

The prosody of Basque songs: A methodological proposal

1. Introduction

A textsetting grammar constrains how a verbal text is set to music. In this paper I will discuss some methodological issues on the data-preparation stage for the analysis of textsetting. Special attention will be drawn on Basque textsetting.¹ In fact, the thoughts here presented are a kind of by-product of a project in progress on textsetting problems in Basque.

In general terms, the methodological issues I discuss are a complement to the metrical grids methodology developed in texts such as Halle / Lerdahl (1993). However, as already mentioned, I deal mainly with the data-preparation stage, and not so much with the subsequent analysis of these data.

The paper is divided into two main sections. Firstly, I consider some issues on pitch changes in tunes. Secondly, I discuss data sources, namely, sound recordings and transcriptions. Just before the conclusions, an illustration of the proposed methodology is briefly presented.

1 The Basque language is named *euskara* in Basque, but I will use its English equivalent throughout the text.

2. On pitch

2.1 General arguments for considering pitch

When considering the kinds of acoustic constraints which are to be found in textsetting, pitch is not normally taken into account. This assumption might be inherited from ideas about spoken (not sung) verse.

On the one hand, it seems that only phonological features can be regulated in song. For instance, as pitch contour is phonological in Chinese, then it could have a constrained relationship with musical pitch contour. This is something which has been shown to be the case in Chinese Opera (Liu 1974; Yung 1983 for two early studies; for other tone languages see Sollis 2010; Schellenberg 2013 and references therein). Likewise, pitch contour isn't expected to be constrained in English songs, because it doesn't have a phonological status in spoken English. This would be a reason to ignore pitch when analysing the setting of non-tonal languages such as English.

On the other hand, it seems that these phonological contrasts must be produced in speech and in song by the same psycho-acoustic means. That way, if pitch doesn't play any role in materialising a language's phonological contrasts, musical pitch would not be expected to constrain textsetting.

Sung verse, though, can make use of perceptual properties not present in speech or spoken verse. For instance, metrical expectations in song have been shown to have a constrained relationship with linguistic accent, even if metrical expectations don't play any role in speech phonology. As argued by Halle / Lerdahl, “[m]uch narrower constraints are imposed by the requirements (...) of assigning ‘strong’ metrical positions to ‘stressed’ syllables” (1993:4).

Turning now to pitch: psycho-acoustical research has shown that pitch can define accent in music (Müllensiefen *et al.* 2009 for a review). Thus, from a theoretical point of view at least, there is no reason to think that the melodic accents we do perceive while listening to songs don't play any role in textsetting grammars. Indeed, this kind of accent, as formalised by Thomassen (1982), has been successfully correlated to linguistic accent in Estonian *regilaul* songs (Särg 2006). In this corpus,

lexical accent can be reinforced by a conjunction of melodic contour and metrical prominence, or exclusively by the former.

Nevertheless, as Huron and Royal point out, “it might be the case that, when notes of different durations are used, the resulting agogic accents dominate the rhythmic effect” (1996:501). Therefore, we must expect that melodic accent shows its relevance mostly in isochronous songs or passages, there where agogic accents can’t play any role. This is the case, for instance, in the Estonian tradition mentioned before. All in all, phenomenal accents such as pitch prominence shouldn’t be neglected from textsetting analysis.

2.2 Arguments for considering pitch in Basque textsetting

Let’s see now a more specific argument for considering pitch when analysing Basque textsettings. In Figure 1 the present-day Basque speaking area is shown. The different colours set out the dialectal boundaries and the dark-grey region in the south shows some dialects which have disappeared during the 20th century. Nowadays there are about half a million native speakers in an area of 135 by 35 km.

