the sixteenth century no Maltese spelling system used special symbols to represent emphatic consonants.<sup>1</sup>

Maltese also inherited from Arabic a set of consonants produced with primary constriction in the posterior region of the vocal tract. For Hayward & Hayward (1989: 179):

One class of sounds which has been given recognition in traditional descriptions of Semitic languages is that of ‘gutturals’ or ‘laryngeals’. This class includes the laryngeals proper (IPA [h], [ʔ]), the pharyngeals (IPA [ħ], [ʕ]) and, though somewhat less frequently, the uvulars (IPA [q], [χ], [ʁ]), though

<sup>1</sup>Notice, however, that Saada (1986) transcribes consonants coarticulated with back vowels as emphatic in her study of Maltese in Tunisia. This choice of transcription may have been influenced by Tunisian Arabic; cf. Ghazeli (1977).

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the exact composition of the class will vary from language to language. It is typically associated with low vowels and/or phonological processes involving vowel lowering. We wish to argue that ‘guttural’ needs recognition as a natural class in generative phonology as well.

According to McCarthy (1994: 191) “Standard Arabic and most modern Arabic dialects have retained the full set of gutturals usually reconstructed for Proto-Semitic: laryngeals  $\text{ʔ}$  and  $h$ ; pharyngeals  $\text{ħ}$  and  $\text{ʕ}$ ; and uvulars  $\chi$  and  $\text{ʁ}$ ”.

This applies to pre-modern Maltese. However, it should be carefully noted that the modern Maltese glottal stop is the reflex of the voiceless uvular stop  $q$ , not the reflex of Arabic ‘hamza’.

By the end of the Middle Ages, emphatic consonants had been subtracted from the sound pattern with compensatory phonologization of back stem vowels; cf. Comrie (1991: 237). In (pre)modern times, Agius de Soldanis (1750) and Vassalli (1796) took note of ongoing changes in gutturals: persistent weakness of  $h$ , loss of  $\chi$  merged with  $\text{ħ}$ , and of  $\text{y}$  merged with  $\text{ʕ}$ . In the nineteenth century, complex processes of diphthongization and pharyngealization triggered by the pharyngeal sonorant on adjacent vowels are attested. During the twentieth century,  $\text{ʕ}$  was lost in almost all dialects, and vowel pharyngealization ceased being discriminant, except residually. As already observed, the uvular stop  $q$  has been progressively replaced by laryngeal  $\text{ʔ}$  in mainstream Maltese, a change which also took place in many modern Arabic dialects.

After this introduction, I review different approaches to the phonological representation of emphatic and guttural consonants in medieval Maltese. Then I analyze data in pre-modern Maltese, modern Maltese, and contemporary Maltese (sections 3 to 5). §6 is devoted to what kinds of abstractness should be allowed in phonology. Sections 7 and 8 are devoted to the representation of sounds involving orthographic  $h$  or  $għ$ . §9 introduces the table of contemporary consonants in Element Theory, to be compared to that given in section 2 for medieval Maltese. I conclude on the metamorphosis of ‘gutturals’ during the last millenium. Diachronic steps are recapitulated in the appendix.

## 2 Phonological features for “back” consonants

### 2.1 SPE features, Feature Geometry, and Elements

In his synchronic analysis of modern Maltese, Brame (1972) divides consonants into major classes with two SPE binary features:  $[\pm\text{consonant}]$  and  $[\pm\text{sonorant}]$ .

Consonants and vowels share features [ $\pm$ low] and [ $\pm$ back]. There is an interaction between guttural consonants, which are [+low] and [+back], and vowels through a rule of ‘Guttural Assimilation’: “the vowel *i* assimilates to  $\hbar$  and  $\text{ʔ}$  in lowness and backness”:

$$(1) \text{ Guttural Assimilation: } i \rightarrow a / \text{ \_\_\_ } \left[ \begin{array}{l} +\text{CONS} \\ +\text{LOW} \\ +\text{BACK} \end{array} \right] \text{ (Brame 1972: 33)}$$

cf. Hume (1994: 171) for an alternative formulation of this rule.

Hayward & Hayward (1989: 185) argued against the use of [+low, +back] features in the representation of gutturals:

The class of guttural sounds cannot be equated with the class of [+low] segments, however. As has often been pointed out, the specification [+low] is simply not appropriate for the laryngeals [h] and [ʔ] because the definition of the feature refers to the position of the body of the tongue, and this organ is not involved in any primary way in laryngeal articulations. Furthermore, even if the laryngeals were allowed to be [+low] ‘by convention’, there are cases, as we have seen, where uvulars need to be included in the class, and these have been classified as [-low]. Chomsky & Halle (cf. 1968: 305).

Invocation of [+back] is even less useful, for this would not only leave out the laryngeals (for exactly the same reasons as those just considered) but would bring in the velars, which, unless modified in some way [...], do not, as far as we are aware, pattern with gutturals phonologically.

For the authors, who support their analysis by adducing data from several Semitic and Cushitic languages, “crucial to the definition of ‘guttural’ is a satisfactory distinctive characterization of the laryngeals” (p. 186):

It seems to us that any attempt at providing a comprehensive solution to the problems raised by the various sorts of behaviours exhibited by [h] and [ʔ] cross-linguistically will in all likelihood be made within the framework of Feature Geometry, in which hierarchical relations between features and classes of features are given explicit recognition (cf., for example, Clements 1985; Sagey 1986). The events involved in producing [h] and [ʔ] would be assigned to a separate ‘laryngeal node’. In languages where the laryngeals behaved as ‘guttural consonants’, it would be necessary to give overt recognition to the relationship existing between the laryngeal node features and

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a particular ‘zone of constriction’, namely the guttural zone. This relation would, of course, obtain in virtue of the location of the larynx within this zone.

In independently conducted research, McCarthy (1991; 1994) recognized the feature [pharyngeal] and bound the representation of emphatics and gutturals in these terms (1994: 219):

The phonetic evidence establishes important points of similarity between the gutturals and the emphatics. Broadly, the gutturals and the emphatics share constriction in the pharynx, and narrowly, the uvular gutturals share with *q* and the coronal emphatics a constriction in the oropharynx produced by raising and retracting the tongue body. We expect to find two principal types of phonological patterning corresponding to these phonetic resemblances: a class of primary and secondary [pharyngeal] sounds, including gutturals, *q*, and emphatics; and a class of sounds with [pharyngeal] constriction produced by the [dorsal] articulator, including uvular gutturals, *q*, and emphatics.

After a detailed discussion, McCarthy concludes that in Arabic “the laryngeals are classified as [pharyngeal] and so belong to the guttural class” (p. 224). Altogether, medieval Maltese data support McCarthy’s analysis on the phonological patterning of emphatics and gutturals, including uvular *q* and laryngeal *h*.

In his dissertation *Towards a Comparative Typology of Emphatics* Bellem (2007) adopted Element Theory. In Harris & Lindsey (1995) the theory includes the resonance ‘elements’ listed in Table 2.

Table 2: Resonance elements in Harris & Lindsey (1995)

Element	Salient acoustic property	Articulatory target C	Articulatory target V
A	F <sub>1</sub> -F <sub>2</sub> : convergence	pharyngeality	a
I	F <sub>1</sub> -F <sub>2</sub> : wide divergence	palatality	i
U	F <sub>1</sub> -F <sub>2</sub> : downwards shift	(velar-)labiality	u
(@	none (acoustic baseline)	velarity	ə

Bellem (2007: 131) argues that pharyngeals are {A}-headed, while coronals in languages with a salient contrast ‘front-back’ are characterized by the presence of {I}. It follows that the element {A} is involved as primary melodic feature for gutturals, and secondary for emphatic coronals. I retain this analysis, rather than

that proposed by Backley (2011), where the element {A} may also characterize plain coronals. The formal implications of headedness in elements are analyzed in Breit (2013).

## 2.2 Medieval Maltese consonants in Element Theory

I propose an architecture in which the elements {C} and {V} play the role of the elements {ʔ}, {H}, and {L} in previous models; cf. Harris & Lindsey (1995); Bellem (2007); Backley (2011); and Puech (2016). A segment in a string is represented as a column organized in two sets of elements. The structural elements {C} and {V} refer to the *manner of articulation*, including laryngeal voice; melodic elements refer to the *place of articulation* through profiles of resonance. The melodic elements are {I}, {U}, and {A}. Headedness (underlined element) expresses the dominance of an element’s main property. In the absence of front rounded vowels, {I} and {U} may not combine; thus, they are hosted on the same line. In the presence of mid-vowels, {I} or {U} may combine with {A}: they are hosted on two separate lines.

Consonants are divided into two major categories: obstruents and sonorants. The former includes stops and affricates, spirants and fricatives; the latter includes liquids, nasals and glides. In Jakobson et al. (1952: 24), affricates are considered as “strident stops” and in Clements (1999) as “noncontoured stops”. As observed by Bellem (2007: note 176), “the status of pulmonic affricates is also not entirely clear”. I propose to represent them as strong stops (headed {C}). Similarly, fricatives may be ‘weak’, like approximants, or ‘strong’, like sibilants. They will be represented with headed or headless {C} merged with headless {V}. Sonorants are represented with headed {V} dominated by {C}, which corresponds to segments produced with ‘spontaneous voice’ in Chomsky & Halle (1968).

Obstruents and sonorants either are underspecified on a third line, or have {V} or {C} as specifier. {V} expresses voice in obstruents. If an obstruent has no voiced counterpart nor a voiced allophone, it is marked with {C} on the third line: this applies in Maltese to the voiceless gutturals *q*, *χ*, and *ħ*. For sonorants, the element {C} on the third line features the absence of oral airflow in nasals; lateral /l/ is unspecified, while the rhotic (plain or emphatic) is specified for {V}.

(2)	<b>Stops</b>	<b>Fricatives</b>	<b>Sonorants</b>
	<i>weak</i> / <i>strong</i>	<i>weak</i> / <i>strong</i>	<i>weak</i> / <i>strong</i>
	C <u>C</u>	C <u>C</u>	C
		V <u>V</u>	<u>V</u>
	(C or V)	(C or V)	(V)      C

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Studies in Arabic dialectology suggest that the affricate /dʒ/ may also be realized as either /ʒ, g/ or /j/, depending on the geographical region of dialects; cf. Kaye (1972). Maltese retained the post-alveolar affricate pronunciation. Contrary to other ‘coronal’ consonants, however, Maltese /dʒ/ is not a ‘sun letter’ to which the definite article *l* assimilates; cf. Sutcliffe (1936: 18), Comrie (1980: 25). This suggests that in Medieval Maltese the phoneme was still ‘felt’ as a voiced (post)palatal obstruent. On the other hand, prefixed *t* in verbal forms assimilates to /dʒ/, as it does to other coronal obstruents; cf. Sutcliffe (1936: chapter V); concerning regressive rounding vowel harmony, /dʒ/ behaves as other coronal obstruents; cf. Sutcliffe (1936), Puech (1978: 387).

