

Rhythmic and Phonetic Transcription of Two Recited English Sonnets

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ABSTRACT

Recitation of poetry has unfortunately gone out of fashion nowadays. Poetry has become more and more a question of reading, seeing and grasping meanings. While text and speech are undoubtedly related, the actual sound of a poem constitutes an experience, for both reciter and listener, not to be equalled to that of the silent reader. Indeed interrelated phenomena like rhythm, *sandhi* and intonation give a special flavour to the recitation; in the same way, a score cannot offer the reader –with the possible exception of an expert composer and conductor –all the impressions, emotions and meanings that arise in the actual performance of a musical piece. We have already treated this subject for Spanish and Persian poetry (Sánchez and Puyà 1996). Our purpose in this paper is to extend now this approach to English, with two Shakespeare sonnets, and, bearing in mind these speech phenomena, to offer a precise and finer phonetic transcription than in our previous article. A metric recitation model has been developed, presented and applied to both sonnets. No attempt to enter into semantic and syntactic matters has been made, unless relevant for the metrical structure.

0. INTRODUCTION

Prosody is a major aspect of speech, partially reflected by punctuation in writing. Within prosody itself it is intonation, which reveals, guides and gives life to the syntax, to the accents (understood as phonetic emphasis, mainly tonal), to the phrase mood (question, order, asseveration), to the pragmatics

and the fine nuances of meaning. A useful speech model, either human or the one used by an automatic system of synthesis, must grasp and include the complex rules that govern prosody, especially intonation. With yet another turn of the screw, metrics adds a new component, an artistic one in this case –also partially understood– which further complicates any valid prosody model of poetry.

We have approached these problems within the so-called accentual-syllabic metrics, of the type existing in the modern Western languages (English, Italian, Spanish and others), in contrast with the quantitative, used in some ancient and venerable tongues (i.e., Sanskrit, Greek, archaic Latin) and other languages such as classical and modern Arabic and Persian (Fārsī) as may be seen later (1.2). We focus now our attention on the study of English, for which we have tried to elaborate a model that would make possible, from a written text, the production of *poetic speech*, that is, speech with an artistic metrical scheme. In it, all the prosodic traits of speech –pitch (height), timbre (phonetic value), intensity (volume), quantity (duration of the phonetic stretches)– must be considered in order to produce an elocution faithful to a hypothetical ideal poetic speech, in delicate balance and compromise. Moreover, the rules that control these traits have different temporal scopes (phrasal, syntagmatic, allophonic, etc.). This model should be useful and operative both for the human reciter and for an automatic speech synthesizer (Sánchez and Pûyâ 1996).

Generally speaking, all recitations should take into account and reflect the usual linguistic levels of all kinds of plain speech, as well as some features which are specific to poetic speech. Beginning with semantics and syntax, the highest in rank, a recitation must utter the phrases included in the text (that is, bring them into actual speech, extracting and transporting them from the abstract into the real-time, actual realization) and highlight their syntactic relationships (coordinations, subordinations, epithets, parentheses, anaphora, cataphora, deictics) and moods (such as questions, assertions, invectives, etc.) (Sánchez 1996). Moreover, to help create the special atmosphere of this production, others contributions must be added: such as all those not fully established modulations that express attitudes and sentiments: doubt, fear, desire, anxiety, irony, love, joy and many more –some of which, once formalized, even gave rise to distinct classical poetic genres (elegy, dithyrambus, epigram, hymeneal...).

But we shall leave for a posterior paper this important question of intonation which will then complete the recitation. Let us, therefore, enter into our metric recitation model.

1. A PROSODY MODEL FOR ACCENTUAL-SYLLABIC METRICS

1.1. From sounds to syllables

From the acoustic-phonetic point of view, speech –including verse– can be considered as a variation in time of perceptive acoustic aspects known as *traits*: features that present a relative independence, since we can change one of them, leaving the others unaltered. These traits are: tone or pitch, intensity or loudness, timbre or colour. If these traits are kept constant for a while (i.e., a tenth of a second), and then at least one of them, say pitch, suffers a sudden, sharp ¹ change (i.e., in a fiftieth of a second), the result will be a sound event or unit, (i.e., the time interval between the beginning and the sudden change, or between two other consecutive sudden changes) whose duration can be measured (see Fig.1). This duration, called quantity, constitutes an additional trait. Hence we can consider the temporal continuum of sound as a chain of phonic units, which correspond, approximately, to the allophones (i.e., sound realizations of phonemes) and will therefore present all **four** traits.

The timbrical oppositions mainly –but other traits can be used as well– between adjacent allophones produce, in turn, units of a superior category: the syllables, typically emerging from a pair of allophones, the first being shorter, noisier and less voiced than the second: the CV pair (consonant-vowel) ². These syllables acquire, from their allophonic components, pitch, intensity and duration values, all these focused in the vowel, which becomes the syllabic nucleus. At this level, syllables present a mutual and collective organization, by being some of them marked whereas others remain unmarked, thus giving rise to metres and rhythms, especially in poetic speech. The concept of *markedness* is somewhat similar to which is called *salient* in functional grammar (Halliday 1988: 272), and will be discussed later in some detail. See also García Calvo (1979:301-317) and García Calvo (1990:316-386).

