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Word-Final Obstruent Devoicing in Maltese: Inherited, Internal Development or Contact-Induced?

Abstract

Maltese is a peripheral dialect of Arabic heavily influenced by Sicilian and Italian (see *e.g.* Krier 1976). Maltese is believed by some to be an offshoot of Sicilian Arabic, but this is subject to debate in the literature (see Isserlin 1977; Brincat 1995; Agius 1996; La Rosa 2014; Avram forthcoming). A characteristic of Maltese phonology is the devoicing of obstruents in word-final position (Cohen 1966; Borg 1975, 1997b). The present paper looks into the possible origins of this phonological rule, *i.e.* whether it may have been inherited from Sicilian Arabic, whether it is the outcome of an internal development or whether it is a change triggered by contact with Sicilian and Italian. The evidence examined includes transcriptions of personal names and place-names in Greek and Latin documents (see *e.g.* Cusa 1868; Caracausi 1983; Avram 2012, 2016, forthcoming), the earliest texts in Maltese, and early Arabic loanwords in Sicilian (De Gregorio & Seybold 1903). Also discussed are insights provided by research on language contacts (see *e.g.* Thomason & Kaufman 1988) and on second language phonology (see *e.g.* Flege & Davidian 1984; Fullana & Mora 2009). It is suggested that, as in other peripheral dialects of Arabic, word-final obstruent devoicing in Maltese is a contact-induced change.

Keywords: Maltese, contact linguistics, obstruents, sound change, devoicing, Maltese dialects.

Introduction

Maltese is a peripheral dialect of Arabic heavily influenced by Sicilian and Italian (see *e.g.* Krier 1976). Maltese is believed by some to be an offshoot of Sicilian Arabic, but this is a matter of some dispute in the literature (see Isserlin 1977; Brincat 1995; Agius 1996; La Rosa 2014; Avram forthcoming).

As is well known, a characteristic of the phonology of Modern Maltese is the devoicing of obstruents in word-final position. In a survey of synchronic and diachronic aspects of the phonological system of Maltese, Cohen (1966: 13) mentions "une neutralization générale dans la langue de la corrélation de sonorité à la finale absolue." In his analysis of Maltese morphophonemics, Borg (1975: 19) writes that "all final voiced obstruents occurring in underlying forms are phonetically realized as voiceless segments." Word-final obstruent devoicing in Modern Maltese is illustrated by examples such as the following:

(1)
 a. [bi:**p**] 'door' vs. [bi**b**i:n] 'doors' (Borg 1975: 19)
 b. [mar**t**] 'sickness' vs. [mar**d**a] 'a sickness' (Borg 1975: 19)
 c. [gri:**k**] 'Greek' vs. [gri:**g**i] 'Greeks' (Borg 1975: 19)
 d. [azi:**s**] 'dear M.' vs. [azi:**z**a] 'dear F.' (Borg 1975: 19)
 e. [hʤi:**č**] 'glass' vs. [hʤi:**ʤ**a] 'a piece of glass' (Borg 1975: 20)

The same point is made in an overview of Maltese phonology by Borg (1997b: 250), who states that "the voicing opposition [is] neutralized in prejunctural position […] where voicing contrasts are normally restricted to underlying representations."

The aim of the present paper is to identify the origin of word-final obstruent devoicing in Maltese, by examining the following possibilities: (i) it is inherited from Sicilian Arabic; (ii) it is the outcome of an internal development; (iii) it is triggered by contact with Sicilian and Italian.

The paper is structured as follows. Section 1 is concerned with word-final obstruent devoicing in Sicilian Arabic and Maltese. Section 2 illustrates word-final obstruent devoicing in peripheral Arabic dialects. Section 3 proposes an account of the emergence in Maltese of the rule of word-final obstruent devoicing. Section 4 summarizes the findings.

All examples appear in the orthography or system of transcription used in the sources and include the original translation.