In Arabic dental (weak) fricatives /θ/ and /ð/ are phonemic; cf. Al-Khairy (2005: 2-3). However, I did not include the phonetic symbol *ð* in Table 1 to interpret the transcription of modern *deheb* ‘gold’ from Arabic *ḏahab* as “veheb” by Megiser (1606: 20, word 42). Other words point to *θ* (voiceless interdental fricative). In any case, dental fricatives correspond to the plosives *t* or *d* in (pre)modern Maltese; cf. Aquilina (1961: 127), Cowan (1964: 220), Cassola (1987-88: 82, note 75), Comrie (1991: 241), Kontzi (1994: 17), Brincat (2011: 243-44).

Regarding laryngeal *h*, I follow Laufer (1991: 92) whose observations for Hebrew and Arabic “show that in the production of every [h] there is a narrowing of the glottis. The frication in [h] looks as in any other fricatives, except for the place of articulation”. I interpret it as a glottal approximant realized as [h] or [ɦ], which neither triggers nor prevents voicing harmony in an obstruent cluster

For resonance, labials are characterized by {U} and coronals by {I}, as in Bellem (2007). I follow Backley (2011: 75) in considering that fricatives *s* and *z* are characterized by the headless melodic element {I}, while post-alveolar *ʃ* is characterized by headed {I}. The glide *y* and the tense vowel *i* as well are {I}-headed, while lax *ɪ* is characterized by headless {I}.

Emphatics and guttural obstruents form a natural class defined by the presence of element {A}. From his experimental work on Hebrew and Arabic, Laufer (1988: 198) concludes “that emphatic and pharyngeal sounds share, qualitatively, the same pharyngeal constriction. However, the pharyngeal constriction is the primary one for pharyngeal and a secondary one for emphatics”. Uvular obstruents *q* and *χ* are characterized by the headless element {A}, pharyngeal consonants *ħ* and *ʕ* by headed {A}; in emphatic coronals the element {I} is combined with {A} (Tables 3 and 4).

Table 3: Obstruents in (post)medieval Maltese

<i>Segment</i>	<b>b f t d ʈ ɖ</b>	<b>ʃ s z ʂ ɟ</b>	<b>k g q ɣ ħ h</b>
<i>Structure</i>	C C C C C C V V V V V	C C C C C C V V V V V V	C C C C C C V V V V C C C
<i>Melody</i>	U U I I I I A A A	I I I I I I A	A A A

Table 4: Sonorants in (post)medieval Maltese

	<b>m n l r ɾ y w ʁ ʕ</b>
<i>Structure</i>	C C C C C C C C C C V V V V V V V V V V C C V V
<i>Melody</i>	U I I I I I U A A A

Table 5: Arabic roots, medieval and modern forms

Arabic root	Medieval Maltese	Modern Maltese	Gloss
√ f ʃ d	faʃad	<i>fasad</i>	to bleed
√ ɣ b ʈ	ɣabat	<i>ħabat</i>	to bump
√ ħ ʃ d	ħaʃad	<i>ħasad</i>	to reap
√ ɣ ʈ f	ɣaʈaf	<i>ħataf</i>	to snatch
√ q b ɖ	qabaɖ	<i>qabad</i>	to catch
√ m ʂ ʈ	maʃaʈ	<i>maxat</i>	to comb
√ n ʃ b	naʃab	<i>nasab</i>	to set a net
√ q r ʃ	qaraʃ	<i>qaras</i>	to pinch
√ q ʈ r	qaʈar	<i>qatar</i>	to fall by drops
√ r b ʈ	raʈaʈ	<i>rabat</i>	to tie
√ ʈ l b	ʈalab	<i>talab</i>	to request



### 2.3 Loss of emphatic consonants and compensatory effects

In (pre)modern Maltese, forms whose Arabic etymon had an emphatic consonant are characterized by stem vocalism *a*. Other stems have vocalism *i* by default, or *u* for some of them. In Table 5, Arabic roots are given after Aquilina’s dictionary (Aquilina 1987; 1990). Medieval forms are reconstructed; modern forms are orthographic.

As is well known, an emphatic consonant prevented ‘*imaala*’, i.e. fronting and raising of /ā/ to lax and diphthongized /ɪ<sup>ə</sup>/ (Cowan 1966; Alexander Borg 1976), (Alexander Borg 1997: 271). Even more interesting is the split between two *ū*, represented as *ũ* and *û* by Vassalli (1796: XVIII) and Vassalli (1827: 11). The author describes the former as the “contraction of *o*, and of *u*”, while the latter is the “contraction of *e*, and of *u*”. In past participles, the stem-infix vowel is *ũ* for ‘back’ (formerly emphatic) stems, while it is *û* for ‘front’ stems. The two vowels are merged in Standard Maltese but remain distinct in Gozitan Maltese pausal forms (Alexander Borg 1977):

(3)	Arabic root	Pf-3-M.SG	Gloss	PP-M.SG: Vassalli	Gozitan.	Standard M.
	√ f ṣ d	fasad	‘to bleed’	mifsũd	mifsouḍ	mifsũḍ
	√ f s d	fised	‘to spoil’	mifsũd	mifseuḍ	mifsũḍ

Modern Gozitan diphthongized realizations [oi] vs. [ei] of *ī* in pausal context are also attested by Vassalli (1827: 11) and in Bonelli (1897: vol. IV, 97):<sup>2</sup>

(4)	a.	√ t l b	taboip (l. 19)	<i>tabīb</i>	‘doctor’
	b.	√ qss	qasseis (l. 23)	<i>qassīs</i>	‘priest’

### 2.4 Conclusion

In medieval Maltese, the whole stem domain was ‘back’ in presence of an etymological emphatic consonant, otherwise it was ‘front’ (except in forms with stem vocalism *u*). We can reconstruct two steps:

- Stem backness is anchored on a radical emphatic consonant, and extended to the whole stem: the element {A} is shared by the emphatic consonant and stem vowels.

<sup>2</sup>Bonelli’s footnote: “In emphatic position, especially at the end of a sentence, the items *bylli*, *dīn* or similar, will be pronounced in the country *byllej*, *dein* etc.; *bylli ma ġejts? byllej? why you did not come, why?*”. [The term ‘emphatic’ refers here to phrase focus, not to consonant properties].

- Stem backness is anchored on vowels; emphatic consonants are merged with their plain counterpart: ‘back’ stem vowels are characterized by a headed element {A}, while {I} is assigned by default to ‘front’ stem vowels.

### 3 Gutturals in pre-modern Maltese

Canon Agius de Soldanis (1712-1770), born in Rabat (Gozo), and Mikiel Anton Vassalli (1761-1829), born in Żebbuġ (Malta), were two erudite Maltese scholars. In the eighteenth century, the prevailing opinion was that Maltese ancestors were Punic, Hebrew, Syriac, or even Etruscan; cf. Brincat (2011: chapter 7). Thus, de Soldanis called the book he published in 1750: *Della Lingua Punica, presentemente usata da Maltesi*. In the introduction to his dictionary, Vassalli (1796) suggests that Maltese is a legacy from several Semitic languages: Punic, Phoenician, Hebrew, Chaldean, Samaritan, Syriac, and Arabic. Moreover, he connects these substrata to Maltese dialectal variations. In subsequent work, however, Vassalli (1827) agreed that Maltese is, in fact, an offshoot from Arabic.

#### 3.1 Description of gutturals by A. de Soldanis 1750

In *Alfabeto Punico-Maltese*, Agius de Soldanis (1750) lists 22 symbols. The following excerpts (p. 72-74) have been translated into English; modern orthographic forms are in italics.

(5) k [k] Grave, acute as Greek *k*, and more forced than *q*, e.g. *Kaws* ‘bow’; *Kera* ‘house rent’; *qaws*, *kerā*.

gk [g] shall be pronounced instead of Hebrew *Ghimel*, and Greek *Gamma* γ,<sup>3</sup> especially if it comes before a vowel as a consonant, e.g. *Gkrieżem* ‘throats’; *grieżem*.

q [q] Thin, acute, is pronounced in the summit of the throat, e.g. *Qolla* ‘jar’; *qolla*.

hh [ħ] Is pronounced with strong aspiration, e.g. *Hhait* ‘wall’; *Hharbifc* ‘to scratch’. If there is a dot on one of the *hs*, then the aspiration should be more open, while always born from the throat with a light or a strong push from the chest, e.g. *Hhamar*, donkey ~ stupid; *ħmar*.

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<sup>3</sup>“Gimel” is the third letter of consonantal alphabets in some Semitic languages. Its sound value in Phoenician is the voiced plosive [g]. The Greek letter “gamma” is derived from it.

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ch [χ] Is pronounced grave, hoarse in the summit of the throat, with a bit more force than preceding [hh], e.g. *Chait* ‘thread’; *ħajt*.

h [h] Nicely aspirated, e.g. *Hem* ‘there’; with a dot on top, it should be pronounced with more breathing, but gently, e.g. *Ĥem* ‘trouble’; *hemm*, *hemm*.

gh [ʕ/ɣ] The most difficult letter, which is grave, and is pronounced in the middle of the throat, among modern Arabs and among Punic-Maltese, e.g. *Ghain* ‘eye’. If on top of the *g* a dot has been noted, the pronunciation shall be deeper, and if more than one dot, the aspiration is growing, e.g. *Ġhar* ‘grotto’, *Ġhar* ‘shame’, *Ġhar* ‘envious of’; *ghar*, *gh̄ar*, *gh̄̄er*.

The author distinguishes different realizations of ‘gh’ (Aain) by diacritic dots (Table 6).

Table 6: Realisations of ‘gh’

A. de Soldanis	Gloss	Arabic root	Vassalli (IPA)	Modern spelling
Ġhar	cave	√ ɣ w r	[ɣo:r]	ghar
Ġhar	shame	√ ʕ j r	[ʕa:r]	gh̄ar
Ġhar	he got jealous	√ ɣ j r	[ɣa:r]	gh̄̄er

Concerning *h*, Agius de Soldanis uses a diacritic dot to distinguish *Ĥem* ‘noise’ from *Hem* ‘there’, which may indicate that initial *h* was better preserved in nouns or verbs than in cliticized adverbs. In modern Maltese, intervocalic *h* is dropped: *deheb*, [dēb]) ‘gold’, except in dialects where *h* is realized as *ħ*: [deħeb].

There is no doubt that Agius de Soldanis was aware of dialectal differences between different varieties of Maltese pronunciations. The distribution of velar *k* and uvular *q* in his work differs from modern mainstream Maltese. The author records the words in his *Dizionario* (1750) listed in Table 7.

The alternation *q* ~ *k*, well spread at this time, is still attested in Great Harbour (Malta) and Rabat (Gozo). In my fieldwork in the 1980s, I recorded the forms in Table 8 in Rabat (near the hospital) and Xewkija (close to Rabat); cf. Puech (1994).