1.2 Accentual-syllabic metrics ³ versus quantitative metrics

A. Accentual-Syllabic Metrics

In this type of metrics, each line presents usually the same number of syllables, counting up to the last accented one. This means that one –even two in Spanish, as note 4 shows– unaccented syllable can be added to the line without spoiling the rhythmical and metrical sense. In this brief overview we shall consider only *regular* lines, discarding freer poems. Accents emphasize some syllables, usually regularly spaced, marking them as prominent moments. See Leech (1991:108-120) and Domínguez Caparrós (1988) on this subject. We shall separate syllables with hyphens and signal synaloepha with lower hyphens, using lower case for unaccented syllables, and marking with

capitals the *regularly* accented (writing the actual stress over the vowels), in a simplified English-like transcription. Let us see some well-known examples taken from poets in different periods, to compare their essentially similar metrical behaviour (note also the frequent but not total coincidence of accents with capitals, a deviation to be explained later):

French, XVII(Corneille: *Le Cid*: lin. 405-6)

*Je suis jeune, il est vrai;
mais aux âmes bien nées*

| jé-suí-JÉN-il-eh-VRÉh-
meh-oz-Áh-me-bián-NÉh

*La valeur n'attend point
le nombre des années*

| lah-vah-LÉR-na-ten-PUÁN-
le-nóm-BRE-dez-an-NÉh

Spanish, XIX(Becquer, *Rimas*: VII)

*Del salón en el ángulo oscuro
de su dueño, tal vez olvidada*

| del-sa-LÓN-en - el- ÁN - guh- lo_os-KÚ-roh
de-su-DUÉ-nioh,-tal-VÉTH-ol-bhi-DH-dha

Italian, XIII(Dante, *Commedia*: I. 1-2)

*Nel mezzo del cammín di nostra vita
mi ritrovai per una selva oscura*

| nel-MÉD-soh-DEL-kam-MÍN-di-NÓS-trah-VÍ-tah
mih-RI-troh-VÁI-per-Úh-nah-SÉL-va__os-KÚH-rah

English, XVII(Milton, *Paradise Lost*: I, 1-2)

*Of first Man's disobedience, and the fruit
of that forbidden tree, whose mortal taste*

| of-FÍRST-mán's-DIS-o-BÉ-diens-AND-the-FRÚT
of-THÁT-for-BI-den-TRÉÉ,-whuz-MOR-tal-TÉIST

B. Quantitative Metrics

As it is well-known, in this kind of metrics, the syllables belong formally, abstractly, to two classes: long and short (Steingass 1886; Crusius 1950:10-30; Batmanglij 1988). Longs are uttered longer than the shorts in their vicinity –which does not prevent a *short* in a slow passage being longer than a *long* in a quick one. Let see some examples of these metrics, now indicating shorts with lower case and longs with capitals. Accents do not coincide necessarily with longs, but do so often.

Latin, I(Catulo, *Catulli Carmina*, XXXV)

*Poetae tenero, meo sodali
uelim Caecilio, papyre dicas...*

| po-É-TAE-té-ne-ROIH-mé-OH-soh-DÁ-LI
ué-LIM-KAE-kí-lí-OH-pa-PÍ-rch-DÍ-KAS

Persian, XIII(Rúmi, *Diwân el-Kebir*, 441)

BÉN-MA-eh-RÓKH-keh-BÁGH-oh-goh-
LES-TÁN-a-MÁ-reh-ZÚST
BOG-SHÁ-eh-LÁB-keh-GHÁN-de-fa-
RÁ-VÁN-a-MÁ-reh-ZÚST

| بنطای رخ که باغ و ک-
(ک) لستان آرزوست
بکشای لب که قند ف-
(ف) راواند آرزوست

1.3. Accents and metric-rhythmic marks

These two concepts are closely related in the so-called accentual-syllabic metrics; but they must be dissociated in order to clarify both our metrical model and its practical realization in recitation.

The Metric-Rhythmic Mark (or MRM), can be defined as an expected moment which recurs periodically. It is then similar to the first beat of a musical measure, which need not be stressed or emphasized in order to be felt and expected.

How then is this expectation created? Usually by placing stressed (accented) syllables in specific locations in the first line of the poem. In general, any phonetic prominence at some regularly spaced places in time will *mark* them in the conscience of the listener (i.e., contrast them from the surrounding syllables); he or she will expect from then on.

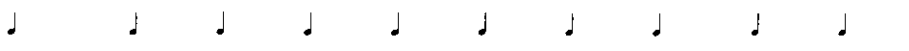
In accentual-syllabic metrics, stress is, therefore, the creator of the marks; but immediately after, these creatures begin a life of their own, allowing stresses to behave more freely in the following lines of the poem. This freedom, however, cannot be so great as to make one forget the previously created marks; or even worse, to suggest by a different regular pattern, a new correlative set of marks.

For instance, in XII.1. (see 2.5.): “*When I do count the clock that tells the time/...*”, we have the simple iambic pattern: oOoOoOoOoO (O, stressed; o, unstressed), which marks even syllables against odd ones. The listener will find stresses in following even syllables, which usually happens until XII.5. where we read: “*.../ When lofty trees I see barren of leaves/...*”. Now the mark will fall in XII.5.8, [rren] (as [...bá-RREN-of...], using our previous notation in 1.2.), an unstressed syllable preceded by the stressed [bá]. Let us represent syllables as musical quarter notes (afterwards we will refine this notation). According to our model, a common error in recitation consists in temporally displacing the stressed syllable to the temporal place of the marked one, a waiting-time or pause in this case, which would sound as:




When lóf ty trées I sée — bá rren of léaves

instead of



When lóf ty trées I sée bá rren of léaves

An even worse error could be to keep time regular but stress the marked-unstressed syllable:



When lóf ty trées I sée ba RRÉN of léaves

which would be intolerably un-English.

Our proposal for a both metrically and linguistically correct recitation is described in paragraphs 1.4-6. But before, let us see another case where marks are more difficult to establish, as in sonnet VIII.

The very first line already violates the iambic marking, beginning by: “*Music to hear...*”, i.e. [mú- SIC- to- HÉAR]. But, as the naive but logically minded reader should say: Why an iambic marking? Well, in this case the iambs are suggested by the following lines of the poem, the other more than one hundred sonnets of Shakespeare, those included in his plays, and many other sonnets from other authors, from his time to the present. This case shows that an *a posteriori* and contextual stressing can also suggest, establish the lay out of the marking pattern of a poem (for a more formal proof of the sonnets’ iambic nature, see 3.3. and 4.3.).

