The Intonational Phonology of Maltese

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ABSTRACT

This paper reports on work which is currently being carried out to consolidate the phonological analysis of Maltese within the Autosegmental-Metrical framework used in other work on intonation and in previous work of the author. Consolidation of the phonological analysis of prosodic structure and intonation in Maltese is expected to go hand in hand with annotation of data from a small corpus of spoken standard Maltese using *MalToBI* or *ToBI*-style conventions adapted for use with Maltese, similar to those which have been developed for other languages.

The *MalToBI* adaptation will serve as the basis for the annotation of data from the corpus of spoken standard Maltese currently being undertaken as part of *SPAN*, as well as, eventually, of other data. It is hoped that annotated data from the project will be used to establish the distribution of intonation patterns and their functions in Maltese, and that such a functional analysis will contribute to a better understanding of the workings of prosodic structure and intonation in Maltese in the broader context of prosodic typology.

1. INTRODUCTION

This paper reports on ongoing work on consolidation of the phonological analysis of Maltese within the Autosegmental-Metrical framework used in other work on intonation (Pierrehumbert 1980, Ladd 1996) and in previous work of the author (Vella 1995, 2003 and 2007). It is intended as a preliminary to adaptation of a *ToBI*-style annotation system (Beckman 1997) for Maltese similar to that which has been developed for other languages such as German (Baumann 2000 and Grice et. al. 2005a) and Italian (Grice et. al. 2005b), amongst others. It is hoped that preliminary work on annotation of data from the corpus of spoken standard Maltese currently being undertaken as part of *SPAN*, will serve to consolidate various aspects of the actual phonological analysis including establishing the

distribution of intonation patterns and their functions in Maltese.

This paper is therefore intended to provide a state-of-the-art description of the work which has been, and is being carried out, on the intonation of Maltese. In particular, it will attempt to establish what still needs to be done in order for a more comprehensive description of the prosody of standard Maltese to be possible, and for this to be adapted in such a way as for a set of *MalToBI* labels for the transcription of Maltese intonation to be determined. Preliminary testing of such a system will be immediately possible given the work being carried out currently as part of the project *SPAN* (see also section 2).

2. BACKGROUND

The description of prosodic structure and intonation of Maltese has continued to be hampered, in part, by the lack of structured resources for use in its study. Much of the work of this researcher on the subject of prosodic structure and intonation in Maltese has in fact relied mainly on data collected in the form of sentences read out by speakers from cue cards, thus limiting the pragmatic and discourse contexts which are so eminently involved in the prosodic structure and intonational choices made by speakers (Vella 1995, 2003).

Recent attempts to address this lacuna in the availability of structured resources for use in the study of Maltese have led to the compilation of a small corpus of spoken Maltese. The corpus consists of data from 16 speakers of standard Maltese (balanced in terms of age, sex and educational background) and contains material in four different speech styles ranging from more formal sentence and text reading, through to more informal, quasi-conversational speech (see Vella and Farrugia 2006). The quasi-conversational material is currently being developed into a tagged corpus through the addition of labelling at the orthographic and intonational levels as part of the

project *SPAN* (Speech Annotation for a Corpus of Maltese) which the author is co-ordinating.[1]

The adaptation of a *ToBI*-style framework, or *MalToBI*, for Maltese will be based on the results of research previously carried out, and ongoing, on the prosodic structure and intonation of Maltese (Vella 1995, 2003, 2007). Various aspects of the phonetics and phonology of the intonation of Maltese should be easier to determine given a larger body of data involving different speech styles for use in the analysis. Amongst other things, it is hoped that preliminary annotation work will make it possible for some of the following questions to be answered:

1. What set of pitch and phrase accent, as well as boundary tones, are necessary to describe Maltese intonation?
2. What break index types are relevant to the description of Maltese intonation?
3. How do different tonal configurations relate to specific intonational functions in Maltese?
4. Are there any phonetic implementation characteristics relating in particular, either to the timing of events, or to the scaling of pitch, that are worthy of note?

This paper discusses issues arising out of 1 above and begins to address issues arising out of 2. Preliminary answers to 3 and 4 are also beginning to emerge in the course of continuing research in this area.

