

Chapter 5

Consecutive Stresses

I have been accounting for poetic rhythm by assuming the existence of three metrical dimensions: prose rhythm, metric pattern, and performance. For our purpose, prose rhythm consists of irregularly alternating stressed and unstressed syllables. Metre consists of regularly alternating weak and strong positions of the abstract versification pattern. The present theory assumes that a rhythmical performance is a solution to a perceptual problem posed by the conflicting patterns of metre and prose rhythm. In the verse instances discussed in the present chapter there are sequences of consecutive stresses. I will consider four typical configurations of consecutive stresses and investigate some of the theoretical problems involved, including the irrefutability of metricalness claims made by theoreticians. I will explore the problems of rhythmical performance involved, in light of the principles elaborated in Chapters 2 and 3. These principles predict that wherever metrical complexities arise, the performer will tend to have recourse to extra grouping on the one hand, and over-articulation (including parsing) on the other.

A Test Case

Grouping and parsing may occur even by using the same vocal manipulations. To understand how they interact, consider the following verse line:

1. Another clipped her profúse lócks, and threw
(Shelley, "Adonais", 93)

In the phrase "her profúse lócks" the stress has been displaced from an even-numbered (strong) position to the right, to an odd-numbered (weak) position. This generates a sequence of two unstressed syllables followed by two stressed ones. According to the principles expounded in Chapters 2 and 3, this requires a performance in which the two stressed syllables are over-articulated, while the four syllables are strongly grouped together, and conspicuously separated in some way from their sequel. In the present instance, there occurs an extra difficulty. When we have to resort to such a grouping of syllables in order to solve a metric problem, certainty is suspended for a stretch of four syllables, and is re-established at a point where the linguistic stress pattern and the versification pattern have again a coinciding downbeat. Perception of the verse line is facilitated if it is parsed by a caesura into two segments in the middle. As argued in Chapter 4, in the iambic pentameter line this should occur after the fourth, fifth or sixth position. Such a group of four syllables

Click here to go to the sound files for this chapter:
http://www.tau.ac.il/~tsurxx/Rhythm_Book_mp/Chapter5a_Sound_Files.html

achieves greatest stability if the coinciding downbeat occurs in the tenth position (at the line ending), the fourth position (before the unmarked caesura) or in the sixth position (before the marked caesura), in a decreasing order of naturalness. In Shelley's line, however, the group ends in the eighth position, where the smallest degree of stability is achieved. This requires the performer to deploy more rigorously the devices of rhythmical performance.

Let us consider briefly two performances of this line by one performer, DF. DF is one of the colleagues from the academy who over the past two decades recorded a selection of problematic verse lines at my request. He was one of the few reciters who combined a keen intuition as to the problems arising in the verse line and the solutions to be offered with an admirable command of his voice to carry out his solutions. His notions of prosody were intuitive rather than systematic, and he had no advance knowledge of the hypotheses to be tested. He performed excerpt 1 twice: first with the stress on the first syllable of "profuse", and then, being unsatisfied, he repeated the line with the stress on its second syllable. His second reading of "her profuse locks" is shown in Figure 1.

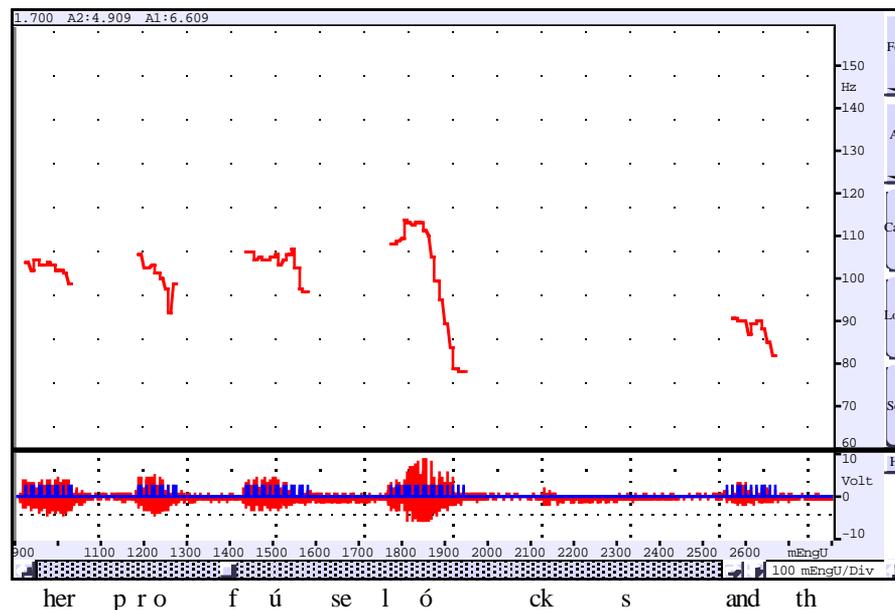


Figure 1 Wave plot and f_0 extract of "her profuse locks, and th" in DF's reading