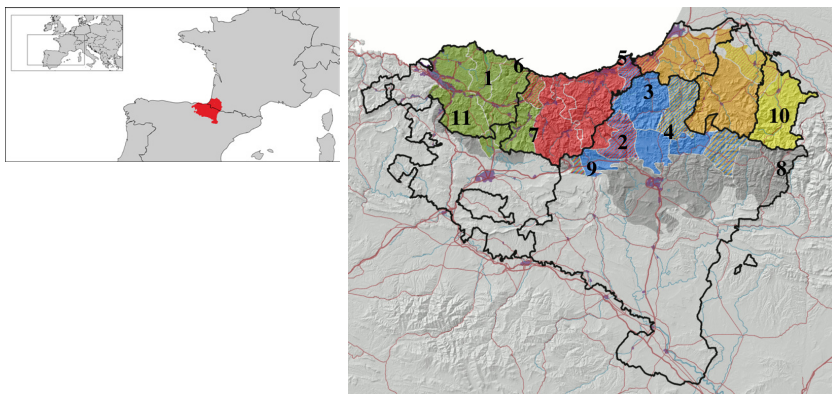


Fig. 1: Geographic distribution of the Basque dialects spoken nowadays (according to Zuazo 2008). Basque dialects have disappeared from the southern dark-grey region during the 20th century. Numbers show the different accentual types (according to van der Hulst 2010:471–476). Both maps are freely available at Wikimedia Commons; I’ve adapted the second one to include accentual types.

Textsetting issues on Basque songs haven't been properly studied. Among what has been said on the topic, there is a common claim which has been made by several prominent Basque scholars but which hasn't been yet the object of a thorough analysis. According to this claim, Basque spoken prosody plays no role in Basque songs (Altube 1932:271; Mitxelena 1961:379; Amuriza 1981:58).

Now I would like to point out two problematic facts about the Basque language which should be taken into account in order to undertake the study of textsetting in Basque. As we shall see, pitch is involved.

In the first place, the Basque language has a high degree of dialectal fragmentation considering the small region where it is spoken. Dialects differ in, among other aspects, the prosodic system they use. About ten different prosodic systems have been described (van der Hulst 2010:471–476 for a synthesis; Hualde 1999 for a deeper discussion), as shown by the numbers on the map on Figure 1. These systems contrast in a number of aspects, notably in their cue type (pitch-accent or stress-accent), in weight sensitivity and in the accent window location. Besides, these systems sometimes show even local differences which can produce significant changes in the lexical stress of important classes of words, such as plurals. All in all, given this variability, the size of the region and the mobility of songs, it is hard to know which prosodic system produced each song.

In the second place, we should consider the different prosodic systems from a diachronic point of view. The Basque linguist Hualde argues that the pitch-accent type present nowadays in northern Bizkaia (numbers 1 and 6 in the map) may have given rise to the rest of the systems (1997:223–253; 1995). Present-day stress-accent systems would be recent innovations.

To sum up, if the songs we want to analyse were produced in a prosodic system where pitch is phonological, musical pitch might very well constrain the linguistic text. Furthermore, as we have claimed before, even if the given dialect doesn't use pitch to generate phonological contrasts, melodic accents can also be perceived as accents by the listener. This is especially true for a singing tradition, such as the Basque one, which favours notes of similar length (as mentioned above, when very different note lengths are used, the resulting agogic accents might prevail over the pitch accents).

3. On data sources

If we want to analyse a textsetting grammar, the abstract representation of the text should be analysed, and not every subtle variation of any particular performance. Transcriptions are supposed to reflect this abstract text; therefore, they would seem preferable to sound recordings. However, I believe we should always prefer sound recordings as the source material. Let's see some reasons.

3.1 *The amount of data*

In the first place, recordings are richer than transcriptions. Written sources are necessarily a selection of the traits perceived by the transcriber in the stimulus; as such, they can lack some crucial information. The intensity (dB) of syllables, for instance, is not normally notated in any explicit way. Besides, quite often only the setting for the first stanza is provided; for the following stanzas just the linguistic text is given. That way we cannot be sure about the exact metrical position and pitch which correspond to each syllable.

Secondly, field-work recordings often include spoken passages by the informant. This can provide additional information on the prosodic system we are interested in. Also, it can be especially useful in a linguistically fragmented area like the Basque one.²

Obviously, this advice on using recordings can only apply to relatively modern music. Different solutions should be developed to deal with songs performed previous to the invention of recording technology. However, as I am to argue, even when we are unable to expand the limits of our corpus, being aware of the nature of the data we are handling (what it provides and what it lacks) remains essential.