3. MALTESE INTONATION

Earlier research on prosodic structure and intonation in Maltese by this author (Vella 1995, 2003, 2007) suggests amongst other things, utilisation not only of a number of accent-related pitch accents, but also of the existence of events of an accent-related but post-nuclear nature similar to other "phrase accent" type phenomena which have been described and discussed for example in Grice et. al. (2000) for other languages. Two tunes identified for Maltese in earlier work by this author will first be described in 3.1 and illustrated by means of analysed examples from the corpus.

Vella (1995) also identified a further tune, one used in vocatives, imperatives and positive tag questions. This appears to be the same, or a similar tune, to the one used in *wh*-questions in Maltese. The latter forms part of an ongoing investigation of the phonetics and phonology of *wh*-questions in Maltese and will be discussed in 3.2.

3.1. Pitch/phrase accent and boundary tones

Two nuclear and post-nuclear tune combinations in Maltese have been identified by Vella (1995) to occur in Maltese.

In cases of a falling (statement) nuclear tune, H*+L, Vella posits a L boundary tone, notationally following Vella (1995), Lp, attached to the edge of the phonological phrase marked as [+focus]. In cases involving, for whatever reason, early focus, this H*+L Lp sequence is followed by a movement to very low pitch on a stressed syllable close to the edge of the phrase, followed by a slight rise to the edge of that phrase. This pitch movement was originally represented as L* Hi, the notation being intended as a means of indicating the presence of a L tone with a secondary attachment to the post-nuclear stressed syllable, L*, followed by a slight rise, notationally Hi. The L tone in this sequence is here being reinterpreted as a phrase accent, notationally L-, in line with Grice et. al. (2000). The choice is therefore either, between a H*+L pitch accent and a Lp boundary tone associated with the nuclear syllable and boundary tone respectively of a focused P-phrase, or, a H*+L Lp sequence followed by a L- phrase accent linked to the stressed syllable closest to the edge of the I-phrase and a final Hi boundary tone. A schematisation of this is provided in Figure 1 below.
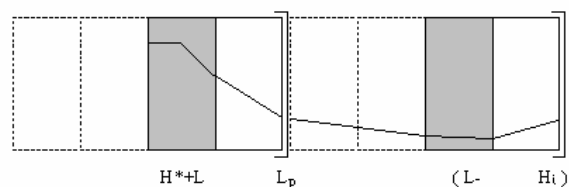

Figure 1[2]

An analysed example from the corpus of Maltese mentioned above is shown in Figure 2 below.

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[2] In this figure, as well as in Figures 5 and 9, stressed syllables are indicated by means of shading; broken lines indicate the possibility of an unspecified number of syllables occurring prior to a stressed syllable.
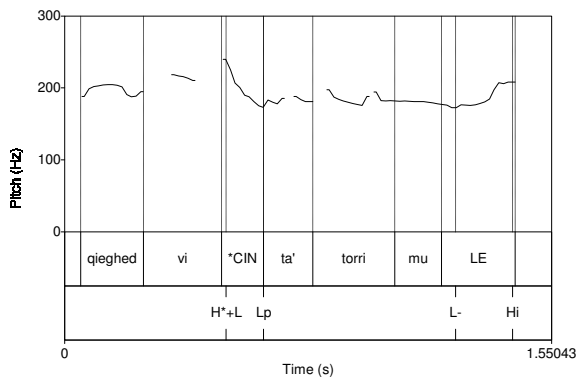
Figure 2[3]

In the example above, 'you are NEAR Mulé Tower', the element marked as [+focus] is *vi*CIN* 'near': *torri muLE* 'Mulé Tower' is shared information in this particular context and gets assigned the L- Hi phrase accent and boundary tone sequence described above.