But this violation is even consolidated in second line: “.../*Sweets with sweets war not, joy delights in joy/...*”. with the shocking metric situation: [swéets- WITH- swéets - WÁR-nót...]. We also find, in 5.1-3, [if- THE- trúe], and obviously unstressed marked syllable; in 9.1-4, [márk- HÓW- óne-STRÍNG...], all stressed, and in 10.1-2, [strikes- ÉACH ...], where the difficulty lies not so much in the metric problem of the stressed unmarked first syllable, as in the phonetic hardship of having one syllable beginning with a weaker consonant, [s] that the following [t], which would suggest two syllables instead of one, as we explain in Sánchez (1995b).

The possible difficulty of the concept of metric-rhythmic mark lies in the fact that it does not exist at all, save in the conscience of the listener (however unconscious of this marking pattern) –and the reciter, of course: both share a complicity in marking the time.

1.4. Reciting accents and marks

Contrary to general belief, which supposes accent to consist primarily in increases of intensity, according to the findings of the analytic ear (i.e., disconnected from any language interpretation) and automatic analysis, the acoustic nature of accent lies mainly in tone rises and concomitantly, although to a smaller degree, in the emphasis put on the remaining traits, intensity and quantity; even including timbre, which becomes clearer and more distinct, that is, the further away it is from *schwa* or neutral vowel.

Since we have considered the sound continuum a chain of discrete elements, we must determine the duration of each: the total time span of the locution will be distributed among the units. Beginning with the smallest, the allophonic stretches, consonants will generally be given smaller quantities than vowels, in the proportions suggested by practice and previous analyses. As for syllabic stretches, in accentual-syllabic metrics, we generally utter the accented syllables with greater duration, since we know that in English, Spanish and related languages, quantity is a concomitant trait of the accent.

However, for the rhythmically marked though not accentuated syllables, we dissociate tone and quantity, maintaining the tone linked to the accent and keeping the quantity in reserve for the rhythmic mark –the only way to be simultaneously loyal both to prosody and metrics. Reflecting accents (´) and marks (in capitals), we obtain the following:

lwhen- LÓF- ty- TRÉES- i- SÉE- bá- RREN- of- léaves l
 (Shakespeare. Son.XII.5)

lmu- SIC- to- HÉAR-, why- HÉARS´T- thou- MÚ- sic- SÁD- ly? l
 (Shakespeare. Son.VIII.1)

lvér- DE- ru- BÓR- hoy- BÓ- ga l
 (Alexandre 1990:153)

1.5. A laboratory measurement of syllable length according to the mark.

In order to test the influence of marks on syllable length, we have compared two syllables including the same word and vowels in two opposite contexts: as marked and as unmarked. The two segments have been taken from Gielgud's recitation (Shakespeare 1995). In Fig.1 we see how the same syllable [ai] ("I", pronoun), is longer than its neighbours when marked, as in "*When I do...*" (XII.1.1-3), in top; but it is shorter otherwise, as in "*...trees I see...*" (XII.5.4-6), in bottom (1 division=1/10 seconds).

Therefore the initial length of a syllable in plain speech is modified to conform with its position in the pattern, a iambic pentameter in our case. We conclude that, in metric poems, as the Shakespeare's sonnets, speech, specially rhythm, is governed by the metrical pattern assigned to the poem. Thus, syllable quantity depends on the mark condition: marked/unmarked.

A conservative 3:2 proportion between marked/unmarked length has been adopted for our notation, but even a 2:1 could be considered faithful to the actual utterance. In this way, these examples of the so called *accentual-syllabic metrics* become also, at least in their actual production, quantitative; and the classical signs for longs and shorts are therefore also, in this sense, justified.

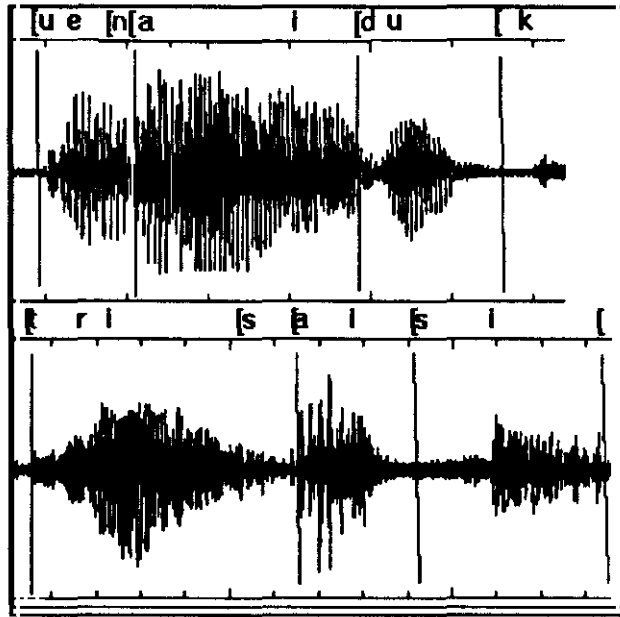


FIG. 1. Syllable [ai] / 'T', is longer than its neighbours when marked (top), but shorter otherwise (bottom).

1.6. Synchronism of rhythmic marks

In poetic recitation, we do not just get contrasts in emphasis —marks— between neighbouring syllables, so creating a pattern —a phenomenon which falls within the competence of **metrics**. In close relation to this kind of recitation, there also exist regularities of these marks in time —a phenomenon which falls within the competence of **rhythm**. Not only metric patterns —feet— are uttered, but furthermore their production is organized in such a way that the marks tend to occur periodically.

This rhythmic periodicity leads us close, very close indeed to musical

rhythm, bringing in numerical proportions into the temporal rendering, something that is an essential characteristic of Music. We so enter the domain of the rhythmic period or measure, a time interval where events –notes, beats– occur. A domain where recurrences are sure to take place, where a punctual return is certain. That is, where one knows and waits for the beginning of the next bar.