Vassalli’s *Lexicon* (1796) is preceded by a *Preliminary Discourse to the Maltese Nation*, which provides us with reliable dialectal descriptions of gutturals. The following excerpts have been translated from Italian into English:<sup>4</sup>

<sup>4</sup>Special thanks to Michelangelo Falco, who assisted me in translating the original text. I am the only one to be held responsible for any error of translation or interpretation.

- (6) LIV      h [h] To the symbol H, I have assigned an aspirated sound and called it He, such as Havn *here*, hynn *there*, hi *she*, ybleh *silly*.
- LXXXIV      Among the new symbols added, a majority was necessary to describe GUTTURAL sounds.
- LXXXV      ʁ [ħ] To the first guttural sound, called Hha, I assigned a symbol similar to an A compressed in this way ʁ. This sound is found in many Oriental languages, and it is very aspirated, profound and dry, like the Arabic ح.
- LXXXVI      ʘ [χ] The second guttural sound, which resembles an O with a perpendicular line down the middle, indicates a hoarse and almost hampered pronunciation. The appropriate sound is Arabic ح: like ʘia *my brother*.
- LXXXVII    ʘ [ʕ] The third guttural sound, called Aajn, is represented by this symbol ʘ, which I took from Phoenician, as it is found in the inscriptions, and modified it to better fit with the other letters. It describes a very guttural and slightly husky sound, common among the Oriental languages. Since it is often unpronounced at the end of a word, I marked this instance as ʘ̄ to make it distinct; and, therefore, its presence is maintained in order to preserve the root of the word.
- LXXXVIII   ʘ [ʕ] I wanted to describe the fourth guttural sound, which denotes a big, huskier and more guttural sound, with two Aajn united in this way ʘʘ, but in order to avoid confusion with the Latin letter m I depicted it as ʘ̄.
- LXXXIX      ʕ [q] There is another sound in our language common among Oriental languages, which is considered by some a guttural sound, and by others a palatal, that is formed in the roof of the mouth, like a K. Nevertheless, it differs for its sharpness of pronunciation, half palatal and half guttural, and produces a certain epiglottal sound, which is very difficult to describe. For this reason, I have included it among the guttural sounds. It is not a low-pitched sound, instead it is harsh and very high-pitched. The symbol that represents it, ʕ, is Phoenician as well, but I gave it a better shape more fitting with the present font.

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Table 7: Distribution of velar *k* and uvular *q* listed in Agius de Soldanis (1750)

	A. de Soldanis	page	Modern orthography	Gloss
k	kadim	148	<i>qadim</i>	‘old’
	kasma	149	<i>qasma</i>	‘break’
	kauì	149	<i>qawwi</i>	‘strong’
q	qbir	167	<i>kbir</i>	‘big’
	Qemmùna	167	<i>Kemmuna</i>	‘Comino’
	qelp	168	<i>kelb</i>	‘dog’
	qlàmàr	168	<i>klamar</i>	‘calamary’
	qtieb	170	<i>ktieb</i>	‘book’
	qul	170	<i>kiel</i>	‘he ate’

Table 8: *q* ~ *k* alternation, after Puech (1994)

Orthography	Gloss	Standard	Rabat	Xewkija
<i>qalb</i>	‘heart’	[ʔalb̩]	[qalb̩]	[kalb̩]
<i>kelb</i>	‘dog’	[kɛlb̩]	[kælb̩]	[kælb̩]

### 3.2 Minimal pairs

In *Grammatica della lingua Maltese*, Vassalli (1827: 14-15) gives lists of minimal pairs. Examples below have been transcribed in IPA. Some words are obsolete in modern Maltese (MM):

(7)	a.	<i>k</i>	Gloss	MM	<i>q</i>	Gloss	MM
		karkar	to drag along	<i>karkar</i>	qarqar	to rumble	<i>qarqar</i>
		kī³s	drinking glass	<i>kies</i>	qī³s	to measure	<i>qies</i>
		klūbi	ravenous	<i>klubi</i>	qlūbi	courageous	<i>qlubi</i>
		kriḅ	groaning	<i>krib</i>	qriḅ	nearness	<i>qrib</i>
		ʔakar	viscous	<i>ghakar</i>	ʔaqar	to ulcerate	<i>ghaqar</i>
		joktor	it abounds	<i>joktor</i>	joqtor	it leaks	<i>joqtor</i>
		ħarri³k	who prosecutes	<i>ħarriek</i>	ħarri³q	who ignites	<i>ħarrieq</i>

b.	ħ			χ		
	ħajjar	to allure	<i>ħajjar</i>	χajjar	to let choose	<i>ħajjar</i>
	ħallæ	breaker, pile	<i>ħalla</i>	χallæ	to leave	<i>ħalla</i>
	ħajt	wall	<i>ħajt</i>	χajt	thread	<i>ħajt</i>
	ħall	to untie	<i>ħall</i>	χall	vinegar	<i>ħall</i>
	ħarat	to plough	<i>ħarat</i>	χarat	to strip off leaves	<i>ħarat</i>
	ħarqa	burn	<i>ħarqa</i>	χarqa	a strip of clothes	<i>ħarqa</i>
	ħazen	to show respect	<i>ħazen</i>	χazen	to store	<i>ħazen</i>
	ħulæ	to become sweet	<i>ħila</i>	χulæ	to waste	<i>ħela</i>
	bahħar	to sail	<i>bahħar</i>	baxχar	to perfume	<i>bahħar</i>
c.	ʕ			ɣ		
	ʕabbæ	to load	<i>għabba</i>	ɣabbæ	to deceive	<i>għabba</i>
	ʕalaq	bloodsucker	<i>għalaq</i>	ɣalaq	to close	<i>għalaq</i>
	ʕâli	high	<i>għali</i>	ɣâli	expensive	<i>għali</i>
	ʕâr	shame	<i>għar</i>	ɣâr	cave	<i>għar</i>
	ʕazel	to choose	<i>għazel</i>	ɣazel	to spin (wool)	<i>għazel</i>
	ʕiraq	to sweat	<i>għereq</i>	ɣiraq	to sink	<i>għereq</i>

### 3.3 Dialectal variation in pre-modern Maltese

Vassalli knew perfectly well that many speakers do not respect what is the ‘correct’ pronunciation of gutturals for him. In his introduction to the *Lexicon* (1796) he comments on speech habits in different areas in the following terms:

XVII If we want to explore the subtleties of this language (Maltese), and, so to say, carry out a fine-grained analysis, exploring its dialects, we would also find that they are like the related oriental languages, each with a special and varied inclination to one of these languages. Our language is usually

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divided into five dialects by the population, using these dialects we jokingly make ourselves incomprehensible to each other. They are named as follows in Maltese = *Lsÿn tal blÿd* , *lsÿn tal  awdeu*, *lsÿn tar-r ajj el t' ysfel* , *lsÿn tar-r ajj el ta f uq* , *lsÿn tar-r ajj el tan-nofs* = *Dialect of the city, dialect of the Gozo, dialect of the low villages, dialect of the high villages, and dialect of the middle villages*. Each dialect has its own subdialect of a certain place, and they make it possible to identify which area you come from, since they have appreciable differences. Mainly they are distinguished by pronunciation, that is by the sounds: consonants, or vowels, or both.

- XVIII With the *dialect of the towns*, which I call the *dialect of the harbour*, since it is spoken in the towns by the main harbour, we intend to refer to the language of the new capital and its suburb, of the town called l'Isola - since it is a peninsula inside the harbour -, of Bermula, of Borgo-Santangelo, and of the castles around. In the dialect of these places which can be considered as one big town, subdialects can be distinguished: as a matter of fact, the citizens of Isola differ considerably in their speech from the inhabitants of Bermula, and they differ from the people of Borgo-Santangelo, and they all differ from the people of Valletta ...
- XIX The defect of this language can be recognized mainly through the lack of the sounds     e   [respectively:     q], which are pronounced by the speakers of this dialect as     e K [respectively:     k], without any real distinction: therefore, they are often confused in the discourse and one word is taken for another. A major part of the speakers naturally lacks these sounds because they did not acquire them in their childhood. Many have these sounds though, but they either abstain from using them, believing to speak in a trendier way, or they use them in the wrong way.
- XX The dialect of Gozo Island is little different from those of the countryside of Malta as to the pronunciation ... very ancient Arabic expressions are used there, especially by the peasants, whose speech is Arabized a lot.
- XXI Now we come to the dialects of the countryside of Malta. The one which is spoken (*fyr-r ajj el ta f uq*) in the high lands, that is in the West, is the purest dialect of Malta; the ancient capital, called *li Mdina* with its suburbs where a few barbarisms are more widespread than elsewhere is excluded. I cannot hear any defects in the guttural sounds ...
- XXII Similarly, in the oriental villages of Malta called (*r-r ajj el t' ysfel*) *low villages*, there is a good dialect, undamaged in the guttural sounds ...

XXIII Finally, despite sharing the mistakes of the neighboring areas the best Maltese pronunciation can be found in the middle villages. In this area, the guttural sounds are preserved in their entirety, as can easily be observed by those who have some knowledge of Oriental languages. The very aspirate sound of the root H at the end of the word is pronounced as it is, like Ybleh<sup>5</sup> *silly*, Ykreh<sup>6</sup> *ugly*, Nebbyh<sup>7</sup> *who wakes up*, which differs from Nebby<sup>8</sup> *who barks*, though throughout the domain badly pronounced **ʔ** ...

I give Vassalli's examples of 'ideal pronunciation' in IPA in Table 9.

Table 9: Examples of Vassalli's 'ideal pronunciation'

Harbour	Vassalli's norm	Modern orthography	Gloss
mɔχruet	mɑhriːt	<i>mohriet</i>	'plough'
χlɪmt	χolma ɦlɪmt ɦolma	<i>ɦlomt ɦolma</i>	'I dreamt about'
'nχossni ɣɪrkān	'nɦossni ɣɪrɣān	<i>inɦossni ɣɦarɣan</i>	'I feel sweaty'
qaɪqa	kaɪka	<i>kaghka</i>	'ring-cake'
juɪqaɪwɛf	juɪkaɪwɛf	<i>juɪkaghwɛg</i>	'he moves (spasm)'
ɦhoqq	ɦhokk	<i>ihokk</i>	'he rubs'
buqaɪwār	bukaɪwār	<i>bukaghwar</i>	'black beetle'

### 3.4 Allophonic variation in gutturals

According to Vassalli's observations and idealized norm, radical *h* is maintained in uncorrupted dialects in all positions. However, if *h* stands for the 3rd masculine object suffix, it may be realized as [ɦ]; cf. Vassalli (1827: §24):

The He, H, h merely denotes the aspirated and soft sound; such as *il-kerha*, *u il-belha harbet mal ybleh* 'the ugly and the silly [female] fled with the silly [male]'; *Bɦima mɦejjma* 'spoiled animal'. The same sound is kept at the end of words when it is radical, e.g. *gɦieh* 'honor', *mɦwɛgɦeh* 'honored'; *blyieh*, or *tbelleh* 'he grew foolish'; *ikreh* 'ugly', or derived: *kerreh*, *tkerreh*. However, if word final h is an affixed pronoun, then it will be pronounced *ɦ* ...