Figure 3 shows a second analysed example from the corpus data. In this example, literally 'this is Light Place I have here', it is *DAWL* within the location *misraħ id-*DAWL* which is marked as [+focus]: *GĦANdi* 'I have' and *HAWN* 'here' involve rephrasing of the information already encoded in *dan hu* 'this is'.
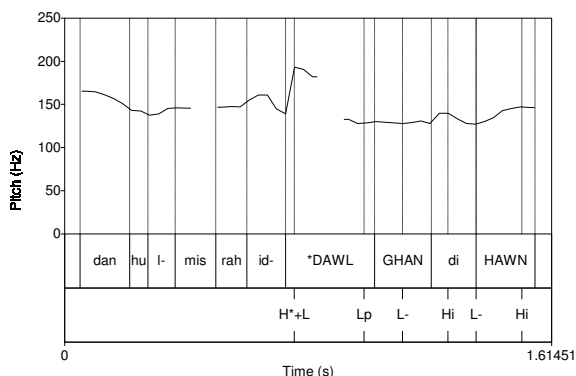

Figure 3

This example is interesting because it illustrates the possibility of some kind of "tone copying", for example as described by Grice et. al. (2000). The post-nuclear elements in this case seem to be

assigned their own separate, slightly rising, phrase accent and boundary tone sequence.

It is clear even from a cursory analysis of data from Maltese that examples such as the one in Figure 3 above are not infrequent. A further example of this sort *jogħ*GOBni KIEku x-XOGĦOL*, a possible translation for which could read 'I like it, if it were ever to be possible, that sort of work', can be seen in Figure 4 below. In this example the speaker's use of *kieku* is meant to indicate that he is aware of the remoteness of the possibility of him ever actually being in a position to do the work he is saying he likes, whilst *x-xogħol* is co-referential with the object clitic incorporated into *jogħġobni*. The nuclear falling tune can be seen to be followed by two instances of the phrase accent/boundary sequences described above.
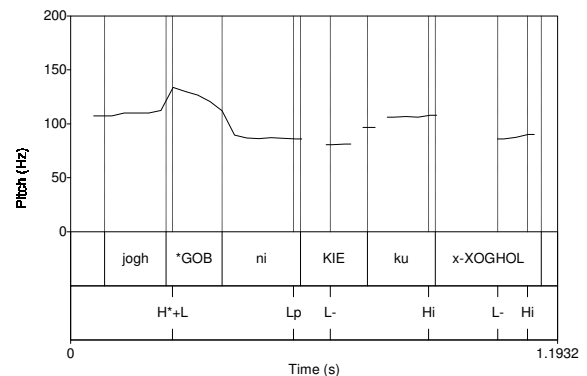

Figure 4

When the nuclear tune involves a rising (question) tune, there is a L* attached to the nuclear syllable. This is followed by a Hp attached to the edge of the phonological phrase marked as [+focus]. In cases involving early focus, a nuclear L* Hp is followed by a post-nuclear tune L+H- Hi consisting of an upstepping phrase accent L+H- and a final Hi. A schematisation of this is provided in Figure 5 below.
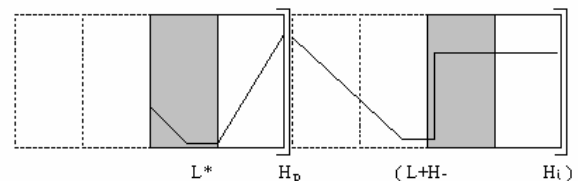

Figure 5

In view of the fact that the tail end of the phrase accent L+H- consists of a levelling of, rather than an increase in pitch, a final boundary tone was not actually specified in Vella's original analysis of this tune. It is being introduced here however,

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[3] This figure, as also the pitch extraction analysis it is based on, has been generated using PRAAT ver. 4.6.03. Only two tiers are included in the analysis shown here. The TEXT tier contains a word-by-word segmentation in standard orthography but without capitalisation. Stressed syllables are segmented as separate intervals and are capitalised. An asterisk is placed at the beginning of stressed syllables which are clearly nuclear. The TUNE tier contains a tonal analysis: labelling is based on current knowledge of the facts about Maltese intonation. The distinction between P(honological)- and I(ntonational)-phrase boundaries, notationally i and p, has been retained in the analysis presented here of the post-nuclear tunes although empirical evidence for the distinction is still needed.

although further work is necessary in order for a more definitive understanding of what happens in cases of this sort to be reached.