The metrical schemes now fill in the bars, so that their durations, when added up, give a final result equal to the duration of the rhythmic period. Thus, a succession of feet such as the one found in Shakespeare’s sonnets (˘ represents unmarked and ˘ marked):

//˘˘/˘˘/˘˘/˘˘/˘˘//

can be organized by assigning fixed and proportional durations to the marked and unmarked syllables, in such a way as to get regular rhythmic periods. For example, if ˘ is equivalent to 3 beats and to ˘ 2, and we begin counting from the second syllable, the first marked, coinciding with our sense of *first beat* in the measure, we get the regular scheme:

//2 | 3 2 3 2 | 3 2 3 2 | 3 (2) * //2 | 3 2 ...

that admits a periodicity of 10 beats, a cycle which transcends the verse limits: the beginning of the next verse first measure will occur *on time*. The pause at the end of the verse (represented by *) will then take on the form of a rest that fills the void until the next bar. We have thus a 10-part measure that works throughout the poem, with oscillations in tempo, pauses, and *fermata*, like its musical sister, but without breaking this numerical coherence known as rhythm. By making each beat equal to an eighth, we have the quarter for the two-beat syllable, and the dotted quarter for the three-beat one, and we can represent the scheme as:

♪ | ♪ . ♪ ♪ . ♪ | ♪ . ♪ ♪ . ♪ | ♪ . (♪) † . ♪ | ♪ .
 //first line of verse..... // second

A shorter measure of 5 beats could have been chosen: but short identical groups tend to be paired in greater groups, of which the first is the marked pair: we spontaneously build a two-level marking, with an approximate hierarchy of 1 3 2 4 for the four syllables of the group; this is similar to what happens in the 4:4 musical measure. The proportion 3 to 2 is here only illustrative, as we saw; this is not the case in quantitative metrics, where *longs* are actually 2 or 3 times longer than *shorts* (Sánchez and Puyá 1996).

The second syllable is the first of the group because in this way **the last** becomes first of its measure. This fact is suggested by the paramount phonetic and rhythmic importance of this last stressed syllable before the end-of-line pause. Note the optional second note in the third measure, which corresponds to the also optional additional unstressed and unmarked syllable. This conforms a feminine ending of the line.

1.7. Metrical model

Let us summarize our model by a series of steps (an algorithm) to be followed either by the human reciter or the machinal one.

A. METRE

1. A regular syllabic-accentual pattern is supposed for the poem.
2. A preliminary account of the number of syllables is done for each line.
3. a. If these numbers are too dissimilar the regularity hypothesis is abandoned.
b. If these numbers are not too dissimilar, an adjustment of the dissimilar is made by means of syncope, dieresis, sinalepha, hiatus and elision, in order to equal these numbers of syllables.
4. Lines are ordered by syllables in an (equal) number of columns. Accents are written on each syllable. The number of accents are summed up column by column (see 3.3., 4.3.).
5. If no column presents a clear predominance (i.e. the double) over its neighbours, we renounce to the marking. The columns that present a clear predominance over its neighbours, are marked.
6. Marked columns must be separated by unmarked, one or two, thus creating the alternance: OoO or OooO. If we have three, a secondary mark is created in the middle: OoOoO. Any combination of these subpatterns are possible, but the regular ones should be preferred, because they are simpler.
7. We assign a quantity (length) proportion between marked/unmarked syllables.
8. We consider the obtained mark pattern as the metre of the poem.

B. RHYTHM

9. The marks are hierarchised: last is usually the topmost, first comes next.
10. Pauses are added as end-of-line fillings, to get the time interval assigned to **all** lines.
11. We try to divide this interval in smaller equal intervals. If it is possible, we consider as them as **bars**, which the syllables will fill with their respective durations, thus becoming musical figures (half, quarter,...)
12. If we succeed in finding the same figures for each bar, we have found the rhythm of the poem. If not, we look for bigger intervals; if it is still not possible, the whole line will be considered as the rhythmical pattern of the poem.

13. The poem is recited following this rhythmical score. All the usual parameters constituting the *rhythmopoeia* must be chosen: tempo and its changes, and intensity; all this, of course, respecting the intonation, which constitutes the second part of our recitation model.

2. TRANSCRIPTION CRITERIA

Based on the previous considerations, we will summarize now our chosen options.

2.1. Stress-Accent

As in many languages, English stresses by means of a tonal emphasis of the stressed syllable nuclear vowel, despite the meaning of the word *stress*, which points to intensity emphasis; pitch measurements and synthetic speech experiments show this tonal stress without any doubt; however concomitant emphasis in intensity, quantity and timbre appear too in stressed syllables. Phonetic stress has been applied with a syntactic approach, by grouping *meaningful* words with its own clitics-like words (Sánchez and Caramés 1996). No difference has been made between primary and secondary stresses, despite the fact that this difference became clear sometimes, as in «did, do, him, thee, can, must», less stressed than the rest. Of course we consider only *grammatical* (syntactic, lexical) accents, not the semantic and pragmatic *focus*, more subject to discussion.

2.2. Phonetics

An effort has been made to reflect the boundary interactive phenomena (*sandhi*) between contiguous words. The strict syllabification of the poems (10 or 11 syllables) has also forced several phonetic assimilations and ellipses, without which, more syllables would appear (Selkirk 1984:302-305). Other problems found have been the choice of adequate sounds for old French words and for the rhyme, and this has imposed changes on the modern sound form of some words (Morris 1895:xlii-l). We will use two transcription criteria: the first is an almost plain English writing of the poem showing the syllables in columns that break word boundaries, as described in the next paragraph; the second uses the IPA notation (International Phonetic Association 1949) –updated in the 1989/90 Kiel Convention–, with the fonts provided by (SIL, 1993); the broad transcription (Laver 1994; Martínez Celdrán,

1986) has been used, including one level of phonetic sentence stress (the-strong one). In normal English, [p,t,k] are slightly aspirated, as well as [wh] in «where, when, why»; this aspiration has not been reflected, whereas the stronger aspiration in «who, whose», has.

2.3. Intonation

Besides pitch movements due to stress, a rich set of melodic phenomena appear in the recitation according the syntactic (Sánchez and Caramés, 1996), semantic, pragmatic (Bergé y Sánchez 1995) and phonetic levels of speech. No melodic rendering has accordingly been made, the possibilities being quite debatable and variable. However, syntactic intonation is mandatory because without it the poem becomes unintelligible, as with the texts of some songs where their melodies destroy the tonal syntactic segmentation and coherence. See again Sánchez and Caramés (1996) for this syntactic intoning, and our initial considerations in 0.