1. Word-final obstruent devoicing in Sicilian Arabic and Maltese

1.1. Sicilian Arabic

As noted by Isserlin (1977: 24), "devoicing […] may have occurred at least sporadically" in Sicilian Arabic. A number of other authors comment on the devoicing of specific obstruents. Lentin (2007: 78), for instance, writes that "*/d/ était souvent réalisée comme une sourde." La Rosa (2010: 60) mentions the occurrence of "quelques cas d'assourdissement de /ḍ/ > /ṭ/ […] de /d/ > /t/, et de /b/ > /p/." More recently, La Rosa (2014: 57) states that "le consonanti *bā* et *dāl* possono essere desonorizzate."

Most of the evidence for the devoicing in Sicilian Arabic of word-final obstruents comes from notarial documents (such as contracts or cadastral surveys) in Greek and Latin. What follows is a brief overview of the currently available evidence of word-final obstruent devoicing in Sicilian Arabic.

In Greek documents, */-b/ is transcribed with <π> in surnames:

(2)

    a. *Ḥāǧi**b** > χάτζε**π** (Cusa 1868: 135)

    b. *Šāri**b** > σέρι**π** (Cusa 1868: 475)

However, <π> is extremely frequently used to transcribe */b/ in various phonological environments, in alternation with <β / б> or <πβ / πб> (see also Caracausi 1983: 57; Metcalfe 1999: 101; La Rosa 2014: 57). In Latin texts */-b/ is only very rarely transcribed with <p> in place-names:

(3) *dar**b** dār at-tīs > Dar**p**tarattis* 'vicolo della casa dello scemo' (Caracausi 1983: 208, fn. 227)

With respect to */-d/, Caracausi (1983: 58) observes that "è però frequente, specialmente in posizione originariamente finale l'uso di *t*." Similarly, Metcalfe (1999: 100) concludes that "there is a significantly stronger overall tendency for *dāl*-s to be written as *tau* in the Greek in word final positions." Indeed, /-d/ is transcribed with <τ> or <t> in surnames:

(4)

    a. *Aḥma**d** > άχμε**τ**[1] (Cusa 1868, *passim*)

    b. *Muḥamma**d** > μουχάμμου**τ**[2] (Cusa 1868: 3)

    c. *Ṣamū**d** > σαμού**τ** (Cusa 1868: 135)

    d. *Ḥammū**d** > Hamu**t** 1136 (Metcalfe 1999: 75)

    e. *ʕab**d** l-Sayyi**d** > Abdessei**t** 1136 (Metcalfe 1999: 75)

Devoicing of */-d/ is also attested in place-names, as shown by the transcriptions with <τ> or <t>:

(5)

    a. *Misī**d**[3] > μισί**τ** 1153 (Cusa 1868: 31)

    b. *ben ḥamū**d** > benhamu**t** 1182 (Cusa 1868: 183)

    c. *Ġār Bū Ǧāri**d** > garbuiera**t** 1182 (Cusa 1868: 195)

    d. *dar**b** al-ʿabī**d** > darbilhabi**t** 'vicolo degli schiavi' 1254 (Caracausi 1983: 208)

Similarly, */-d/ transcribed with <τ> or <t> in Arabic loanwords in Sicilian:

(6)

    a. *qāʔi**d** > Gay**t**us 'commander' 1114 (Caracausi 1983: 238)

    b. *qāʔi**d** > κάι**τ**ον 'commander' 1130 (Cusa 1868: 48)

    c. *marqa**d** > marca**t**os 'sheepfold' 1285 (Caracausi 1983: 280)

Another obstruent which undergoes devoicing in word-final position is */-z/. In surnames it is occasionally transcribed with <ç>:

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[1]   All occurrences in Cusa (1868).

[2]   The spelling with final <τ> is by far the most frequent one in Cusa (1868).

[3]   The Maghrebian variant of *masǧid* 'mosque' (Caracausi 1987–1988: 22; Lentin 2007: 77).