An analysed example of a question with early focus and a post-nuclear tune such as that described above can be seen in Figure 6 below.
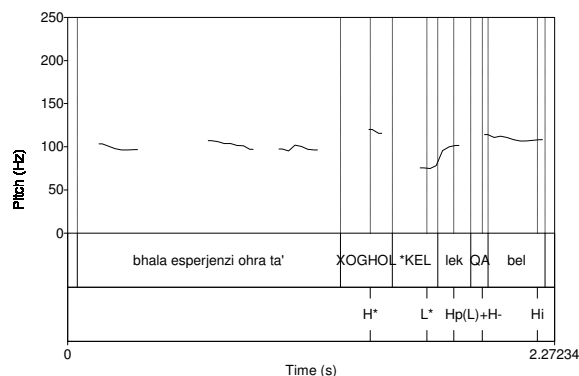

Figure 6

In the above example, *bħala esperjenzi oħra ta' xogħol* 'in so far as other experiences of work go', is a fronted object of some sort. The question being asked is *KELLEK*, 'have you had', 'other experiences of work'. The adverb *QAbel* 'before' is marked as [-focus] since what the interviewer seems to be interested in finding out in this case is whether the interviewee has work experience: exactly when such experience was acquired is really not all that important, and hence gets backgrounded intonationally by being assigned the L+H- Hi sequence described above. The absence of an intervening syllable between the end of *KELlek in the phonological phrase marked as [+focus], and *QAbel*, means that there is no concrete manifestation of the L tone in the L+H- phrase accent in this case.

A second example of a question with early focus can be seen in Figure 7. In this case, *THOBB* 'do you like' (once again segmental material is limited given the voiceless stop/glottal stop sequence in the onset and the voiceless stop in the coda) is marked as [+focus]. There is an intervening syllable between the verb and the stressed syllable of *isSIEfer* 'going abroad'. Focus on the verb in this case seems to arise out of the implication that most people like going abroad: what needs to be determined is whether the interviewee too likes doing so.
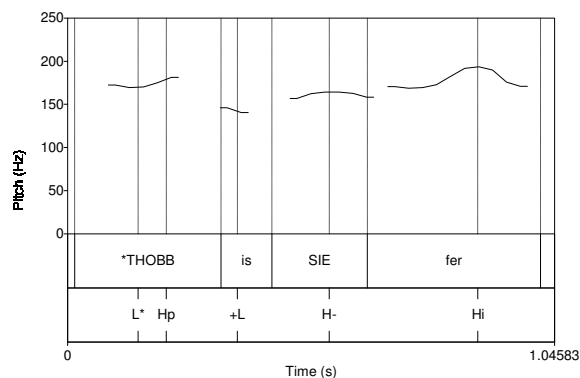

Figure 7

One further example of an early nuclear question tune followed by a L+H- Hi sequence on an element marked as [-focus] can be seen in Figure 8. The verb *tit*KELlem* 'do you speak' is marked as [+focus] whilst *bl-lingwi* 'different languages' is marked as [-focus]: there is an element of insistence involved here, speaking different languages being a requirement of the job being discussed.
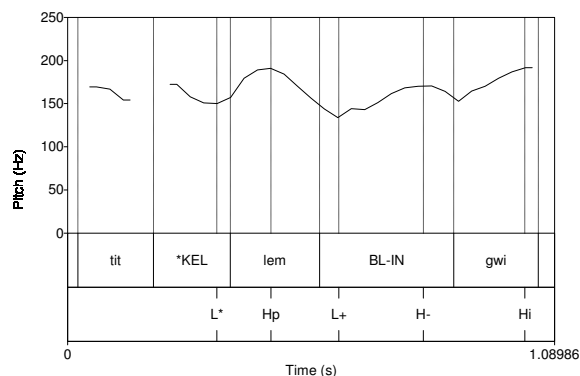