In any case intonation and metrics present a surprising independence, which allow us to treat them separately.

2.4. Quantity

Vowel quantity could enter in contradiction with metrics: but the latter governs syllable quantity more than the *context less* vowel duration, as we saw in Fig.1. Therefore, the correct vowel duration should be inserted in the broader syllable stretch: the remaining time can be filled with the consonants' durations or with occasional pauses which, however, must not break the rhythmic periodicity: see in sections 1.3 to 1.5 our reasoning in relation to syllable length and periodicity.

2.5 Metrical and rhythmical hypothesis

We assume that these sonnets, as well of the remaining one hundred and fifty two, have been written in a single metric form, the Iambic Pentameter, with rhythm marks no longer suggested by quantity but by stress or accent, as is usual in modern Western languages. However, stress only proposes the mark sequence, usually at the beginning; afterwards stresses often contradict marks, in a negative (mark without stress) or positive (unmarked stressed syllables) way. This is obvious since long stressed sequences often appear, as well as equally long unstressed ones. The mark is therefore an offspring of

stress, but becomes –as children normally do!– an independent fact and, thus, an independent concept (see 1.3.).

The strophic form, the English classical sonnet, consists of three quatrains and a final couplet, what gives us the complete rhyming structure: **ABAB CDCD EFEF GG**. The rhyme is perfect or *consonant* (see 4.3.), which phonetically means that the last stressed vowel and all the sounds following it are equal (or almost) for rhyming lines.

The syllabification will be shown in columns as the best way to suggest the adequate phonic groups (Sánchez 1995a) (Sánchez and Puyâ 1996) –not always an easy matter for Shakespeare sonnets. Syllables always begin with a consonant, with the exception of non diphthongal vowel clusters and line beginnings with initial vowel (Sánchez 1995b): a glottal stop has been included in these cases, to act as a dummy consonant. Classical metrical symbols for short and long syllables (/ ~ /) are used, despite the different meaning that *mark* takes in accentual-syllabic metrics, as described before. Syllables will be referred to by a triad of numbers, sonnet-line-syllable (i.e., SSS.ll.ss), omitting the first when unnecessary. Standard musical symbols are used to clarify rhythmic and musical concepts and to show the regularities of syllable production.

2.6. Recitation technique

We think that the metrically ordered lines of verse must be *uttered and felt* as verse; otherwise the line structure would be useless, and prose style could be adopted. The way to show this line end –a new mark– will be a pause, realized without breaking the natural intonation curve; or, when the sentence continues on the next line (enjambment), filling in this pause by slightly prolonging the final syllable during the time pause. Therefore we do not see as correct the complete omission of the line ending pause or its alternative syllable prolongation, linking lines together or, even worse, intoning endings in a school-like fashion (see our reasoning and proposals in 1.4-6). Punctuation does not influence metrics nor phonetics, it governs intonation alone –specially its syntactic component. In normal speech, the sound chain is continuous, unless broken by doubt sounds and fillers (i.e.,...*huh*, ...*hmm*., ...*but*...) and by emphatic or syntactic pauses (commas, full stops, colons...). Here these can be also included as voluntary effects, but, as we showed, while not breaking the mark pattern.

The musical notation used also applies to the silence filling the gap between lines, which must also conform with the chosen meter as we saw. Of course this musical reference must be fluently interpreted, with tempo changes which follow the syntactic, expressive, even dramatic events (*decrescendo*, *accelerando*, *fermata* pause).

2.7. Sources

The version used for the sonnets has been the one provided by Internet (Shakespeare 1994a) to be compared with the well-known English editions of Booth (Shakespeare 1977); Kerrigan (Shakespeare 1986); Wells and Taylor (Shakespeare 1988); Blakemore (Shakespeare 1996); and the bilingual English-Spanish editions and metrical translations of García Calvo (Shakespeare 1994b) and Mujica Láinez (Shakespeare 1991). We have also made use of two recorded versions by Pasco (Shakespeare 1984) and Gielgud (Shakespeare 1995).

We will begin with sonnet XII, since we find its rhythmic comprehension easier than VIII, which begins in a rather disturbing manner, as we saw in 1.3.

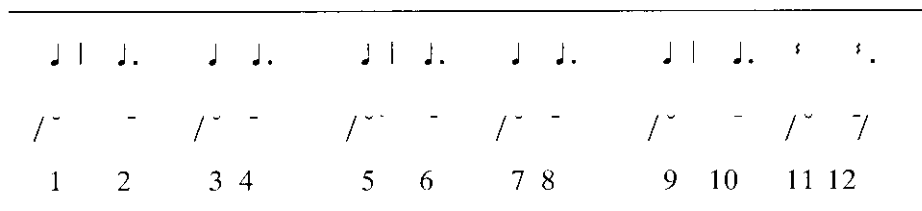
3. SONNET XII

3.1. Text

When I do count the clock that tells the time,
 And see the brave day sunk in hideous night;
 When I behold the violet past prime,
 And sable curls all silver'd o'er with white;
 When lofty trees I see barren of leaves
 Which erst from heat did canopy the herd,
 And summer's green all girded up in sheaves
 Borne on the bier with white and bristly beard,
 Then of thy beauty do I question make,
 That thou among the wastes of time must go,
 Since sweets and beauties do themselves forsake
 And die as fast as they see others grow;
 And nothing 'gainst Time's scythe can make defence
 Save breed, to brave him when he takes thee hence.

3.2. Rhythmical and phonetic transcription

We join here our two metrical notations, musical and traditional, together with a numbering of syllables, shown in corresponding columns. Traditional *long* signs are used for marked syllables, and *shorts* for unmarked. The musical notes are grouped in bars, of which the first note coincides with the most prominent syllables, establishing thus a new hierarchy between marked syllables.