(7) *al-Kandūz > ελκενδούς (Cusa 1868: 170)

Further evidence of the devoicing of */-z/ is provided by transcriptions with <s> in place-names occurring in Latin documents:

(8)
 a. *Markaz > Merche**s** (Caracausi 1983: 73)
 b. *Manzil Kharrāz > m**e**nzelcharre**s** 1182 (Cusa 1868: 191)
 c. *ʕazāz > aze**s** 1182 (Cusa 1868: 192)
 d. *raḥal al-Ǧauz > rahalygeu**s** 1182 (Cusa 1868: 193)

Devoicing of */-ḍ/ is rather poorly attested, in spellings with <ṭ> in Arabic documents, as in (9a), and in transcriptions with <t> in place-names mentioned in Greek texts, as in (9b):

(9)
 a. *rabaḍ > rabaṭ 'outskirts' (La Rosa 2014: 69)
 b. *al-Aḥwāḍ > λαχουάτ 'cisterns' (Caracausi 1983: 114, fn. 166)

Finally, devoicing of */-ẓ/ is illustrated by (at least) one example – a surname occurring in a Greek document (see also Agius 1996: 416; La Rosa 2014: 69) – in which it is transcribed with <τ>:

(10) al-Mulaffaẓ > μουλάφατ[4] (Cusa 1868: 276)

To sum up, */-b/, */-d/, */-ḍ/, */-z/ and */-ẓ/ appear to undergo devoicing in Sicilian Arabic, but there are considerable differences in the frequency with which these five obstruents are affected. While the evidence for the devoicing of */-b/ is inconclusive, this accords with Blevins' (2004: 106–107) observation that cross-linguistically "phonetic devoicing will be most common in velar consonants, less common in coronal consonants, and less common still in labial consonants."

1.2. Maltese

The earliest known Maltese text is Pieru Caxaru's *Cantilena* (c. 1450). As shown by Cohen and Vanhove (1991: 181), "la neutralization sourde/sonore en finale au profit de la sourde […] n'est pas attestée dans la Cantilène."

The examination of 15th- and early 16th-century proper names recorded in notarial documents (see also Avram 2012: 99–101, 2016: 50–52, forthcoming) brings to light extremely rare cases of obstruents devoiced in word-final position. For instance, */-d/ is transcribed with <t> in the following surname:

(11) *Muḥamma**d** > Muhame**t** 1445 (Fiorini 1987–1988: 106)

Also, */-z/ is transcribed with <s> in the surname below:

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4   Where <τ> reflects the last stage in the developments */ẓ/ > /ḍ/ > /t/.

(12) *ˁağūz > aius 1480s (Wettinger 1968: 30)

The same transcription of */-z/ is also found in a place-name:

(13) *maˁaz > ilmohos 'the goats' 1523 (Wettinger 1983: 34)

Note, however, that in the forms in (12)–(13) <s> may stand for [z], since <z> would represent [ts] or [dz].

In fact, obvious cases of word-final obstruent devoicing are first attested in 1588, in Megiser's word-list (see Cowan 1964; Avram forthcoming):

(14)
 a. *Chops* 'Brodt' (Megiser 1610: 10), *cf.* Ar. *ḫubz*
 b. *Embit* 'Wein' (Megiser 1610: 10), *cf.* Ar. *nabīḏ*
 c. *Belt* 'Stadt' (Megiser 1610: 11), *cf.* Ar. *balad*
 d. *Tajep* 'Schöne heutere Zeit' (Megiser 1610: 12), *cf.* Ar. *ṭayyib*
 e. *Guart* 'Rosen' (Megiser 1610: 12), *cf.* Ar. *ward*
 f. *Ecnep* 'Trauben' (Megiser 1610: 12), *cf.* Ar. *ˁinab*
 g. *Quachat* 'Eins' (Megiser 1610: 13), *cf.* Ar. *wāḥid*

On the other hand, forms with word-final voiced obstruents are still found in Megiser's word-list:

(15)
 a. *Veheb* 'Gold' (Megiser 1610: 11), *cf.* Ar. *ḏahab*
 b. *Chtieb* 'Buch' (Megiser 1610: 11), *cf.* Ar. *kitāb*
 c. *Kelb* 'Hund' (Megiser 1610: 11), *cf.* Ar. *kalb*

The same situation holds for later, 17th-century records of Maltese. Both devoiced and voiced obstruents occur word-finally in proper names:

(16)
 a. *Mihammet* 1632 (Wettinger 1983: 40), *cf.* Ar. *Muḥammad*
 b. *Mitahlep* (Abela 1647: 65), *cf.* Ar. √*ḥlb*

(17) *Vyed el Charrub* (Abela 1647: 73), *cf.* Ar. *wād-* 'valley', *ḫarrūb* 'locust'

Philip Skippon's word-list (1664) contains very few instances of word-final devoiced obstruents:

(18)
 a. *tachsep* 'Cogitare' (Cachia 2000: 37), *cf.* Ar. *taḥsub* 'you reckon'
 b. *raat* 'Tonitru' (Cachia 2000: 34), *cf.* Ar. *raˁad* 'to thunder'

The overwhelming majority of the relevant forms listed by Skippon (1664) exhibit word-final voiced obstruents:

(19)
    a. *chatab* 'Lignum' (Cachia 2000: 34), *cf.* Ar. *ḥaṭab* 'firewood'
    b. *chadīd* 'Ferrum' (Cachia 2000: 40), *cf.* Ar. *ḥadīd*

Gian Francesco Bonamico's *Sonnet* (1672) also includes instances of both word-final devoiced obstruents, as in (20), and word-final voiced obstruents, as in (21):

(20)
    a. *art* 'earth' (Cachia 2000: 18), *cf.* Ar. *ʔarḍ*
    b. *bart* 'cold' (Cachia 2000: 18), *cf.* Ar. *bard*

(21)
    a. *schab* 'clouds' (Cachia 2000: 18), *cf.* Ar. *saḥāb*
    b. *cqalb* 'heart' (Cachia 2000: 18), *cf.* Ar. *qalb*

Consider next 18th-century attestations of Maltese. Some of the forms in the short word-list in Maius (1718) are illustrative of word-final devoicing of obstruents, as in (22), while others, as in (23) show that voiced obstruents still appear in word-final position:

(22)
    a. *it* 'manus' (Maius 1718: 23), *cf.* Ar. *yad*
    b. *Hops* 'panis' (Maius 1718: 25), *cf.* Ar. *ḫubz*

(23)
    a. *Bieb* 'portae nomen est' (Maius 1718: 23), *cf.* Ar. *bāb*
    b. *Deeb* 'aurum' (Maius 1718: 22), *cf.* Ar. *ḏahab*
    c. *taieb* ['good'] (Maius 1718: 22), *cf.* Ar. *ṭayyib*

The vocabulary and grammar of Maltese by the marquis of Sentenat, a manuscript in Catalan dating from around the half of the 18th century, contains a relatively large number of forms relevant to the fate of word-final obstruents. These are almost equally divided between forms with devoiced and others with voiced obstruents in word-final position, illustrated in (24) and (25) respectively:

(24)
    a. *bart* 'fret' (Queraltó Bartrès 2003: 29), *cf.* Ar. *bard*
    b. *hhhatap* 'llenya' (Queraltó Bartrès 2003: 32), *cf.* Ar. *ḥaṭab* 'firewood'
    c. *hhops* 'pa' (Queraltó Bartrès 2003: 35), *cf.* Ar. *ḫubz*
    d. *marrit* 'malalt' (Queraltó Bartrès 2003: 32), *cf.* Ar. *marīḍ*

(25)

    a. *bieb* 'porta' (Queraltó Bartrès 2003: 37), *cf.* Ar. *bāb*

    b. *kalb* 'cor' (Queraltó Bartrès 2003: 25), *cf.* Ar. *qalb*

    c. *dhehhheb* 'or' (Queraltó Bartrès 2003: 35), *cf.* Ar. *ḏahab*

    d. *taijeb* 'bo' (Queraltó Bartrès 2003: 23), *cf.* Ar. *ṭayyib*

Several forms listed by de Soldanis (1750) illustrate devoicing of obstruents in word-final position. These include the following:

(26)

    a. *ḏeep* 'oro' (de Soldanis 1750: 129), *cf.* Ar. *ḏahab*

    b. *it* 'mano' (de Soldanis 1750: 147), *cf.* Ar. *yad*

    c. *Hhops* 'pane' (de Soldanis 1750: 146), *cf.* Ar. *ḫubz*

On the other hand, voiced obstruents are still attested in word-final position:

(27)

    a. *Ghageb* 'ammirazione' (de Soldanis 1750: 185), *cf.* Ar. *ʕaǧab*

    b. *gdid* 'nuovo' (de Soldanis 1750: 114), *cf.* Ar. *ǧadīd*

Significantly, de Soldanis (1750) explicitly mentions cases of variation. Consider the following examples of alternative pronunciations:

(28)

    a. *Bieb* o *Biep* 'porta' (de Soldanis 1750: 124), *cf.* Ar. *bāb*

    b. *tajeb*, o *tajep* 'bene' (de Soldanis 1750: 80), *cf.* Ar. *ṭayyib*

    c. *Rmièt*, *Ramed* 'cenere' (de Soldanis 1750: 172), *cf.* Ar. *ramād*

It is only at the end of the 18th century that what amounts to the first categorical statement of the rule of word-final obstruent devoicing is formulated by Vassalli (1796). With respect to "la B e la D," Vassalli (1796: XXXII) specifies that "in fine della parola […] la prima pronunziasi P, e T la seconda." In a later work, similar specifications are made about several obstruents: "la lettera Ajn [= ʕ]," which "essendo in fine di voce, si profferirà come **ħ**[5] [= ħ]" (Vassalli 1827: 5); "il G [= ʤ]," which "in fine della parola suona c [= ʧ]" (Vassalli 1827: 7); "Gkho [= ɣ]," which "può mutarsi il suono […] in quello del **ḫ**[6] [= x] quanda sarà in fine della dizione" (Vassalli 1827: 8); "il Z," which "in fine della dizioni sentesi pronunciare come se fosse un s."

In conclusion, word-final obstruent devoicing is a late development in Maltese, starting with the end of the 16th century. Therefore, word-final obstruent devoicing cannot have been inherited from Sicilian Arabic: if it had, it should have been attested in the earliest records of Maltese. The devoicing of obstruents in word-final position appears to have been an instance of lexical diffusion (in the sense of Chen 1972; Chen & Wang 1975), *i.e.* a slow – lasting about two centuries – and gradual spread across the Maltese lexicon.

2. Word-final obstruent devoicing in peripheral Arabic dialects

The devoicing of obstruents in word-final position is attested in a number of Arabic dialects and it is a characteristic typical of the peripheral dialects of Arabic.[5]

In Nigerian Arabic "a voiced non-sonorant consonant is devoiced before […] a pause" (Owens 1993: 21), *i.e.* all obstruents undergo devoicing in word-final position:

(29)
  a. *muruḏ → muruṯ* 'he became sick' (Owens 1993: 22)
  b. *ḏíhig → ḏíhik* 'he laughed' (Owens 1993: 22)
  c. *badízz → bidíss* 'I push' (Owens 1993: 22)
  d. *taǧ → tač* 'you M SG come' (Owens 1993: 22)

In one of the earliest descriptions of Chadian Arabic, Deredinger (1912: 342) writes about /b/ that "à la fin des mots, mais seulement quand la dernière syllabe est brève, elle se rapproche […] de la sourde *p*." Deredinger (1912: 344) further states that "une dentale sonore devient aisément sourde lorsqu'elle est finale d'un mot." These cases of devoicing of stops in word-final position are illustrated below:

(30)
  a. *halip* 'milk' (Deredinger 1912: 342), *cf.* Ar. *ḥalab*
  b. *bārit* 'cold' (Deredinger 1912: 347), *cf.* Ar. *bārid*

According to Manfredi (2012: 153), "final obstruent devoicing occurs on a regular basis" in Kordofanian Baggara Arabic, affecting *e.g.* stops, as in (31a–b), or affricates, as in (31c):

(31)
  a. *ǧīb* [dʒi:**p**] 'bring' (Manfredi 2012: 153)
  b. *balad* [bələ**t**] 'country' (Manfredi 2012: 153)
  c. *bitaǧ* [bitə**tʃ**] 'you come' (Manfredi 2012: 153)