Figure 8

3.2. *Wh*-questions

A falling contour having an "early" H tone, rather than a peak on the stressed syllable of a focused element close to the right edge of the phrase as in the case of the nuclear statement tune described in 3.1 above, was noted by Vella (1995) to occur in vocatives, imperatives and positive tags. The schematisation of this contour in Figure 9 illustrates the difference between this contour (originally dubbed as the "vocative" contour") and the fall described earlier.
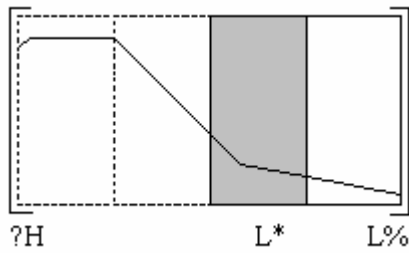
Figure 9

An example from the corpus data of an imperative involving use of the tune in question can be seen in Figure 10.
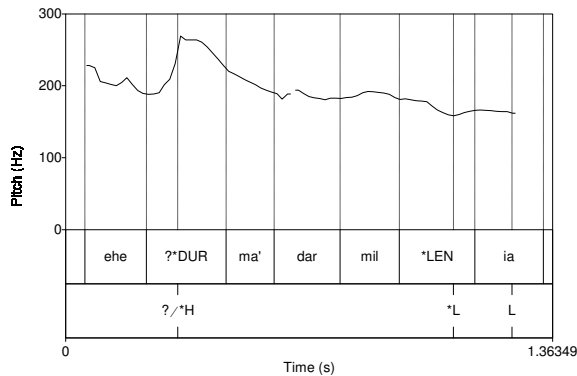

Figure 10[4]

The contour in Figure 10 above is characterised by a H tone early in the sentence on the verb *DUR* 'turn'. There is a L tone on the penultimately stressed syllable of *mil*LENia* with lowering F0 to the end of the sentence. It is not clear whether *DUR* in the above is accented or whether the perception of prominence is merely a function of the early H tone. There is a L tone linked with the stressed syllable of *mil*LENia*, F0 continuing to fall to the end of the sentence.

Figure 11 (reproduced from Vella 2007) gives averaged values (in ERB) at different points in the *wh*-questions of 4 speakers for whom read data from the corpus mentioned earlier in this paper were analysed (see Vella 2007). The similarity across speakers, as well as the overall similarity between the global shape of the questions analysed and that shown in the schematisation in Figure 9 above rather than to the global shape of the nuclear statement tune described in 3.1 above, is remarkable.
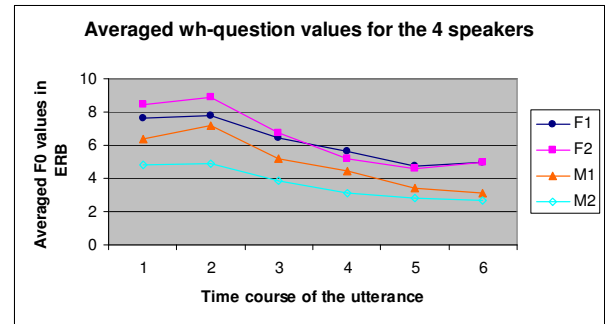

Figure 11

Two differences have been observed to distinguish the falling contour described earlier in this paper from that in *wh*-questions: 1) the H tone in *wh*-questions appears to be characterised by higher F0 as compared to H tones in other sentence types; and 2) the H tone in *wh*-questions occurs very "early" in the sentence.

The analysis of *wh*-questions carried out as part of the research being reported in Vella (2007) suggests that *wh*-questions do in fact exhibit a tendency to some sort of "raising". Figure 12 (reproduced from Vella, 2007) in fact demonstrates this quite neatly.
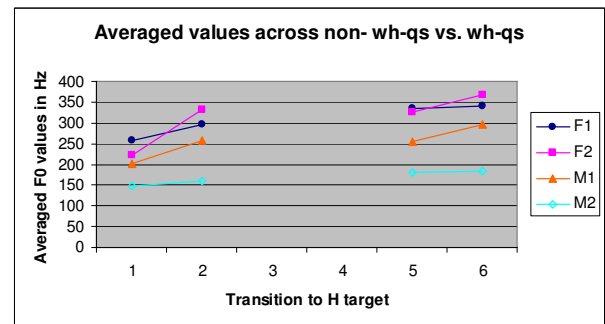