When	I	do	count	the	clock	that	tells	the	time	(ending pause)
we	'naɪ	'du	'kaunt	ðə	'klɒk	ðæt	'telz	ðə	'taɪm	
And	see	the	brave	day	sun	k-in	hi	deous	night;	
ʔænd	'si:	ðə	breɪv	'deɪ	'sʌŋ	kɪn	'hi	djəs	'naɪt	
Whe	n-I	be	hold	the	vi	o	let	past	prime,	
we	'naɪ	bi:	'həʊld	ðə	'va	iə	let	'past	'praɪm	
And	sa	ble	curl	s-all	sil	ver'	d-o'er	with	white;	4
ʔænd	'sei	bəl	'kɜ:l	'zɔ:l	'sɪl	və	'dəʊə	wɪθ	'waɪt	
When	lof	ty	tree	s-I	see	ba	rre	n-of	leaves	
wen	'ləf	tɪ	'tri:	zəɪ	'si:	'bɑ	re	nəv	'li:vz	
Whi	ch-erst	from	heat	did	ca	no	py	the	herd,	
wɪ	'tʃɜ:st	fɹəm	'hi:t	'dɪd	'kæ	nə	pɪ	əə	'hɜ:d	
And	sum	mer's	gree	n-all	gir	de	d-u	p-in	sheaves	
ʔænd	'sʌ	mɜ:z	'gri:	'nɔ:l	'gɜ:	dɪ	'dʌ	pɪn	'ʃi:vz	
Bor	ne-on	the	bier	with	whi	te-and	bris	tly	beard,	8
'bɔ	nɒn	ðə	'biə	wɪð	'wai	tænd	'brɪs	tli	'bi:ɜ:d	
The	n-of	thy	beau	ty	do	I	ques	tion	make,	
'ðe	nəv	ðəɪ	'bjʊ	tɪ	'du	'ɪaɪ	'kwes	tʃɪən	'meɪk	
That	thou	a	mong	the	waste	s-of	time	must	go,	
ðæt	'ðəʊ	ʔə	mɒŋ	ðə	'weɪst	səf	'taɪm	'mʌst	'gəʊ	
Since	sweet	s-and	beau	ties	do	them	selves	for	sake	
sɪn	'swi:t	sænd	'bjʊ	tɪz	'du	ðem	'selvz	fɔ:	'seɪk	
And	die	as	fas	t-as	they	see	o	thers	grow;	12
ʔæn	'da	ɪəz	'fʌs	təz	'ðeɪ	'si:	'ɔ	ðəz	'grəʊ	
And	no	thing	'gainst	Time's	scythe	can	make	de	fence	
ʔænd	'nɒ	θɪŋ	genst	'taɪm	'saɪθ	'kən	'meɪk	də	'fens	
Save	breed,	to	brave	him	when	he	takes	thee	hence.	
seɪv	'bri:d	tə	'breɪv	'hɪm	wen	'hi	'teɪks	'ði:	'hens	

3.3. Comments on sonnet XII transcription

Referring back to the comments made in 1.1, syllables begin with a consonant, taking it from the previous closed syllable when necessary and possible (XII.1.2, 2.7, 3.2, ...). In 3.7, the middle syllable of the trisyllable «violet» begins with the semi-vowel [i] or [j], which acts as a consonant in the

more vocalic context of [a] and [ə] (Sánchez 1995b). Initial *and's* have been provided with a glottal stop [ʔ] (like Arabic *hamza*), as well as 9.7, 10.3 and 12.8; but 12.3 did not need it, as it borrowed the semivowel [ɹ] from the previous syllable (10.3 could alternatively also have used the semivowel [ʊ] or [w] as initial consonant). Final 'f' in 10.7 remain [f] because it is followed by unvoiced 't'; but becomes voiced, [v], in 5.9 and 9.2.

In 6.10 and 8.10, «herd» and «beard» rhyme when the second is stressed on the second vowel, as [bɪz:d]. The other lines present clear rhymes (a measure of phonetic distance between rhymed ends could be defined, especially for imperfect rhyme –see 4.3.).

By ordering the fourteen lines into separate syllables we find a set of columns, one for each syllable. Let us make a short statistics on the number of accented syllables in each column (auxiliary «do» and «did» have been accented, as well as verbs, nouns, adjectives, pronouns and adverbs); and express these numbers in percentage of the total number of lines (14); we join then the odd and even columns and find also the percentages of stressed syllables:

Type:	/~	-/~	-/~	-/~	-/~	-/~	-/~	-/~	-/~
Syllable:	1	2 3	4 5	6 7	8 9	10			
Accents:	2	12 1	12 7	13 5	11 3	14			
Percents:	15	85 7	85 50 93	35 79 20	100				
Odd/Even Percent:		26 %	89 %	Quotient: 3.42					

This simple calculation leads to some interesting results:

1. The supposed iambic structure is justified by the overall distribution of stresses: the iambic marking is realized by means of a statistical predominance of accented even syllables, 3.42 times the number of accented odd.

2. Accepting this iambic pattern, we find syllables 6 and 10 as the most predominant (93 and 100%). This fact, together with the perceived emphasis of syllable 2, the first stressed in the line, conform the shown rhythmic-musical ordering of the poem, into 3 *measures* of 4 syllables each, the first anacrustic (with a note before the bar). The *flexible* number 12, total of syllables plus empty places for the ending pause, allows us different combinations, as 6+6 or 2+8, which would have been suggested by a different set of stressed columns.

These musical arrays are not arithmetic exercises only; on the contrary, they are ways to offer different rhythmic versions for the poem, practical *rhythmic scores* that must be performed, said, heard and felt, as we said above.

4. SONNET VIII

4.1. Text

Music to hear, why hear'st thou music sadly?
 Sweets with sweets war not, joy delights in joy.
 Why lovest thou that which thou receivest not gladly,
 Or else receivest with pleasure thine annoy?
 If the true concord of well-tuned sounds,
 By unions married, do offend thine ear,
 They do but sweetly chide thee, who confounds
 In singleness the parts that thou shouldst bear.
 Mark how one string, sweet husband to another,
 Strikes each in each by mutual ordering,
 Resembling sire and child and happy mother
 Who all in one, one pleasing note do sing:
 Whose speechless song, being many, seeming one,
 Sings this to thee: 'thou single wilt prove none'.