With respect to Anatolian Arabic, Jastrow (2007: 90) writes that "voiced consonants in word-final position have a tendency to become unvoiced." This statement actually refers to obstruents only, since it is further specified (Jastrow 2007: 90) that "the sonants *l, r, m, n* are not subject to final devoicing." Consider the following examples from three Anatolian Arabic dialects – Hasköy Arabic, Mardin Arabic, and Tillo Arabic:

(32)
  a. Hasköy Ar. *širib* [ʃìri**p**] 'drink!' (Ionete 2016: 324)
  b. Mardin Ar. *ʕaqad → ʕaqaṯ*[6] 'to bind' (Grigore 2007: 45)
  c. Mardin Ar. *mīž → mīš* 'fog' (Grigore 2007: 45)

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5   This grapheme designed by Vassalli stands for [h].

6   This grapheme designed by Vassalli stands for [x].

    d. Tillo Ar. *lawz* → *law**s*** 'almond' (Lahdo 2009: 57)
    e. Tillo Ar. *maʕ* → *ma**ḥ*** 'with' (Lahdo 2009: 56)
    f. Tillo Ar. *ḥaǧǧ* → *ḥa**čč*** 'pilgrimage' (Lahdo 2009: 53)

The devoicing of word-final obstruents in Anatolian Arabic is generally attributed to the influence exerted by Turkish. Grigore (2007: 45), for instance, concludes with respect to word-final obstruent devoicing in Mardin Arabic that "ce traitement […] est soutenu par l'influence de la langue turque où ce phénomène est tyique."

    Consider finally Cypriot Maronite Arabic, in which word-final devoicing is limited to stops (Borg 1997a: 228, 2007: 539):

(33)
    a. *tae**p*** 'good' (Kaye & Rosenhouse 1997: 79), *cf.* Ar. *ṭayyi**b***
    b. *kle**p*** 'dogs' (Borg 1997a: 221), *cf.* Ar. *kilā**b***

The phenomenon is considered to be contact-induced, by *e.g.* Borg (2007: 539), who mentions "absolute neutralization of the historical voicing contrast in stops (via contact with Greek)."

    To conclude, word-final obstruent devoicing in (at least some) peripheral Arabic dialects is the outcome of language contacts. Since Maltese is (historically) also a peripheral dialect of Arabic, word-final obstruent devoicing may be one of the effects of intense contacts with Sicilian and/or Italian, rather than an internal development. This possibility is explored in the next section.

3. Word-final obstruent devoicing in Maltese: Why and how?

3.1. Sociolinguistic situation in 16th-century Malta

As seen in section 1.2, clear instances of word-final obstruent devoicing are first attested in Maltese towards the end of the 16th century. It is therefore instructive to examine the sociolinguistic situation in 16th-century Malta.

    After the arrival in 1530 of the Order of the Knights Hospitaller of St John, there was a massive influx of foreigners in Malta, consisting of "sailors, soldiers, slaves and a number of Greeks from Rhodos" as well as of "labourers and artisans, mainly from Sicily and Southern Italy" (Brincat 1991: 98). The demographic evolution of Malta's population in the period between 1530 and 1590 and the proportion of foreigners are set out in the Table 1:

Table 1. Population of Malta and Gozo[7]

Year	Total	Local	Foreign	% Foreign
1530	20,000	17,000	4,000	20.0
1547–1550	13,000	10,000	3,000	23.0
1565	14,000	10,000	4,000	28.5
1582	23,000	20,000	3,000	13.0
1590	32,290	28,864	3,426	10.6

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7   Adapted from Brincat (1991: 97).

The arrival of mostly male immigrants also led to marriages between local women and foreigners. There are no records prior to 1600, but the relevant figures and percentages would have presumably been similar to those summarized in Table 2:

Table 2. Marriages between local brides and foreign grooms[8]

City	Period	Marriages	Foreign grooms	% Foreign grooms
Valetta	1600–1613	235	54	21.0
Valetta	1627–1650	1,131	366	32.0

Under the circumstances, "cultural and linguistic contact between speakers of Maltese and the foreign population would have multiplied beyond comparison to what it had been before" (Borg 2011: 1036).