Figure 12

A more important element in the ongoing investigation of the phonetics and phonology of *wh*-question intonation in Maltese is the attempt to determine whether the H tone at the start of *wh*-qs in Maltese is associated with: i) the boundary at the left edge of the phrase (as was suggested for example by Vella (1995) in her analysis of the "vocative contour"); ii) the beginning of the *wh*-word; or iii) the accented syllable of the *wh*-word. For various reasons (for example, the fact that the *wh*-words in most of the examples analysed were monosyllabic and/or started with a stop or fricative, as well as the fact that there was only one example in the data analysed having a non-initial *wh*-word), a definitive answer to this question is not yet possible.

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[4] The % marks inserted into PRAAT have for some reason not been retained by the program at the stage of the drawing of the PRAAT pictures which have been used to illustrate this section.

While the precise anchoring point of the H tone in *wh*-questions cannot be determined on the basis of Vella's (2007) study, the fact that this H tone occurs "early" seems clear. Let us examine the analysed example from the corpus *u bħala…turisti, ?*X' tippre*FEri* 'and as for tourists, what (nationality) do you prefer', shown in Figure 13.
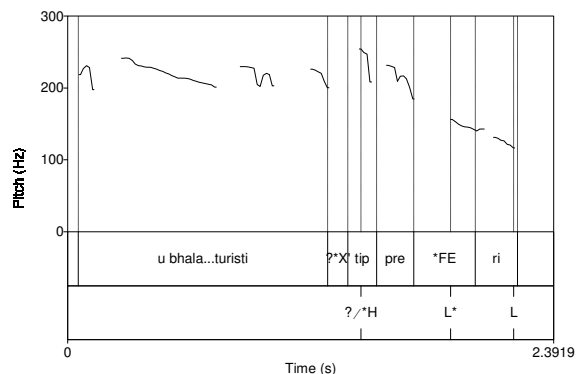

Figure 13

The *wh*-word in this case is *x'* (the abbreviated form of *xi*) 'what'. This is pronounced as a voiceless palato-alveolar fricative yielding no F0 trace. In spite of the fact that /ʃ/ is followed by a voiceless stop /t/ in this case, the target for the H tone occurs as early as is in fact possible, "early" here however meaning with reference to the *wh*-word itself rather than to the beginning of the utterance.

Working out what the anchoring point for the H tone is is further confuted by the fact that analysis of the rare examples of *wh*-questions involving a non-initially stressed *wh*-word suggest that the H tone in such questions occurs earlier than at the stressed syllable of the *wh*-word. An example illustrating this can be seen in Figure 14.
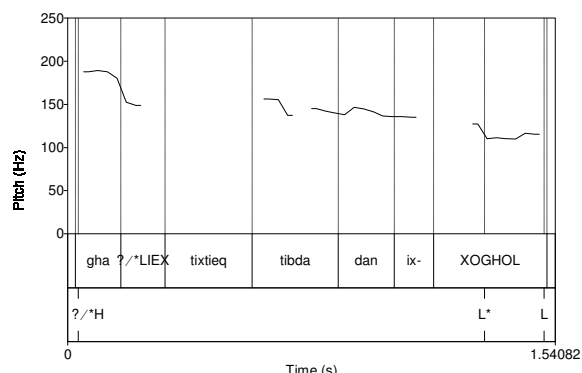

Figure 14

The *wh*-word *għa?*LIEX* 'why' is one of the few *wh*-words in Maltese with non-initial stress. As can be seen from Figure 14, the H tone in this case appears to coincide with the beginning of the *wh*-question *għa?*LIEX trid tibda dan ix-XOGĦOL* 'why do you want to start (doing) this work'. The point in this case is that the target for the H tone does not seem to be the stressed syllable of the *wh*-word. Thus, although more evidence for this is still necessary, the claim that the anchoring point for the H tone in *wh*-questions is the *wh*-word itself needs to be entertained.