4.2. Rhythmical and phonetic transcription

The same metrical layout devised for sonnet XII is also used here; see some alternatives in 4.3.

♪		♪.		♪	♪.		♪		♪.		'	'	.	
/	~	-		/	~	-		/	~	-		/	~	/
1	2	3	4	5	6	7	8	9	10	11	12			

<i>Mu</i>	<i>sic</i>	<i>to</i>	<i>hear,</i>	<i>why</i>	<i>hear'st</i>	<i>thou</i>	<i>mu</i>	<i>sic</i>	<i>sad</i>	<i>ly?</i>
'mjʊ	zɪk	tə	'hɪə	'waɪ	'hɪərs	'ðəʊ	'mjʊ	zɪk	'sɑd	lɪ
<i>Sweets</i>	<i>with</i>	<i>sweets</i>	<i>war</i>	<i>not,</i>	<i>joy</i>	<i>de</i>	<i>light</i>	<i>s-in</i>	<i>joy.</i>	
'swi:ts	wɪθ	'swi:ts	'we:	'nɒt	'dʒɔɪ	dɪ	'laɪt	sɪn	'dʒɔɪ	

Lines 1 and 3 in 1st and 3rd quatrains (lines 1, 3, 9, 11) are *feminine*, ending with additional unmarked syllables, whose durations are included in the empty period reserved for the end-of-line pause as we said. This only makes these pauses shorter, but maintains regular the three bars phrase in which we have placed each line.

In lines 10 and 12 we find «...ordering/» rhymed with «...note do sing/», which is rather risky since rhyme can be defined as *exact* (consonant) or *approximate* (assonant) *coincidence* of phonetic chains from the last accented vowel in the line; this forces the rendering of the end of line 12 as accented only in «note», the pitch falling afterwards, as in the one but last stressed word «ordering», in 10.8-10. In this way it is pronounced by our two reciters, Gielgud (1995) and Pasco (1984), therefore losing the last iambic foot. It is a curious fact that while Spanish verse behaves similarly to English for these feminine endings in additional syllables, it differs however in the last case quoted, 10.8-10, «ordering»: in Spanish **two** additional syllables ⁴ would be used in this line, instead of fitting them in the usual 10. On the one hand we see that fact as an additional and indirect proof of the greater relevance of accent in this language than in English. But the probable explanation may be found in the old pronunciation of «ordering» as «*orderinge*»: since we learn in Morris (1895:xl) that Chaucer used both participle forms; and it is not unlikely that the modern form was accented, as the old, on the last syllable even in Shakespeare's time. In this way it has been transcribed here. Indeed, we find in lines 325-326 of *The Prologue* (Chaucer 1895:12) the similar rhyme "...make a thing/... his wrytingf" and in many other places ⁵. Thus two alternatives are offered to realize the rhyme of lines 10 and 12, but we believe the second to be the correct one.

The chosen metric pattern forces some words to be syllabified in an unusual manner: while we had to make «vi-o-let» in three syllables (XII.3.6-8), as we saw, «mu-tual»(VIII.10.6-7) falls in two instead of three; and «tu-nèd» (VIII.5.8-9) also in two, instead of one. Some cases are also extremely compressed as «re-ceivest» (VIII.3.7-8), in two. In 4.9 the geminated 'n' has been used for «an-noy».

The beginning of line 9 is complex, due to the contiguous consonants [r,k,h]. We also find there six contiguous accented syllables. Line 10 increases the difficulty because of the [st] couple, which must be said in one single unmarked phonic blow, followed by the marked [each] joined by the last [s] of the previous syllable (10.1-10.2). Syllable 12.2 presents another interesting case of glottal stop which is needed in order to begin a detached clear syllable, [ʔa]. In line 13, 13.1 and 13.2 present two contiguous similar sounds, [z,s] which probably must be assimilated into a new sound or into one of them, the strongest [s] (Sánchez 1995b), a common case in English.

Now let us repeat our statistical research for this sonnet, as we did for XII:

Type:	/~	-/~	-/~	-/~	-/~	-/~	-/~	-/~	-/~	-/~
Syllable:	1	2 3	4 5	6 7	8 9	10				
Accents:	9	11 4	13 7	13 3	11 4	13				
Percents:	64	79 29	93 50 93	21 79 29 9	3					
Odd/Even Percent:		39 %	87 %	Quotient: 2.23						

The accentual emphasis of columns 4, 6 and 10, gives form to a new bar pattern of 2+4+6, with 3 anacrustic syllables, which would appear as:

♪	♪.	♪	♪.	♪		♪.	♪	♪.	♪		♪.	♪	♪.
/~	-	/~	- /	-	-	/	~	-	/~	-	/~	~	/
1	2	3	4	5	6	7	8	9	10	11	12		

In this optional pattern and in the percentage figures that appear for this sonnet we find a measure of our already perceived difficult and imprecise scansion. Even and odd syllables show far less difference than in XII, only a 2.23 factor of even/odd against a 3.42 for XII, and no marked column shows the 100% unanimity shown for the former (except, of course, if we consider «*ordering*» accented on the last syllable). Perhaps the opposition between the grave and solemn character of XII, and the ambiguous and equivocal character of VIII have been emphasized and rhetorically represented in the very poetic form. Form and content are here blended as in other kinds of artistic substrata.

5. FINAL CONSIDERATIONS ON POETRY AND MUSIC

Perhaps the reader will find our approach too musically oriented, too daring in borrowing musical terms and scores to explain poetic recitation. Let us state, in these final comments, that we believe both expressions not the same, despite their evident similarities.