2 A good example which can be of great use for the study of Basque textsetting is the project *Ahotsak* (Badihardugu 2012), which has compiled an enormous collection of field video recordings, some of which include songs together with spoken passages by the informant.

3.2 *The nature of data*

Having access to plenty of data about the texts we want to analyse can be helpful, but having a critical understanding of what these data can tell us is of even greater importance.

As we have already seen, transcriptions are subjective in a very important way: they are supposed to reflect the abstract categories perceived by the transcriber. Even if this is both indispensable (a grammar *must* deal with categories) and unavoidable, we should, when possible, have access to the recording of a performance as a way of contrasting the transcription.

Moreover, we should also examine the employed notational system, as it reflects a particular perceptual system. That is, the symbols it uses reflect the features relevant to that particular musical tradition, or at least *some* of those features. Using a particular notational system and/or being unfamiliar with the music system being transcribed can entail several problems.

Firstly, the transcriber's perceptual system might differ from the actual system of the song being transcribed in important aspects. On the one hand, non-phonological features might be transcribed; that is, contrasts not present in the abstract text might be perceived as relevant. On the other hand, features relevant to the system might not be perceived as such and hence be completely ignored.

Let's see a simple and quite common example. As reflected in the *Generative Theory of Tonal Music (GTTM)*, Lerdahl / Jackendoff 1983), in European canonical music only metres which are completely isochronous at every level of the metrical grid are conceived. This kind of metre correspond to traditional time signatures such as 2/4, 3/2, 6/8, etc. However, there are plenty of music traditions around the world which use metres that are irregular at a certain level of the grid.³ This kind of metre does appear in Basque songs, as in those using the rhythms of *zortziko* or *ezpata dantza*. Given that metres of this type are nearly inconceivable in a system such as the *GTTM* one, songs are often forced by transcribers or publishers to meet the requirements of totally isochronous metres. Ansorena (2007) quotes some examples of this kind of

3 In Ethnomusicology, this kind of metre is usually referred to as *aksak*, after the Turkish word for 'lame'. Common ways of transcribing them include compound time signatures, 2/8 + 3/8, or simply 5/8.

practice in Basque song-books. As most of the research on textsetting carried out nowadays focus on the musical-metre constraints, choosing the wrong metre can have serious consequences in the assignment of prominence to syllables.

Secondly, some of the notational symbols used by the transcriber might misleadingly represent features which are not even perceived as relevant by the transcriber. As Clayton (1997:171) explains, time-signature bars are sometimes used as a mere reading aid for transcribing music considered non-canonical by westerners, without necessarily having any metrical significance at all.

3.3 Computer-based tools to deal with data

Finally, I'd like to consider some useful tools which can help in two respects when using sound recordings as the main data source.

With regard to data retrieval, software such as Praat (Boersma / Weenink 2013) can be very efficient in detecting syllables or other segments and extracting relevant sound features out of them. Plenty of scripts have been created (and are shared online among users) in order to automatise as much as possible this whole process. Besides, other useful related tools are continuously being developed in the field known as Music Information Retrieval (MRI).

The second aspect concerns the visual representation of data. A considerable advantage of transcriptions over recordings is its visual nature. Among other things, this enables to read information faster than real time and to make comparisons in a much easier way (see Tzanetakis et al. 2007 for a further discussion). Thus, the data obtained from the recordings should be combined and plotted in effective ways.

In Figure 2 you can see a very simple example of two plotted lines of sung verse. Pitch information has been extracted using a Praat script. The combination of text, metrical information and pitch has been plotted using an R script (R Development Core Team 2008), which can process a whole corpus of songs at once. Obviously, other prosodic or metrical features can also be plotted in various ways according to the researcher's needs. This way, a first step for the visual analysis of data is achieved fairly automatically.

4. Illustration

In this paper I argue that both pitch information and sound recordings should have a wider use in textsetting studies. As a way of illustrating the relevance of both claims I now briefly consider an example. Space limitations prevent me from a thorough analysis.