<sup>5</sup> *ibleh* 'foolish'; cf. *belleh*

<sup>6</sup> *ikreh*: 'ugly'; cf. *kerah*

<sup>7</sup> *nebbieh* 'that makes one aware of s.th.'; cf. *nebbah* or *nebbeh*

<sup>8</sup> *nebbieh* 'barker' ('animal that barks'); cf. *nebah*



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Vassalli's examples in square brackets have been transposed into IPA:

- (8) a. [χallūh] ħalla-IMPR 2PL+Obj 3M.SG 'leave him!' ħalluh  
       [χallih] ħalla-IMPR 2sg+Obj 3M.SG 'leave him!' ħallih  
       b. [fiħ] fi prep+Obj 3M.SG 'in it' fiħ

In final position, the 3rd person feminine singular and 3rd person plural are respectively /ha/ and /hom/, with variations in vowel quality which are irrelevant for the representation of /h/. When the stem ends in a guttural consonant, /h/ assimilates the place of articulation of the stem consonant (cf. §25):

- (9) a. [selaxχa] selax-PF-3SG PF+Obj-3F.SG 'he skinned it' selahħa  
       b. [fetaħħa] fetaħ-PF-3SG PF+Obj-3F.SG 'he opened it' fetahħa

To sum up, /h/ has four allophones: [h], [ħ], [χ] and zero. The 3rd person masculine singular object suffix has three allomorphs: /h/, /hū/ or /ū/, whose distribution depends on their position in the word.

Sonorant /ɣ/ is realized as a voiceless uvular fricative [χ] when it is in word final position or followed by a voiceless consonant (cf. §28):

- (10) a. [axsel] yasel-IMPR-2sg 'wash!' aħsel  
       b. [ferraxχem] ferray-PF-3SG+Obj-3PL 'wash them!' ferraghħom

Pharyngeal /ʕ/ (cf. §17) has three allophones: [ʕ], [ħ] if followed by suffix -h, and zero in word-final position:

- (11) a. [samʕet] sema'-PF-3F.SG 'she heard' semgħet  
       b. [samaħħem] sema'-PF-3M.SG+Obj-3pl 'he heard them' semaghħom  
       c. [sama] sema'-PF-3M.SG 'he heard' sema'

### 3.5 Conclusion

In eighteenth century Maltese, the sound pattern has a maximal set of six guttural consonants: *q*, *χ*, *ɣ*, *ħ*, *ʕ*, and *h*. However, some dialects have velar *k* rather than *q*; *ɣ* or zero for *ʕ*, or *ʕ* for *ɣ*; *χ* for *ħ*, or *ħ* for *χ*; *ħ* or *χ* or zero for *h*.

Dialectal variation and allophonic changes undergone by *ɣ* and *ʕ* in different contexts, and the assimilation of place of articulation by *h* preceded by a guttural, contributed to the loss of identity for these sounds. Such variation induced predictable changes, which, indeed, became established in the nineteenth century.

## 4 Gutturals in modern Maltese

Different sources contributed to the documentation on Modern Maltese in the twentieth century. First, urban and rural dialects have been documented by Bonelli (1897-1900) and Stumme (1904). Altogether, their descriptions are convergent, even if their perception of guttural sounds is somewhat different. Saada (1986) published ethnotexts recorded in the 1960s by residents in Tunisia from Maltese families. Her transcription of guttural sounds is almost like Bonelli's. Vanhove (1991) described "the survival of [ʕ] in a Maltese idiolect at Mtaħleb in Malta". Schabert (1976) described conservative idiolects in which [ʕ] appears to be an onglide of pharyngealized vowels. Altogether, I call 'modern', as opposed to 'contemporary', varieties which still include a pharyngeal sonorant and/or pharyngealized vowels. Thus, 'modern' Maltese includes conservative Gozitan dialects which have kept [ɣ] but not [ʕ]; cf. Puech (1994: texts 8 to 10 from Għarb). See also Aquilina & Isserlin (1981).

### 4.1 Bonelli: *Archivio Glottologico Italiano*

Bonelli (1897) published Maltese idiomatic expressions, jingles and two traditional narratives recorded during a two-month stay in urban and rural areas of Malta and Gozo. He completed his study on "the Maltese dialect" in 1898 and 1900. His set of guttural sounds includes *q*, *ʕ*, *ħ*, *h*. The postvelar stop *q* is general and does not alternate with its mutated form *ʔ*. This reflects his informants' pronunciation from Valetta and Rabat (Gozo). The pharyngeal sonorant *ʕ* is the reflex of both *ʕ* and *ɣ*. The pharyngeal fricative *ħ* is the reflex of both *ħ* and *χ*. From Bonelli's transcriptions, it is not clear whether *h* should be granted full phonemic status.

Whether Bonelli's *h* should be granted phonemic status or not, it is present in instances where it is usual in the spelling system:

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(12) in final position (3 M.SG direct object after a long or diphthongized vowel):

- |   |   |                               |                                     |
|---|---|-------------------------------|-------------------------------------|
| a.  | p. 88 dufrejħ                                     | ‘his nails’                   | <i>difrejħ</i>                      |
|   | p. 98 ħudowħ (Gozo)                               | ‘they took him’               | <i>ħaduh</i>                        |
|   | saqs <sup>i</sup> ēħ                              | ‘he asked him’                | <i>saqsieħ</i>                      |
| b. in internal stem position (alternating with stem final ħ): |   |                               |                                     |
|   | p. 89 kerħa                                       | ‘ugly-F.’                     | <i>kerħa</i>                        |
|   | cf. koroħ   | ‘ugly-pl.’                    | <i>koroh</i>                        |
| c. in intervocalic position (direct object initial h):        |   |                               |                                     |
|   | bdi <sup>e</sup> t yssaqs <sup>i</sup> ēħa        | ‘she began to ask her’        | <i>bdiet issaqsieħa</i>             |
| d. in personal pronouns:                                      |   |                               |                                     |
|   | p. 89 u ħū ma ...                                 | ‘and he did not ...’          | <i>u ħu ma ...</i>                  |
|   | u ħi <sup>a</sup> qaltlu                          | ‘and she told him’            | <i>u ħija qaltlu</i>                |
| e. in adverbs:  |   |                               |                                     |
|   | p. 97 beq <sup>e</sup> u sejr <sup>i</sup> n hekk | ‘they had continued that way’ | <i>baqħu sejr<sup>i</sup>n hekk</i> |

Notice that Stumme (1904: 78) takes note of Bonelli’s retention of *h* but never uses it in his own phonetic transcriptions.

Bonelli transcribes the pharyngeal sonorant by the reversed comma (‘) symbol. It is present in radical positions where it is expected:

- |                                |                               |                     |                   |
|--------------------------------|-------------------------------|---------------------|-------------------|
| (13)                           | a. In first radical position: |                     |                   |
|                                | p. 88 ‘adda                   | ‘he passed’         | <i>għadda</i>     |
|                                | š-‘andek?                     | ‘what do you have?’ | <i>x’għandek?</i> |
|                                | na‘mlu                        | ‘we do’             | <i>nagħmlu</i>    |
|                                | p. 89 ‘ajjat                  | ‘he shouted’        | <i>għajjat</i>    |
| b. In second radical position: |                               |                     |                   |
|                                | p. 88 qa‘at                   | ‘he stayed’         | <i>qagħad</i>     |
|                                | p. 89 we‘da                   | ‘a vow’             | <i>wegħda</i>     |
| c. In third radical position:  |                               |                     |                   |
|                                | p. 88 ma sat‘ouš              | ‘they could not’    | <i>ma setgħux</i> |
|                                | p. 89 sem‘ou                  | ‘they heard’        | <i>semgħu</i>     |

In Bonelli’s contributions, no vowel is transcribed as pharyngealized.

## 4.2 Stumme: Maltesische Studien

Stumme (1904) faithfully reports the dialectal variation between (post)velar *q*, maintained in urban areas, and the glottal realization *ʔ* in countryside dialects. He claims that the sound *h* is “totally lacking” (p. 78). Moreover, none of his informants made a distinction between pharyngeal *ħ* (IPA [ħ]) and velar *h* (IPA [χ]); nor between Arabic *ḥ* (IPA [ħ], transcribed as *ḥ*) and *ḫ* (IPA [χ]). On the other hand, Stumme carefully analyzes vowel pharyngealization in relevant contexts (p. 79).

### 4.2.1 Dialectal variants of *q*

Post-velar stop *q* contrasts with (post)palatal *k* appears in texts from Valetta:

(14) *qalb* ‘heart’ vs. *kelb* ‘dog’

Glottal stop *ʔ* contrasts with (post)palatal *k* in texts from countryside towns:

(15) *ʔalb* vs. *kelb*

Only one *k* in texts from Victoria (Gozo), the contrast being supported by the vowel quality:

(16) *kalb* (*qalb*) vs. *kəlb* (*kelb*)  
cf. *kabdu* for *qabdu* ‘they caught’  
*fok* *fuq* ‘upon’  
*fkar* *fqar* ‘poor-pl.’

In Maltese, the change from *q* to *ʔ* has spread from peripheral towns and villages to Valetta (*il-Belt*) and its suburbs. It has been generalized in the twentieth century. However, in my own fieldwork in the 1980s, I still heard postvelar *q* in the Great Harbour area, and *k* instead of *q* or *ʔ* in Xewkija, a village close to Victoria (Gozo).

It should also be noticed that in Standard Maltese some speakers use *k* for *q* (realized as a glottal stop) for some words; cf. Albert Borg (2011: 27).

### 4.2.2 Reflexes of *h*

“The sound *h* is totally lacking in my texts” Stumme (1904: 78). Its reflexes are:

- (17) a. no direct correspondence (virtual consonant for stress assignment):
- |      |           |                     |                   |
|------|-----------|---------------------|-------------------|
| p. 7 | joqtólom  | ‘he’s killing them’ | <i>joqtolhom</i>  |
|      | fuq-râsom | ‘on their heads’    | <i>fuq rashom</i> |
| p. 9 | î         | ‘she’               | <i>hi</i>         |
- b. a glottal stop:
- |      |           |                         |                 |
|------|-----------|-------------------------|-----------------|
| p. 5 | tara’ómṣ | ‘she does not see them’ | <i>tarahomx</i> |
|------|-----------|-------------------------|-----------------|
- c. *ghajn* in radical position:
- |       |       |           |              |
|-------|-------|-----------|--------------|
| p. 19 | kərʒa | ‘ugly-F.’ | <i>kerha</i> |
|-------|-------|-----------|--------------|
- d. a long or diphthongized vowel:
- |       |          |        |              |
|-------|----------|--------|--------------|
| p. 53 | dəp/də̄p | ‘gold’ | <i>deheb</i> |
|-------|----------|--------|--------------|
- variants: də’ep/də̄ʒep
- e. a glide:
- |       |          |                  |                  |
|-------|----------|------------------|------------------|
| p. 27 | raptûwom | ‘they tied them’ | <i>rabtuhom</i>  |
| p. 47 | idějja   | ‘her two hands’  | <i>idejha</i>    |
| p. 5  | ħallijom | ‘he left them’   | <i>ħalliehom</i> |
- f. pharyngeal *ħ*:
- |      |         |                      |                |
|------|---------|----------------------|----------------|
| p. 9 | íkraḥ  | ‘(the) ugliest’      | <i>ikrah</i>   |
| p. 7 | talbûõħ | ‘they asked him for’ | <i>talbuh</i>  |
| p. 6 | taḥħom | ‘their’              | <i>tagħhom</i> |

Moreover, Stumme notes that English *h* is pronounced *ħ*, e.g. [ħarri] for ‘Harry’.