4. DISCUSSION

4.1 Phrase accents and different phrase types

The domain of focus in Maltese, as also, for example, in Bengali, see Hayes and Lahiri (1991), is assumed by Vella (1995), to be the phonological phrase or P-phrase, rather than the intonational phrase or I-phrase, a distinction also following Hayes and Lahiri. The two post-nuclear tunes in Maltese L* Hi and L+H- Hi occur outside and to the right of a final focused P-phrase as optional adjuncts whose choice is dependent on the choice of nuclear tune. In Vella's (1995) analysis these post-nuclear tunes are accounted for as being extrametrical to a final P-phrase although still part of the same I-phrase. The entities in question, although stress-seeking in a way similar to normal pitch accents, are peripheral in nature, syntactically and in terms of information structure as well as phonologically. They coincide with material which can be considered to be "given" information as opposed to "NEW", [-focus] as opposed to [+focus] (see Gussenhoven, 1984) and in this respect serve some sort of backgrounding function.

Various structural contexts (e.g. contexts involving topicalisation resulting from changes in constituent order, the use of pronominal clitics, negation and the use of indefinite pronouns, adverbs in some, though not all, contexts, etc.) that give rise to the use of such post-nuclear tunes in Maltese can be seen to trigger the use of the "phrase accent" type phenomena mentioned above. Although the existence of such phrase accent-type phenomena now seems relatively non-controversial, there are various aspects of both the phonetics and the phonology of these pitch and phrase accent combinations which need to be examined in some detail. In particular, an attempt needs to be made to uncover phonetic evidence for the existence not only of the phrase accents but also of the different types of phrases, P- and I-phrases, and boundaries to these, postulated in the analysis. Phenomena such as pre-boundary lengthening, the blocking or otherwise of

processes such as consonant harmony in the presence of a boundary etc., would seem to be worth investigating in the search for the necessary evidence.

4.2   The *wh*-question analysis so far

Given the analysis proposed in 3.2 above, a number of questions need to be answered:

- Is it to the left edge of the *wh*-word that the H tone in *wh*-questions is anchored?
- If so, what about the analysis of the H tone target at the beginning of vocatives, imperatives and postive tag: are we dealing with the same phenomenon or a different one?
- What practical implications (e.g. for working with a *ToBI*-style adaptation for use with Maltese) need to be considered?

The next step in the analysis of *wh*-questions in Maltese will involve an experiment aimed specifically at clarifying the details of the analysis which have so far remained elusive. Thus, for example, an experiment is being prepared which will involve the analysis of data consisting of batteries of sentences such as the following:

- *Ir-raguni **ghaliex** seraq jafha hu biss.*
  the reason why he-stole he-knows-it he alone
  'He alone knows the reason he stole/was involved in theft.'
- ***Ghaliex** seraq jaf hu biss.*
  why he-stole he-knows he alone
  He alone knows why he stole/was involved in theft.
- ***Ghaliex** seraq meta għandu tant flus?*
  why he-stole when he-has so-much money
  Why, when he has so much money, did he get involved in stealing?
- *B'daqs dawk flus, **ghaliex** seraq?*
  with as-much those money why he-stole
  When he has so much money, why did he get involved in stealing?

In the above, *ghaliex* functions as a relative pronoun in the first two examples and as an interrogative adverb in the third and fourth examples, and occurs in initial as well as non-initial positions within the respective sentences. The experiment will include data involving similar sets of sentences using, for example, *fejn* 'where' and *meta* 'when'.

Once aspects of the description have been clarified it would be useful to revisit the issue of the scaling of the H tone in *wh*-questions since this aspect of the analysis may be related to the matter of its anchoring point. A further question about *wh*-questions which also needs to be dealt with relates to the accentedness or otherwise of *wh*-words and/or other elements within *wh*-questions.

5.   CONCLUSION

Consolidation of the phonological analysis of prosodic structure and intonation in Maltese is expected to go hand in hand with continuation of the work which has started on tagging data from the small corpus of spoken Standard Maltese in the context of the project *SPAN* mentioned earlier. Unlike earlier work in this area, both compilation of the corpus of spoken standard Maltese and work on *SPAN*, is being carried out by a number of researchers working together rather than by one researcher working alone. It is hoped that the increase in the community of researchers equipped to work in this field in itself should have a positive effect on future research in this field.

6.   REFERENCES

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