Figure 2 is a visual representation of two of the lines of a set of improvised sung verses by Andoni Egaña (1994). The set consists of 3 stanzas sung to the same metre and tune. The tune belongs to the repertoire used by present-day Basque improvisers, and a transcription can be found in Dorronsoro (1995). According to this transcription, the 4th and 5th lines of the tune have the same melody. In this set of 3 stanzas, thus, we should find 6 lines sung to this melody. However, if we analyse the actual recording, we find out that there are some variations in it; for instance, the 5th syllable is sung either to a low or to a high pitch (approached by a glissando). The low variant is the same pitch as the 4th syllable, while the high variant is 3 semitones higher, which could be perceived as a melodic accent (Thomassen 1982).

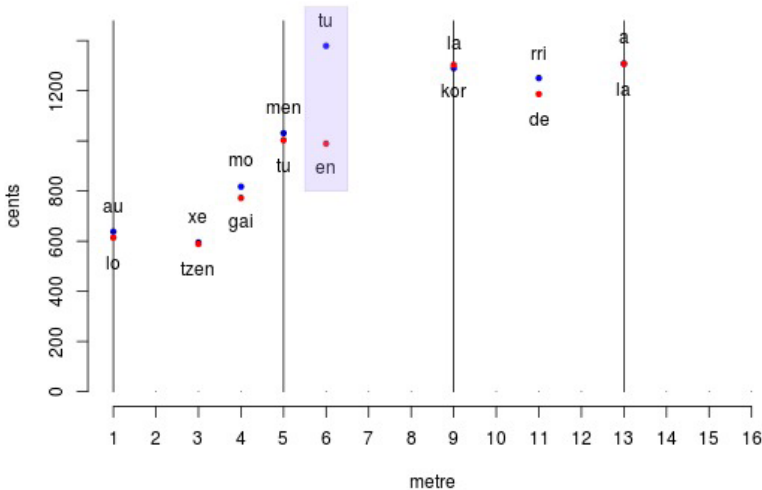


Fig. 2: Two lines of Basque sung verse, extracted from an improvised set of verses by Andoni Egaña (1994). Vertical lines represent the tactus.

Needless to say, no conclusions can be drawn from a few lines of a single song; however, in Table 1 I present the 6 varying syllables in order to further illustrate the point. Hash marks indicate word boundaries, and hyphens word continuations (only the 5th syllable has been annotated). The acute accent marks the high pitch variant in the tune, and the grave accent the low pitch variant.

Table 1: Six lines with a minor melodic variation on the 5th syllable, extracted from an improvised set of verses by Andoni Egaña (1994).

	1	2	3	4	5	6	7	8
1	au	xe	mo	men	– tú #	la	rri	a
2	lo	tzen	gai	tun	# úz –	ta	rri	a
3	lo	tzen	gai	tu	– èn #	kor	de	la
4	ez	da	e	ten	– gó #	o	rre	la
5	e	ne	bio	tze	– kò #	ka	tta	lin
6	nik	jo	ka	tu	# náí #	nu	en	fin

In relation to the metrical grid, the 5th syllable is never located in a strong position. In relation to the melody, however, this syllable sometimes bears a melodic accent and sometimes does not. I have indicated word boundaries to show that we could already conjecture, for instance, that, in metrically weak positions, word-initial syllables must bear a melodic accent, whereas non-initial syllables don't need to. Evidently, the observed pitch variants might also be due to free variation or other reasons; further data is necessary to aim for stronger hypotheses.

All in all, had we followed the prototypical textsetting analysis based on (a) a single version of the melody for all the repeating stanzas, and (b) a metrical grid deprived of pitch information, we would have lost some details which might turn out to be crucial for the analysed textsetting grammar.

5. Conclusion

To conclude, I'd like to summarise briefly the basic methodological proposals presented in the paper. First of all, a corpus of sound recordings

should be built, preferably based on fieldwork. If transcriptions are already available, they should be contrasted, ideally taking into account the transcriber's and our own musical background to see if they differ from the actual grammar being analysed. Then, a suitable method should be adopted in order to segment the acoustic signal and to extract the relevant perceptual features. Finally, this information can be combined with other manually-extracted features in order to enable a first visual analysis.

Acknowledgements

My interest in textsetting has been kindly supported by Juan Zelaia Letamendi and by the Eresbil music archive through their research grant. I would also like to thank the participants of the Séminaire de Métrique Générale for their academic stimulation, and two anonymous reviewers for their very useful remarks.

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