### 4.2.3 Effect of pharyngeal sonorant ʕ on contiguous vowels

Stumme (1904: 75) describes the sound transcribed by the glyph ʕ (IPA [ʕ]) as “strongest throat pressure sound (arab  $\xi$ )”. If ʕ immediately precedes radical or suffixal *ī* or *ū*, an ‘intrusive’ vowel is inserted; cf. Hall (2006). The intrusive nucleus and the high long vowel form a diphthong. In other terms, the first element of the diphthong does not stand for the vocalization of sonorant /ʕ/ but for the phonologization of the vocalic transition between the pharyngeal sonorant and *ī* or *ū* (examples from Stumme’s first text: *Bočča*, dialect of Valetta):

(18)		Stumme	Gloss	Modern orth.
	tʒeīt	ʃīd-IMPf.3F.SG	‘she says’	<i>tghīd</i>
	tīʒeī	tīʃ-1SG	‘my’	<i>tieghī</i>
	ʒoũda	ʃūd-noun.F.SG	‘(a piece of) wood’	<i>ghūda</i>
	tīʒoũ	tīʃ-3M.SG	‘his’	<i>tieghū</i>
	jisímʒoũ	sema’-IMPf-3PL	‘they hear’	<i>jisimghū</i>

ʒ is obligatorily adjacent to a vowel; thus, the stem-initial vowel is not synco-pated in (19c):

(19)	a.	čáʒaq	noun-collective	‘pebbles’	<i>čaghak</i>
	b.	ʒámel	ʃamel-PF-3M.SG	‘he made’	<i>ghamel</i>
		ʒámlu	ʃamel-PF-3PL	‘they made’	<i>ghamlu</i>
		ʒámlet	ʃamel-PF-3F.SG	‘she made’	<i>ghamlet</i>
		šʒámel	what-ʃamel-PF-3 M.SG	‘What did he make?’	<i>x’ghamel?</i>
	c.	ʒamílt	ʃamel-PF-1SG	‘I made’	<i>ghamilt</i>
		cf. contra	kitib- PF-1SG	‘I wrote’	<i>ktibt</i>

Adjacent to ʒ, a stem or suffixal mid-vowel is more open:

(20)	bʒʒqt	noun	‘far’	<i>boghod</i>
	sémʒet	sema’- PF-3F.SG	‘she heard’	<i>semghet</i>

#### 4.2.4 Pharyngealized vowels

Stumme (1904: 79) describes some vowels as ‘ʒain-retaining’ (*ʒain-haltig*). These vowels, which are noted with a subscribed tilde, keep strong guttural pressure (*starke Kehlpresung*) during their whole length. They stand for ʒ merged with a low or mid vowel (represented by IPA ɔ and ε below):

(21)	šâmel	š + ʃamel-PF-3M.SG	‘what did he make?’	<i>x’ghamel</i>
	jâmel	ʃamel- IMPf-3M.SG	‘he makes’	<i>jaghmel</i>
	nâmlu	ʃamel-IMPf 1PL	‘we make’	<i>naghmlu</i>

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- (22) *milbɔt*      adverbial locution      ‘from far’      *mill-bogħod*  
           *šɔl*            work-noun M.SG      ‘work’            *xogħol*

A word-final stem vowel may be pharyngealized, but never a suffixal vowel:

- (23) *sebɔ* ‘seven’ *sebgha*; cf. contra *sémɜet* (not \**sémɛt*) *semghet* ‘she heard’

### 4.2.5 Comparison with Tunisian Arabic

A few years before his fieldwork in Malta, Stumme (1896) had published a grammar of Tunisian Arabic. Comparing Stumme’s transcriptions for Tunisian Arabic and Maltese is enlightening (Table 10).

Table 10: Comparison between Tunisian Arabic and Maltese

Tunisian Arabic (1896: 9)	Maltese 1904	Gloss
<i>smáʕ</i>	<i>séma sema’</i>	hear-PF.3M.SG
<i>smáʕt</i>	<i>smáʕt smajt</i>	hear-PF.1/2sg
<i>sémʕat</i>	<i>sémʕet semghet</i>	hear-PF.3F.SG
<i>sémʕu</i>	<i>sémʕoʔ semghu</i>	hear-PF.3pl

### 4.2.6 Conclusion

Brame (1972: 60) claims that in modern Maltese a rule of “absolute neutralization” changes the ‘abstract’ sonorant *ʕ* into vowel *a* (cf. below 6.2). Stumme’s transcriptions for Maltese, by contrast with Tunisian Arabic, prove that *ʕ* followed by long *ī* or *ū* triggered the diphthongization of the vowel. Thus, the path of change has not been the vocalization of the guttural sonorant (*ʕ* → *a*) but its deletion in twentieth century Maltese in all contexts (residual idiolectal attestations):

- (24) a. ‘hear-PF.3pl’      *sémʕū* (underlying long final vowel)  
           *ū*-diphthongization *sémʕoʔ*  
           *ʕ*-deletion      *sémoʔ* (deletion of *ʕ* and diphthong phonologization)
- b. ‘make-IMP.1SG’      *naʕmel*  
           *ʕ*-deletion      *nāmel* (compensatory length and pharyngealization)

### 4.3 Pharyngealization in the twentieth century

The reference book published by Aquilina (1959) (*The Structure of Maltese*) was first written before the World War as a Ph.D. thesis submitted at SOAS (School of Oriental and African Studies). The author postulates three sets of vowels (Table 11).

Table 11: Three sets of vowels

Short	Long (unpharyngealized)	Pharyngealized
a	a:	$\text{ʔ}a \sim a^{\text{ʔ}} \sim a^{\text{ʔ}}a:$ $\text{a}$
e	e:	$\text{ʔ}e \sim e^{\text{ʔ}} \sim e^{\text{ʔ}}e:$ $\text{e}$
i	i:	$\text{ʔ}i \sim i^{\text{ʔ}} \sim i^{\text{ʔ}}i:$ $\text{i}$ (dialectal)
o	o:	$\text{ʔ}o \sim o^{\text{ʔ}} \sim o^{\text{ʔ}}o:$ $\text{o}$
u	u:	$\text{ʔ}u \sim u^{\text{ʔ}} \sim u^{\text{ʔ}}u:$ $\text{u}$ (dialectal)

Aquilina, however, adds this important comment:

The above pharyngealized vowels are classified as special vowels to distinguish them from the unpharyngealized ones. Such differentiation is necessary to maintain the phonetic and historical individuality of the two sets; but it must be borne in mind that pharyngealization is so weakened that although it is dialectally perceptible in some of our villages and towns, it is hardly perceptible in others.

Based on his fieldwork in the 1970s, Schabert (1976) analyzed two conservative varieties of Maltese, one from St Julians (in the periphery of Valetta) and the other from the coastal village of Marsaxlokk. Like Aquilina (1959), Schabert (1976: 16) postulates three sets of vowels as in Table 12:

Pharyngealization is realized in the following way: the pharyngealized vowel is phonetically longer than its non-pharyngealized counterpart (even in unstressed position), and during the whole length of the vowel or during a portion of its length the pharynx is slightly constricted.

According to Schabert (1976: 18), it sounds as if a faint  $\text{ʔ}$  slips into part of the vowel. In words which start by a pharyngealized vowel there is no prosthetic glottal stop, but when pharynx constriction occurs in the first part an initial sound like  $[\text{ʔ}a:]$  may be heard. He gives the following examples:



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Table 12: Vowels according to Schabert (1976)

short vowels		pharyngealized vowels		long vowels	
i	u			ī	ū
				ɪ <sup>a</sup>	
	o		ɔ		ō
æ	a	æ̣	ɑ̣	ǣ	ā

- (25) a. Stressed position (glissando towards a centralized non-syllabic vocoid)
- |         |                       |               |                 |
|---------|-----------------------|---------------|-----------------|
| /fæ m/  | [fɛ̣ ɛ̣ m] ~ [fɛ̣ :m] | <i>fehem</i>  | ‘he understood’ |
| /ʃɔ l/  | [ʃɔ̣ ɔ̣ l] ~ [ʃɔ̣ :l] | <i>xogħol</i> | ‘work’          |
| /ʔa d / | [ʔạ ɔ̣ t] ~ [ʔạ :t] | <i>qagħad</i> | ‘he stayed’     |
- b. Unstressed position
- |           |                 |                 |                 |
|-----------|-----------------|-----------------|-----------------|
| /æ líʔi/  | [ɛ̣ ˈlɪɛ̣ʔi]    | <i>għelieqi</i> | ‘fields’        |
| /yoʔɔ d/  | [jɔ̣ʔɔ̣ t]      | <i>joqgħod</i>  | ‘he stays’      |
| /na mlūh/ | [nạ ˈmlụ́ɔ̣ h] | <i>nagħmluh</i> | ‘we do it-M.SG’ |

Schabert’s description is of great interest although not, in my opinion, representative of the present dialectal situation in the urban area in which St Julians is integrated; neither is the idiolect he recorded from Marsaxlokk representative for this village; cf. Puech (1994: text 43 and 44-50) and Azzopardi-Alexander (2011: 235-253). Finally, we shall mention the very careful description of an idiolect spoken in Mtaħleb (Malta) by Vanhove (1991). This idiolect attests the survival of ʔ and illustrates the complex relationship between vowel length and pharyngealization in the context of phonemic ʔ. See also Camilleri & Vanhove (1994) for a phonetic and phonological analysis of the dialect spoken in Mġarr (Malta).