Another change brought about by the Order is the growing importance of the so-called "Harbour Area," consisting of Valetta – founded by of the Knights Hospitaller of St John – and the so-called "Three Cities" – Birgu, Senglea and Cospicua:

Table 3. Population of the Harbour Area[9]

Year	The Order	Valetta	Three Cities	Total	Malta	% Harbour Area
1530	4,000	–	1,000	5,000	17,000	29.4
1590	3,500	3,397	5,458	12,355	31,914	38.7

Brincat (1991: 98) writes that "as to the history of the Maltese language, the crucial event was the Order's shifting of the seat of power […] to the harbour area." As further noted by Brincat (1991: 103), "Valetta and the Cottonera area[10] [form] the centre of linguistic innovation."

The massive influx of Sicilian- and Italian-speaking immigrants after 1530, mixed marriages, and the significant proportion of Sicilian- and Italian-speaking immigrants in the Harbour Area between 1530 and 1590 (maximum of 28.5% in 1565, minimum of 10.6% in 1590) are factors conducive to major changes in the sociolinguistic situation. One such development is the occurrence of code mixing: "as early as 1557 […] contemporaries noted that the Maltese were mixing Italian and Maltese" (Borg 2011: 1036–1037). Another significant change is the ever growing Sicilian and Italian influence on Maltese (see also Brincat 1995).

3.2. Borrowing scale and Maltese

Thomason and Kaufman's (1988: 74–76) propose the following borrowing scale which correlates intensity of contact with specific linguistic outcomes:

(i)   Casual contact: lexical borrowing only
(ii)   Slightly more intense contact: slight structural borrowing
(iii) More intense contact: slightly more structural borrowing
(iv)   Strong cultural pressure: moderate structural borrowing
(v)   Very strong cultural pressure: heavy structural borrowing

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8   Based on Brincat (1991: 102).

9   Based on Brincat (1991: 99–100).

10   "Cottonera" is generally synonymous with the "Three Cities," but it is sometimes taken to include the town of Kalkara as well.

The sociolinguistic situation described in section 3.1 suggests that post-1530 Maltese is an illustration of category (iv), *i.e.* of moderate structural borrowing under strong cultural pressure from Sicilian and Italian.

According to Thomason and Kaufman (1988: 75), the specific effects of moderate structural borrowing are: major structural features that cause relatively little typological change; new distinctive features in contrastive sets that are represented in the native vocabulary; loss of some phonological contrasts; new syllable structure constraints, also in the native vocabulary; allophonic and morphophonemic rules, such as palatalization or final obstruent devoicing; borrowed inflectional affixes and categories added to native words; fairly extensive word order changes. Most of these structural effects are attested in Maltese (see *e.g.* Cohen 1966; Krier 1976). Note, in particular, that word-final obstruent devoicing is included by Thomason and Kaufman among the potential effects on the phonology of the borrowing language.

Thomason and Kaufman (1988: 320) also briefly mention word-final obstruent devoicing in Maltese, concluding that "Maltese must have gotten the rule from Sicilian, which had even less scope for the rule in native material." However, Sicilian and Italian do not have a rule of word-final obstruent devoicing; neither of the two languages has obstruents in word-final position. Hence, Sicilian or Italian phonology cannot be the (direct) source of the Maltese rule of word-final obstruent devoicing, *i.e.* word-final obstruent devoicing in Maltese is not the result of borrowing of a phonological rule from Sicilian or Italian.