Recited, spoken classical poetry has some features not present in plain, prose speech. They have to do primarily with time: strong regularities take place, making the uttering of the syllables fall at specific moments syn-

chronized with a prearranged scheme, the metrical pattern or meter of the poem. This fact makes reciting poetry akin to singing, showing, together with music, a temporal order similar to measured rhythms. Indeed ancient text books on music placed Rhythmics close to Metrics, sharing even the terminology –as dactyls, spondees and so on. Poetry, then, requires a temporal order. But this order, necessary to convey *charm*, to *enchant* the listener into the particular atmosphere of the poem, does not prevent, however, many *degrees of freedom* –as scientists term it. On the one hand, freedom in rhythm itself, which, as in music, can be slowly made to evolve in many ways: musical terms have codified these changes and effects. On the other hand, freedom in intonation: while tone is highly ordered in music by the choice, out of the infinite possible pitches, of only a few in simple frequency ratios ⁶, it is less so due to its different behaviour in poetry: intonation is mainly speech intonation, carrying the usual non free syntactical but much freer non grammatical information to convey meanings, impressions and expressions.

6. CONCLUSIONS

In this article two Shakespeare sonnets have been analyzed from the point of view of their actual sound when recited. Recitation of poetry is speech, but a particular, rhythmic, almost musical kind of speech. Our aim has been to show this particularity, going from the sound to the syllable, from the syllable to the meter, from the meter to the rhythm; we leave for a posterior paper the important question of intonation –strongly related to syntax, semantics and pragmatics– which would then complete the recitation model.

We have developed an algorithmical model of the metric aspects of the recitation, in which we introduce a statistical account of accented syllables column by column, which offers a formal proof of the until then supposed metric pattern of the poems, the iambic pentameter: what the poetic feeling already perceived, this (simple) arithmetics revalidates, offering in this way a method for formal analysis of metrics and rhythms.

This model is useful primarily for the human reciter; but its conclusions are also valid and operative form the machine, in automatic speech synthesis and recognition systems.

An informal review of English poetry shows a strong predominance of (accentual)iambic feet, and among them, a predominance of pentameters, from Chaucer to Kipling, including Shakespeare with the overwhelming majority of his poetic works and thousands of lines in his plays (sometimes dialogued) in this meter; and Milton with his vast *Paradise*. There are other metres, of course, but one cannot avoid having a strong feeling: the iamb fits perfectly the idiosyncrasy of English. Probably the great percentage of short

stressed-syllables in this language, demands poems with many stressed, marked, syllables, and the iamb (with his less frequent twin brother, the trochee) offers the best proportion to this end ⁷.

Therefore, fixing this foot and meter in the conscience, feeling them, both in recitation and listening, gives access to an enormous *wealth of beauty* (to express boldly our belief); and to lack this rhythmic and metric feeling leads to the loss of an important part of the verse's charm, reducing it to *silent semantic and symbolic beauty*, considerable, it is true, but incomplete. That this danger is not imaginary can be proved on listening to good actors and competent scholars read a poem omitting the underlying rhythm by the use of modern plain speech pronunciation. If this modest contribution helps to the consecution of that metric feeling, we will consider ourselves very fortunate.

Moreover, after acquiring this metric *sense*, more complex versification can be accessed, grasping better the rhythm underlying the appearance of non metrical text and speech. Furthermore, according to the essential similarity of syllabic-accentual metrics in different languages, shown in 1.2., many other poems can be enjoyed as well, like Dante's *Commedia* (in iambic pentameter!), the Spanish *Siglo de Oro* theatre, the French *alexandrine*. Intermediate forms of expression –oratory, recitative, even publicity– will also become better understood.

We hope to have shown in this paper how poetry artistically regulates the phonetic features of the speech sound to give the poem a life in Time –as sonnet XII expresses so well, *telling by counting strokes*–, a life necessary to *realize* the poem, which is dormant on its *bier* until this moment. As Music, poems must be *performed*, Poetry is Sound; only this gives Verse the charm, the beauty and, paradoxically, the meaning, much richer in speech than in punctuated written text.

NOTES

¹ How sudden? Sudden enough to be perceived as that: it is the perceptual mechanism that judges. Probably the degree of *suddenness* could explain the difference between concatenation of two vowels and *real* diphthongs.

² Hence, the syllable is, using metrical terminology, a sort of *timbric* foot, in the sense that a syllable presents a timbric cluster with an opposition between two basic timbres: consonantal (noisy, unvoiced, transitory) versus vocalic (continuous, voiced, musical), with intermediate forms; this cluster is formally similar to the traditional metric foot, a syllabic cluster with the long/short opposition (Sánchez 1995b).

³ We leave out the *pure* accentual metric, in which equidistant stresses are filled by variable number of syllables, not being relevant for our aim in this paper. This type of metrics appeared both in remote (early medieval) and contemporary times.

⁴ In Spanish we find, for instance: «/a-so-ma-ba_a-sus-o-jos-u-na-LÁ-gri-ma / y_a-mi-la-bio_u-na-fra-se-de-per-IDÓN/» in *rima* XXX of Becquer (1969), in which we have a 10-syllable line paired with a 12, both accented on the 10th. We were unable to find similar examples in English or French.

⁵ Only in *The Prologue* (Chaucer 1895:1) we find the pairs: lin 137-138, «waymentinge/ brenninge/»; 203-204, «pleyinge/ morweninge/»; 757-758, «bringe/ beddinge/»; 1103-1104, «smellinge/ flikeringe/» and so on. Many other interesting rhymed pairs may also be found here that would probably enlighten us about the Shakespearean rhyme.

⁶ Indeed, speech and music uses similar traits (pitch, timbre, intensity, quantity). But musical pitches remain steady for a while —the so called *notes*— while speech pitch varies continuously. Musical pitches show simple frequency ratios between the degrees of their scales: the octave between do and its octave presents the 2:1 ratio; do-sol, 3:2; do-fa, 4:3; *natural* do-mi, 5:4; do-re, 9:8, and so on. Musical rhythms use similar proportions: a whole and a half present the *octave* 2:1; a dotted half and a half, 3:2, and so on. Plain speech does not use these simple ratios for pitch and quantity: but poetic speech approaches them, not in pitch, but in quantity, as we have seen, thus becoming a *genre* of speech akin to music (Sánchez 1995a).

⁷ Because no contiguous marked syllables are possible, since the mark is an emphasis on a syllable with respect to its neighbours. Hence, simple alternance is the best solution to approach marked syllables as much as possible.

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