## 5 Gutturals in contemporary Maltese

In phonemic terms, contemporary Maltese includes two laryngeal obstruents: /ʔ/ and /h/; the latter may be expressed by a pharyngeal or postvelar voiceless allophone: [ħ, χ]; cf. Alexander Borg (1997: 259). Vowels are no longer pharyngealized. We will distinguish two stages in contemporary Maltese. In more conservative idiolects, formerly pharyngealized vowels keep some degree of length even in unstressed position. In more innovative idiolects vowel length is maintained in stressed position only:

- |      |       |       |                |                     |
|------|-------|-------|----------------|---------------------|
| (26) | ámel  | ámel  | <i>ghamel</i>  | ‘he did’            |
|      | āmilt | amilt | <i>ghamilt</i> | ‘I/you-sg. did’     |
| (27) | émes  | émes  | <i>hemež</i>   | ‘he fastened’       |
|      | ēmist | emist | <i>hemizt</i>  | ‘I/you-sg fastened’ |

According to Hume et al. (2009: 36-38), length is similar for an underlying long vowel and a short vowel adjacent to *gh* in stressed position:

- |      |        |                 |                      |                   |
|------|--------|-----------------|----------------------|-------------------|
| (28) | táma   | <i>taghma</i>   | ghama-imperf.3F.SG   | ‘she grows blind’ |
|      | táma   | <i>tama</i>     | noun F.SG            | ‘hope’            |
|      | taǰǰa  | <i>taxxa</i>    | noun F.SG            | ‘tax’             |
|      | táǰǰa? | <i>tghaxxaq</i> | ghaxxaq-imperf.3F.SG | ‘she makes happy’ |

According to my own observations and phonetic observations in Hume et al., a short vowel adjacent to *gh* is not lengthened in unstressed position:

- |      |        |                |                   |            |
|------|--------|----------------|-------------------|------------|
| (29) | nǎrbǎt | <i>norbot</i>  | rabat-imperf.1SG  | ‘I tie’    |
|      | nǎbǎt  | <i>nobghod</i> | baghad-IMP.F.1SG  | ‘I hate’   |
| (30) | tálap  | <i>talab</i>   | talab-perf.3.M.SG | ‘he asked’ |
|      | nǎlap  | <i>nilghab</i> | nilghab-IMP.F.1SG | ‘I play’   |

There are, however, other idiolects in which a short vowel adjacent to *gh* is lengthened in this position. Thus, Camilleri (2014: 60) gives /nila:b/ ‘I play’. According to Vanhove (1991), the long vowel attracts word stress, which yields [niláp]. Notice also the following variation:

- |      |                    |                  |                |              |
|------|--------------------|------------------|----------------|--------------|
| (31) | Hume et al. (2009) | Camilleri (2014) |                |              |
|      | [lápt]             | [lápt]           | <i>lghabt</i>  | ‘I played’   |
|      | [láptu]            | [láptu]          | <i>lghabtu</i> | ‘you played’ |

There are two distinct stem pattern classes for ‘h-medial’ verbs (Camilleri 2014: 66; *Korpus Malti v. 3.0* 2016):

- |      |                          |              |                     |              |
|------|--------------------------|--------------|---------------------|--------------|
| (32) | class 1                  | class 2      |                     |              |
|      | a. [fém] ‘he understood’ | <i>fehém</i> | [dér] ‘he appeared’ | <i>deher</i> |
|      | b. [fimt] 1/2 SG         | <i>fhimt</i> | [dért] 1/2 SG       | <i>dhert</i> |

Class 2 perfect conjugation is like that of ‘għ-medial’ verbs, e.g. *xehed* ‘to give evidence’ and *xeghel* ‘to switch on’. Plural imperfect forms, however, are kept distinct; cf. Camilleri (2014: 123).

Hume et al. (2009: 42) evoke the question of a third degree of *phonemic* length. In any case, the actual length of vowels in different contexts depends on several factors, with variation in individual or dialectal speech habits. Main factors are:

1. underlying representation;
2. position in open or closed syllable;
3. word stress position;
4. intonation pattern.

## 6 On the abstractness of phonology: Maltese *ʃ* and *h*

Brame (1972) called his main contribution on Maltese: *On the Abstractness of Phonology: Maltese ʃ*. As shown by this title, the focus was on the pharyngeal sonorant. Prior to analyzing Brame’s arguments, I will refer to David Cohen’s comparison between Jewish Tunis Arabic and Maltese with respect to *ʃ* and *h*. Finally, I will briefly expose the theoretical background on which my proposal for the representation of *ʃ* and *h* is based.

### 6.1 Cohen’s virtual phoneme

The loss of the pharyngeal sonorant *ʃ* and the approximant *h* broke up the unity of morphological paradigms in forms which had either phoneme as a root consonant. Cohen (1966; 1970) compared the Maltese case with that of Tunis, where the loss of phonemic *h* in the Jewish community was compensated by different strategies which maintained the morphophonemic unity of the Arabic dialect spoken in the city by different communities. For Maltese, Cohen (1970: 131) postulated a virtual segment occupying the position of *ʃ* but never realized as such:

The non-articulation of a sound corresponding to graphic signs *għ* and *h* is characteristic of a part of the population. This part is in constant contact with elements of other groups for whom these signs present diverse realizations from mere intervocalic hiatus to the articulation of pharyngeal and laryngeal consonants in some positions. The existence of a phoneme in positions marked in spelling by *għ* and *h* is felt by all people, at least

in a great number of forms. Apparently, the situation is comparable with Jewish Tunis where the non-articulation of phoneme *h* which still exists in the surrounding Muslim dialect maintains the awareness of a sort of virtual phoneme, pure phonic quantity with no defined form, realized in different ways depending on contexts. [my translation].

In her tribute to Cohen's eminent contribution, Vanhove (2016: 6) concludes that

the complementary distribution of the various allophones Cohen proposes is not exhaustive because of the limited documentation he had access to, but is accurate for the Maltese language of the first half of the twentieth century.

## 6.2 Brame's abstract $\text{ʔ}$

Even if the author concedes that "abstract segments and absolute neutralization must be countenanced in linguistic theory", Brame (1972: 60) concludes that the preservation of morphological regularities induces the inclusion of  $\text{ʔ}$  in the underlying sound system for new generations of language learners:

Instead, great pains were taken to demonstrate that the evidence for underlying  $\text{ʔ}$  is in the phonetic data. That is, the child coming to the language-learning situation is capable of inducing  $\text{ʔ}$  on the basis of Maltese phonetics alone. It would be absurd to ascribe historical knowledge to the language learner. The fact that abstract  $\text{ʔ}$  must be postulated in the phonological component of Maltese is of consequence for the ultimate formulation of a natural principle of the type some have recently been interested in developing. First, any such condition will have to allow for phonological segments that never show up on the phonetic surface. Second, the condition will have to allow for rules of absolute neutralization, since apparently one of the rules needed to account for the phonetics of Maltese is of this type. This rule is stated as:

$\text{ʔ} \rightarrow \text{a}$

Among others, this rule will account for the phonetic reflex of  $\text{ʔ}$  observed in the derivations listed [above].

Some data quoted by Brame in support of his analysis are well attested in diachrony but not usual any more. Let us take the example of *imgħadt* [im $\text{ʔ}$ att] 'I

chewed'. Prosthetic *i* was motivated by the initial stem cluster [mʃ]; cf. Brame (1972: 46), Comrie (1986: 14). In contemporary Maltese, the form is simply pronounced [mátt]. Conservative realizations with prosthetic *i* are, however, preserved in some expressions, e.g. *bl-imgħarfa* 'with a spoon'. Alexander Borg (1997: 262) is certainly correct in his overall conclusion:

the generative interpretation of abstract *għajn* may ultimately prove more faithful to historical fact than to the synchrony of M. At all events, the notion that M. speakers perceive an underlying 'pharyngeal segment' *għajn* finds little support in written usage, since the correct assignment of this digraph in written M remains a notorious source of error even among highly literate speakers.

Brame did not investigate *h* reflexes. Logically, the same arguments put forward for *ʃ* lead to including *h* into the underlying sound system as well.

### 6.3 Emptiness in CV Phonology

#### 6.3.1 CV-only Phonology

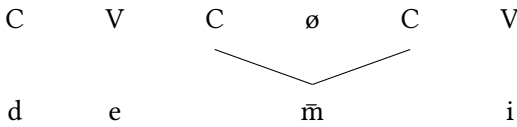
Within the framework of Government Phonology, Lowenstamm (1996) made the radical claim that "syllable structure universally, i.e. regardless of whether the language is templatic or not, reduces to CV." In this model, a Maltese form like *kitbu* 'they wrote' is analyzed as a sequence of three light open syllables, the second of which has an empty nucleus: 'k i t · b u' (the empty nucleus position is here represented by a 'median point'). Words obligatorily start with a C position, and end in a full or empty nucleus, to comply with the CV-only principle.

In other versions, words can start with a V position, or end in a C position; cf. Polgárdi (2012: 111). Independently of Government Phonology, strict C/V alternation may be viewed as an effect of applying the Obligatory Contour Principle (OCP) to syllabic structure. This principle stipulates that, at a given level of structure, adjacent identical elements are prohibited (McCarthy 1986; Odden 1986). In this approach, a sequence of strictly adjacent consonants, like 'C C', or strictly adjacent nuclei, like 'V V' are prohibited. On the other hand, sequences like 'C · C', where the medial position stands for an empty nucleus, and 'V · V', where the medial position stands for an empty consonant, are allowed. Under the OCP application, two adjacent empty positions are also prohibited: a sequence like '\*C · · V' is ill-formed.

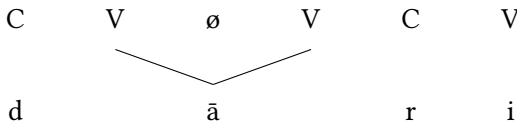
### 6.3.2 Segmental length

In Lowenstamm’s model, a geminate consonant is represented by two C’s straddling an empty nucleus (represented by the zero symbol); conversely, a long vowel is represented by two V’s straddling an empty C-position:

(33) *demmi* ‘my blood’



(34) *dāri* ‘my house’



Alternatively, a long segment may be interpreted as an element {C} or {V} occupying a position and controlling a contiguous empty unit of phonological space; cf. Russo & Ulfsbjorninn (2017). In this view, an empty position precedes the position occupied by the element {C} for geminates; it follows the position occupied by the element {V} for a long vowel:

(35) C V ∅ V V  

d	e	m̄	i
---	---	----	---

(36) C V ∅ C V  

d	ā	r	i
---	---	---	---

The melody of monophthongal long segments occupies the double space of the vertex.

### 6.3.3 Maltese diphthongs in Element Theory

Maltese has two types of diphthongs: The ‘bogus’ diphthongs in (31) are in fact a vowel contiguous to the glide *y* or *w*; the type of diphthong in (34) results from

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melodic *fission* due to an ‘intrusive’ nucleus between the long vowel and a pharyngeal sonorant; on ‘intrusive’ vowels, cf. Hall (2006). The diphthong is an allophonic realization of the long vowel in the presence of /ʕ/ and becomes phonologized when the consonant is lost. When /ū/ or /ī/ are followed by *q* or *h* the long vowel is also perceived as altered and slightly diphthongized; cf. Aquilina (1959: 38, 54) and Borg & Azzopardi (1997: 304, 305). In this context, however, there is no loss of the consonant and, thus, no phonologization of the diphthong.