3.3. Word-final obstruent devoicing in the acquisition of L2 phonology

Findings on the acquisition of English word-final voiced obstruents by learners with various L1s (Flege & Davidian 1984; Flege *et al.* 1995; Major 2001) show that speakers of Romance languages devoice obstruents in word-final position:

    (34) L1 Italian   L2 English   [rot] for *road* (Major 2001: 4)

As noted by Major (2001: 4), "universally, for all language learners […] it is easier to pronounce a final [t] than a final [d]." This is hardly surprising, given that "word-final devoicing […] is a classic minimum effort strategy" (Shariatmadari 2006: 208). *Mutatis mutandis*, it may be assumed that L1 speakers of Sicilian or of Italian devoiced Maltese word-final obstruents. Several arguments can be adduced in support of this account. Firstly, the reflex of etymological */-b/ is /pp/ or /p/ in Arabic loanwords in Sicilian, even if these contain a paragogic vowel (see also Avram forthcoming):

    (35)
      a. *ǧulāb* > *gileppu* 'rosa acqua' (De Gregorio & Seybold 1903: 238)
      b. *maqlūb* > *macalupa* 'volcanetto di fango' (Caracausi 1983: 272)

Secondly, the age of onset of L2 acquisition is an important factor, given that early acquirers perform better in producing word-final obstruents in L2 (Flege *et al.* 1995). As shown in section 3.1, Sicilian and Italian immigrants to Malta were adults, *i.e.* late acquirers. Thirdly, long term exposure to an L2 with word-final obstruents, such as English, is not necessarily conducive to target-like production. Fullana and Mora (2009: 99) show that "long-term exposure of native Italian participants did not lead to a more

accurate production of the distinctive feature of voicing." It may be assumed that in the case of L1 speakers of Sicilian or of Italian, long-term exposure to Maltese did not lead to the production of word-final voiced obstruents. Finally, according to Shariatmadari (2006: 207), "if word-final devoicing were assigned low prestige by a particular group this might well be enough to override ease of articulation and support voicing." However, in Malta, Sicilians and Italians enjoyed high prestige.

The claim made here is, therefore, that word-final obstruent devoicing is the result of imperfect acquisition of Maltese phonology by Sicilian- and Italian-speaking immigrants.

3.4. Spread of word-final obstruent devoicing in Maltese

According to Brincat (1991: 103), from the Harbour Area "the progressive Latinization of [Maltese] opened out fan-like and gradually penetrated rural speech at all social levels," *i.e.* there was "linguistic interaction, first between foreigners and the inhabitants of the harbor cities, then between the latter and the residents of rural towns and villages."

One manifestation of the "progressive Latinization of Maltese" appears to have been the spread of word-final devoicing, via diffusion from a speech style to another and from a social group to another. On this view, word-final obstruent devoicing spread in the speech of an individual from one speech style to another and at the same time it spread from one individual to another within a social group and subsequently from one social group to another. This is represented in the figure below (adapted from Bailey 1973: 176):

Time 1		Social group		
	Style	**1**	**2**	**3**
	Formal	+	–	–
	Casual	+	–	–
Time 2		**Social group**		
	Style	**1**	**2**	**3**
	Formal	+	x	–
	Casual	+	–	–
Time 3		**Social group**		
	Style	**1**	**2**	**3**
	Formal	+	+	x
	Casual	+	x	–
Time 4		**Social group**		
	Style	**1**	**2**	**3**
	Formal	+	+	+
	Casual	+	+	x
Time 5		**Social group**		
	Style	**1**	**2**	**3**
	Formal	+	+	+
	Casual	+	+	+

1 = Sicilian and/or Italian L2 speakers of Maltese
2 = inhabitants of the Harbour Area, L1 speakers of Maltese
3 = inhabitants of rural areas, L1 speakers of Maltese
+ = consistent use; x = variable use; – = absence

Figure 1. Spread of word-final obstruent devoicing in Maltese

4. Conclusions

Maltese word-final obstruent devoicing is a contact-induced change, but it is not the result of borrowing of a phonological rule from Sicilian (contra Thomason & Kaufman 1988: 320).

Maltese word-final devoicing of obstruents is the outcome of the following processes: (i) imperfect second language acquisition of Maltese phonology by Sicilian and Italian immigrants; (ii) adoption of the new phonetic realization of obstruents in word-final position by native speakers of Maltese in the Harbour Area, engaged in frequent and close contacts with Sicilians and Italians; (iii) spread of the new phonetic realization of word-final obstruents to other areas in Malta.

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