### 6.3.3.1 a- Sequence nucleus+glide

(37) The vowels *e*, *o*, and *a* merge with glides *y* or *w* to yield a bogus diphthong:

- |    |         |             |          |
|----|---------|-------------|----------|
| a. | s a y f | <i>sajf</i> | ‘summer’ |
|    | b ε y t | <i>bejt</i> | ‘roof’   |
| b. | b ε w s | <i>bews</i> | ‘kisses’ |
|    | d a w l | <i>dawl</i> | ‘light’  |

The syllabic pattern of these forms is CVCC, like in:

(38) ḥ ɔ b z      *ḥobz*      ‘bread’

**6.3.3.2 b- Complex nucleus melodic fission** When *ʕ* immediately precedes a long tense vowel *ī* or *ū*, the long vowel diphthongizes. In (39a) stem initial *ʕ* is preceded by an empty space to avoid an OCP clash with the prefix *t*, and is immediately followed by an underlyingly long nucleus (step 1); the melody of the long vowel splits: The element {A} is copied from the pharyngeal glide to occupy the first space unit, while the element {I} occupies the second space unit (step 2); in (39b) the diphthong is phonologized.

Melodic fission is illustrated by Stumme’s examples where sonorant *ʕ* triggers the diphthongization of the adjacent vowel, i.e. in ‘tʕeɪd’ *tḡhid*-IMPF.3 F.SG ‘she says’ and ‘samʕou’ *semḡhu*-PF.3PL ‘they heard’:

(39) a. Step 1 (etymon)

t	ʕ	ī	d	s	a	m	ʕ	ū
C	C	V	C	C	V	C	C	V
	<u>V</u>		V	V		<u>V</u>	<u>V</u>	
	V		V			C	V	
I		I	I	I	A	U		U
	<u>A</u>				A		<u>A</u>	

b. Step 2: diphthongization

t		ɾ		ej		d		s	a	m	ɾ	ou
C		C	V	C		C	V	C	V	C	V	
		V				V		V		C		
		V				C		V				
I			A	I	I			I	A	U		U
		A									A	

## 7 Phonological interpretation of orthographic *h*

In this contribution, I will overlook the residual role of *h* in stems. Some of the relevant paradigms and alternations are commented in Camilleri (2014: 67). Suffice it to say that, in modern Maltese, stem-*h* is most often assimilated to *gh*, or to *ħ*. My focus will be on the representation of *h* in suffixes.

### 7.1 *h*-initial suffixes

Orthographic *h* behaves as a consonant in object pronouns:

- (40) a. *ha* (or *-hie*): 3F.SG object (35b) *-na* (or *-nie*): 1PL object  
 b. *hom*: 3PL object *-kom*: 2PL object

In (40a) *h* patterns with suffixes starting by a consonant in (40b) with respect to stem structure and stress assignment but has no surface realization:

- (41) a. *kitibha* ‘he recruited her’ [kitiba]  
*kitibna* ‘he recruited us’ [kitibna]  
 b. *kitibhom* ‘he recruited them’ [kitibom]  
*kitibkom* ‘he recruited you-all’ [kitibkom]

If the object pronoun is V-initial, the second stem vowel in an open syllable is deleted:

- (42) a. *kitbek* ‘he recruited you-sg’ [kitbek]  
 b. *kitbu* ‘he recruited him’ [kitbu]

In (42) the second stem nucleus is syncopated in intervocalic position, while a consonant position blocks stem nucleus syncope in (41). An empty position (represented by a median dot) blocks syncope as well in (43b), since the second stem nucleus is not in intervocalic position:



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- (43) a. *kitib·na*  
       cf. *kitib·om*  
       b. *kitib·a*  
           *kitib·om*

The underlying representation of pronouns with *h* in (40a) above is:

- (44) 

<i>h</i>	<i>a</i>	or	<i>h</i>	<i>ie...</i>	<i>h</i>	<i>o</i>	<i>m</i>
·	V		·	V̄	·	V	C
							V
							C
			I			U	U
	A					A	

Notice that in *kitibna* the suffix consonant is separated from the last stem consonant by an empty position, since a sequence ‘CC’ would be an OCP violation. Similarly, the representation of *kitibha* as *\*/k i t i b · · a/*, with two adjacent empty positions, would be an OCP violation. Orthographic *h* occupies a single space unit left empty, i.e. not occupied by either the element {C} or {V}.

In intervocalic position, the empty space unit is occupied by a palatal or labial glide in agreement with the preceding vowel. According to Alexander Borg (1997: 275), the underlying long vowel is shortened in case of glide insertion:

- (45) a. *k·sī·a*                    [k s í y a]            *ksieha*            ‘he covered it-F.SG’  
       b. *y i š · t · r ū · o m*    [yištrúwom]        *jixtruhom*        ‘they buy them’

Yet, Borg quotes dialectal forms in which the long vowel and the inserted glide yield a geminate glide; cf. Puech (1994: 87):

- (46) *t·rīdū·im*            [tridúwwim]        *triduhim*        ‘you-PL want them’

If both vowels are [nonhigh] they are fused (Alexander Borg 1997: 276):

- (47) a. *š·t·rā·a*                    [štrá]                    *xtraha*            ‘he bought it-F.SG’  
   [štrá]  
       b. *š·t·rā·om*                [štrá.om]                *xtrahom*            ‘he bought them’  
   [štróm]

In the mirror sequence ‘V ·  $\bar{V}$ ’, due to word-stress shift, glide insertion is optional:

- (48) š · t · r ā · ī l i      [štra.íli]      *xtrahieli*      ‘he bought it for me’  
   [štrayíli]

## 7.2 Word-final *h*

When the 3M.SG object suffix is immediately preceded by a vowel and is word-final (or only followed by enclitic negation *š*), its allomorphic realization is *ħ*:

- (49) *kitbuh*                      ‘they wrote it-M’      [k i t b ú ħ]  
         *ktibnieh*                    ‘we wrote it-M’      [k t i b n í ħ]

This applies to stems with etymological *h* in word-final position:

- (50) *kerah*                      ‘ugly-M.SG’              [k é r a ħ]      cf. *kerha* ‘ugly-F.SG’

## 7.3 Conclusion

Orthographic *h* stands for a virtual consonant, i.e. occupies a C-position whose vertex is empty. Its underlying presence is revealed by its effect on the syllabic structure and stress assignment, or by a glide preventing hiatus. In word-final position (disregarding the negative enclitic) it is represented by an allomorph *ħ*, an instance of phonologically conditioned allomorphy.

# 8 Phonological interpretation of the digraph *gh*

The sonorants *ʃ* and *ɣ*, represented in modern spelling by the digraph *gh*, are etymological in many roots as first, second, or third radical. My focus will be on diachronic changes in stems whose one radical was *ʃ* or *ɣ*. I identify four stages, which synchronically correspond to overlapping lengths.

## 8.1 *Għ* adjacent to a (mid)low vowel

In premodern Maltese, *ʃ* and *ɣ* correspond to two distinct sonorants. In most dialects, however, they have been merged. The examples below are drawn from the verb *ghamel* ‘to make’ for two forms in the perfect (3rd M.SG and 1/2 sg). Concerning the quality *i* or *e* of the second stem vowel, suffice it to say that it depends on contexts and dialects; cf. *ghamel* ‘he made’ vs. *ghamilt* ‘I made’:

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(51) **Lect A** (lost in contemporary Maltese)

ʔ	á	m	e	l	ʔ	a	m	í	l	t
C	V	C	V	C	C	V	C	V	C	· C
<u>V</u>		<u>V</u>		<u>V</u>	<u>V</u>		<u>V</u>		<u>V</u>	
		C					C			
		U	I	I			U	I	I	I
<u>A</u>	A		A		<u>A</u>	A				

The loss of articulation of the sonorant is compensated by vowel pharyngealization and length. The initial C-position is represented by an empty vertex associated to a headed element {A}. This position is merged with the adjacent (mid)low nucleus. Pharyngealization results from the embedding of the pharyngeal sonorant in the vowel: it is marked by the element {C} in dependent position under the vertex {V}. Length is kept in the pharyngealized vowel even if it is unstressed:

(52) **Lect B** (conservative lect; cf. Aquilina 1959, Schabert 1976)

á	m	e	l	ā	m	í	l	t		
·	<u>V</u>	C	V	C	·	<u>V</u>	C	V	C	· C
	C	<u>V</u>		<u>V</u>		C	<u>V</u>		<u>V</u>	
		C					C			
		U	I	I			U	I	I	I
<u>A</u>	A		A		<u>A</u>	A				

Pharyngealization has been lost but the vowel retains length, whether it is stressed or not. The paradigm of stems with initial *gh* is similar to that of stems with initial *h*, like *hemež* ‘to pin’; cf. Camilleri (2014: 19). The initial underlying position is represented by an empty vertex associated to a headless melodic element {A}. In being merged with the empty position, this nucleus remains ‘long’ in all positions:

(53) **Lect C**

á	m	e	l	ā	m	í	l	t
<u>V</u>	C	V	C	V	C	V	C	· C
C	<u>V</u>		<u>V</u>	C	<u>V</u>		<u>V</u>	
	C		C		C			
	U	I	I		U	I	I	I
A		A		A				

The initial nucleus is long if it is stressed, and short if stress migrates rightward. Thus, the underlying representation is restructured. It starts with an underlying long nucleus which behaves as an ordinary long nucleus with respect to length:

(54) **Lect D**

á	m	e	l		a	m	í	l	t
V̄	C	V	C		V	C	V	C	· C
	V		V		V		V		
	C				C				
	U	I	I		U	I	I		I
A		A			A				

In the nineteenth century, the conservative lects A and B overlapped; cf. Bonelli (1897; 1898; 1900), Stumme (1904). Lects B and C are well documented in the twentieth century; cf. Aquilina (1959), Schabert (1976), Vanhove (1991). Conservative lect C and innovative lect D are representative of contemporary Maltese.

### 8.2 *Għ* adjacent to an underlying high vowel

When initial *għ* precedes the vowels *ī* or *ū*, a (pharyngealized) diphthong occurred in most dialects, including Standard Maltese:

- (55) a. [áɪ̯d]      *għid*      ‘(religious) feast’      *għ* stands for etymological ʃ  
           [záɪ̯r]      *zghir*      ‘small’      y
- b. [áɪ̯d]      *għud*      ‘wooden hook’      *għ* stands for etymological ʃ  
           [áɪ̯l]      *għul*      ‘ogre’      y

The diphthong is kept in internal position:

- (56) a. [záɪ̯ra]      *zghira*      ‘small-F.SG’  
       b. [áɪ̯da]      *għuda*      ‘(piece of) wood-F.SG’

The quality of the nucleus in the diphthong is variable: *aĩ~eĩ~oĩ* for *għī*, *eũ~aũ~oũ* for *għū*; cf. Aquilina (1959: 54), Alexander Borg (1978: 73), Alexander Borg (1997: 270), Borg & Azzopardi (1997: 299). Variations are observed between rural dialects, with several intervening factors, but also within Standard Maltese. Notice also the absence of diphthongization triggered by *għ* in the dialectal area of the Grand Harbour. All realizations below are attested for *zghir* ‘small-M.SG’:

- (57) a. [zyáɪ̯r], [zoɪ̯r] (in Gozo)  
       b. [zəɪ̯r], [zeɪ̯r], [zeɪ̯r], [zɪ̯r] (in the Grand Harbour)

### 8.3 Digraph *gh* followed by *h*-suffix

Concerning *gh* as third radical, if the stem is followed by an object suffix starting with *-h*, the sequence ‘*gh-h*’ is realized as [h̥h̥]:

- (58) a. *bela'* [béla] ‘he threw’  
 b. *belagh̥ha* [beláh̥ha] ‘he threw it’

It should also be noticed that there are innovations in inflections, even more so in the language of young people. For example, Fabri (2011: 99):

- (59) a. *raha* [rá ] ‘he saw her’  
 b. [rah̥ha] on the model of (59b)

### 8.4 Conclusion

In diachrony, the main reflexes corresponding to etymological guttural sonorants are: vowel diphthongization and/or pharyngealization, lengthening, and allomorphic *h̥*. In the synchrony of contemporary Maltese, I claim, using the same terms as Brame, that on the basis of Maltese phonetics and morpho-phonemic patterns, the child coming to the language-learning situation is capable of inducing underlying stems that include an empty vertex associated to the melodic element {A}:

- in position of first radical; cf. *ghamel*:

·	V	C	V	C
A	A			

- in position of second radical; cf. *lagħab*:

C	V	·	V	C
	A	A	A	

- in position of third radical; cf. *sema'*:

C	V	C	V	·
			A	A

Applicable phonological processes are fusion, diphthongization and deletion. Other cases are accounted for by (phonologically-conditioned) suppletive allomorphy.

## 9 Representation of modern Maltese consonants

Tables 13 and 14 below give the inventory of contemporary Maltese consonants. Compared to the inventory in Tables 1 and 2, there is on the one hand the loss of emphatic and guttural consonants, and, on the other hand, the introduction of new phonemes, due to massive borrowings from Sicilian, Italian and, nowadays, from English; cf. Mifsud (1995). Concerning *ħ*, Borg & Azzopardi (1997: 301) state:

Orthographic *ħ* always corresponds to /h/; orthographic *għ* and *ħ* correspond to /h/ in word final position or when they occur together (orthographic *għ + ħ*). /h/ is articulated as a convexed (central) post-palatal, velar, glottal or pharyngeal voiceless fricative. Its place of articulation varies according to the vocalic context that follows it. However, partially (but often fully) voiced when it precedes voiced obstruents but does not occur in opposition to a voiced velar or post-velar fricative.

Table 13: Obstruents in Modern Maltese

<i>Segment</i>	<b>p b</b>	<b>f v</b>	<b>t d</b>	<b>s z</b>	<b>ts dz</b>	<b>š ž</b>	<b>ʃ ʒ</b>	<b>k g</b>	<b>ħ ʔ</b>
	C C	<u>C</u> <u>C</u>	C C	<u>C</u> <u>C</u>	<u>C</u> <u>C</u>	<u>C</u> <u>C</u>	<u>C</u> <u>C</u>	C C	<u>C</u> <u>C</u>
<i>Structure</i>		V V		V V		V V			V
	V	V	V	V	C V	V	C V	V	C C
<i>Melody</i>	U U	U U	I I	I I	I I	<u>I</u> <u>I</u>	<u>I</u> <u>I</u>		A A

Table 14: Sonorants

	<b>m</b>	<b>n</b>	<b>l</b>	<b>r</b>	<b>y</b>	<b>w</b>
	C	C	C	C	C	C
<i>Structure</i>	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>
	C	C				
<i>Melody</i>	U	I	I	I	<u>I</u>	<u>U</u>
				A		

## 2 Loss of emphatic and guttural consonants

I repeat for convenience the representation of major categories given in §2.2 in Table 15.

Table 15: Representation of major categories (repeated)

Stops		Fricatives		Sonorants	
<i>weak</i>	<i>strong</i>	<i>weak</i>	<i>strong</i>	<i>weak</i>	<i>strong</i>
C	<u>C</u>	C	<u>C</u>	C	
		V	<u>V</u>	<u>V</u>	
(C or V)		(C or V)		(V)	C
Labials	(Denti)alveolar	Post-alveolars	Palato-velar	Guttural	
<i>Melody</i> U	I	<u>I</u>	none	A	

## 10 Conclusion

The loss of emphatic consonants in postmedieval Maltese transferred the burden of maintaining lexical contrasts to stem vowels only. Four centuries later, the loss of guttural consonants broke up regular morphophonemic alternations, inducing opacity in the sound pattern. In other words, there has been a trade-off between ‘less’ on the phonological side and ‘more’ on the morpho-phonological side. Until the (post)medieval stage the natural class of emphatic and guttural consonants was characterized by the element {A}. In pre-modern Maltese, in which *h* was already on its way out and *q* had not yet been replaced by a glottal stop, the narrow ‘guttural’ class was characterized by {A}. This class extended from (post)velars to pharyngeal consonants. In modern Maltese, only voiceless pharyngeal *ħ* and glottal stop *ʔ* retain the element {A} in their representation. A further step in the sound pattern shift tends to favor more urban laryngeal *h* over more rural pharyngeal *ħ* as the main allophone for the ‘guttural’ fricative.

Using the CV framework, I argued that the etymological laryngeal approximant *h* must be analyzed as an empty C-position: its phonotactic behavior is that of a consonant with respect to syllabic structure and stress, but it has no autonomous realization. In some contexts, however, it is directly represented by a glide in intervocalic position, or by the voiceless guttural fricative in word-final position. An empty vertex hosting the melodic element {A} is the direct reflex of former guttural sonorants, indirectly expressed by pharyngealizing and

lengthening effects on adjacent vowels. Once pharyngealization has been lost in contemporary Maltese, it is no longer justified to maintain two different underlying representations corresponding to orthographic *h* and *gh*. The sound pattern only requires that underlying representations may include a content-empty unit of phonological space. Surface forms are generated by regular phonological processes, or phonologically-conditioned allomorphy. In Brame's terms, children "coming to the language-learning situation" are endowed by UG with the capacity of inducing the role of empty consonants in the sound pattern they acquire. Yet, some regularities are of an allomorphic rather than a phonological nature. Thus, canonical paradigm acquisition is also necessary in the learning process.

I would like to end this contribution by extending the phonological predictions made by Fabri (2011: 99):

Bringing in the acquisition perspective once again, another observation is relevant in this context. A diary of language development of my own son, Noah, shows clearly that he often omitted the glottal stop for quite a long time during his acquisition phase. Moreover, even when he learnt how to write at school, he would systematically omit the letter 'q', which represents the glottal, thus implying that he was not even aware of its occurrence. It is, therefore, not implausible to speculate that one way in which Maltese could change is the occurrence of the glottal stop, a change that also affects its phonemic status within the phonological system.

If Noah's children induce a sound pattern without any 'guttural' consonant characterized by the melodic element {A}, the millenary cycle of transferring guttural load from consonants to vowels will have been completed.

## Abbreviations

PF	Perfect	M	Masculine
IMPF	Imperfect	F	Feminine
IMPER	Imperative	SG	Singular
PP	Past participle	PL	Plural
1, 2, 3	1st, 2nd, 3rd person	Obj	(suffixed) Object pronoun



## Appendix: Diachronic changes in Maltese gutturals

Table 16: Diachronic changes in Maltese gutturals

Pre-modern Maltese					
i	k/q <sup>1</sup>	χ ħ	h~∅	ɣ <sup>2</sup> ʕ	Agius de Soldanis (1750)
ii	q	χ~ħ	h	ɣ~ʕ	Vassalli (1796; 1827)
Modern Maltese					
iii	q/ʔ <sup>3</sup>	ħ	h~∅ '~∅	ʕ ʕ	Bonelli (1897; 1900) Stumme (1904); Saada (1986) <sup>4</sup>
iv	ʔ	ħ		ɣ A  <sup>5</sup>	Aquilina 1959
				ʕ A ~ Ā  <sup>6</sup>	Schabert (1976)
v	ʔ	ħ		ʕ Ā ~ Ā	Vanhove (1991) Cohen (1966; 1970)
				Ā/A  <sup>8</sup>	Aquilina & Isserlin (1981) <sup>7</sup> Puech (1994)
				glide~∅ <sup>10</sup>	Ā/A
Contemporary Maltese					
vi	ʔ	ħ			Alexander Borg (1997); Borg & Azzopardi (1997); Hume et al. (2009)
vii		h <sup>9</sup>			
	ʔ	h			

## Notes to Table

<sup>1</sup> Uvular *q* alternates with retracted *k̠* before a [back] vowel. Velar *k* in this environment is still attested in Xewkija (Gozo); e.g. [k̠alp] for *qalb* ‘moon’ vs. [kælp] for *kelb* ‘dog’.

<sup>2</sup> Postvelar *ɣ* is still attested for older speakers in some Gozitan villages (Għarb, Qala); e.g. [ɣaldʔ, ɣlbʔt] for *għalaq, għalaqt*, ‘he / I closed’.

<sup>3</sup> Postvelar *q* is still attested, at least for older speakers, in the Grand Harbour (Malta) and Gozo (Rabat). Phonemic ʔ is distinct to the optional glottal prosthetic onset in V-initial words..

<sup>4</sup> Maltese spoken in Tunisia by French citizens from Maltese families until the 1950s.

<sup>5</sup> The author postulates a set of mid- or low pharyngealized vowels (p. 18). These vowels are preceded or followed by the symbol ɣ, corresponding to orthographic *gh* or *h*. The Symbol |A| refers to mid or low vowels whose phonological expression includes element {A}.

<sup>6</sup> Schabert (1976: 19-20) contrasts the mid/low long vowels [ā ē ɔ] with the allophones [ā̄ ē̄ ɔ̄] of pharyngealized vowels; the two dialects described by Schabert are conservative.

<sup>7</sup> Aquilina & Isserlin (1981) “cannot rule out that pharyngealization may actually occur still in Gozitan dialects” (p. 137), but “encountered no clear instances of ‘pharyngealized’ vowels near a no longer pronounced /ʕ/” (p. 114).

<sup>8</sup> At this stage, no pharyngealization, but variable length due to several factors.

<sup>9</sup> Allophones of /h/ are [h, ħ, χ], depending on contexts and speech habits. In urban Maltese, the pharyngeal articulation is less valued than the laryngeal one.

<sup>10</sup> In general, the reflex of etymological *h* is zero; e.g. [nifmu] *nifhmu* ‘we understand’. Maltese avoids hiatus by inserting a homorganic glide or by fusing two [nonhigh] vowels. In some dialects proto-*h* has been assimilated to *ħ*; cf. *fehēm*: [fēm] vs. [fēħem].

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