[Listen to sound file](#)

Four aspects of the ending of the phrase "her profuse locks" are conspicuous in this graph. First, there is a very long, falling pitch contour at the end of the phrase; second, there is a 59 msec pause before "and", preceded by an exceptionally long /s/ (289 msec) which, in turn, is preceded by a 75-msec-long release of /k/ which, in its turn, is preceded by an exceptionally long 129-msec unvoiced section interpreted by

the listener as the closure of the vocal tract before release. My research assistant was puzzled by the unnaturalness of the utterance, and asked me as for its possible purpose. My answer was that the phrase-ending is probably marked by an exceptionally strong articulation in order to effect both an emphatic grouping of the preceding four syllables and their segregation from the ensuing syntactic unit, and to save mental processing space for the perception of the stress pattern and the metric pattern simultaneously, according to the foregoing analysis. To check this possibility, we had a look at the wave and pitch plots of DF's first reading, where he stressed the first syllable of "profuse". We expected that the falling intonation contour, the pause, the /s/, the release of /k/ as well as the preceding unvoiced period would be shorter. The actual graph is shown in Figure 2. These expectations were amply fulfilled. In Figure 1, the intonation curve of "locks" falls from 113.660 to 78.470 Hz, that is, a fall of 35.19 Hz; whereas in Figure 2 it falls from 131.250 to 111.929 Hz, that is, a fall of 19.321 Hz only. The duration of the pause in Figure 2 is only 25 msec, that of /s/ only 175 msec, that of the release of /k/ 19 msec; only the unvoiced section between the vowel and the release is insignificantly longer, 131 msec.

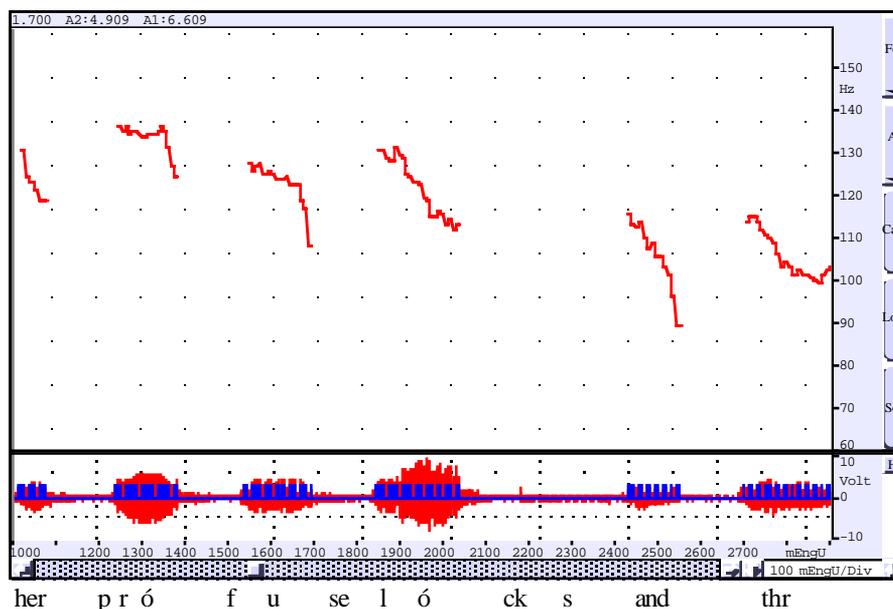


Figure 2 Wave plot and f_0 extract of "her prófuse lócks, and thr" in DF's reading

[Listen to sound file](#)

This difference between Figures 1 and 2 illustrates (does not prove) the assumption that there is a tendency to resolve perceptual problems arising from certain kinds of stress deviations by grouping up to four syllables into a symmetrical metric figure with patent over-articulation at the end of the group as well as at the end of syllables with deviating stress. Accordingly, one should also expect that, in the absence of other indicators, the /s/ of "profuse" with the stress on the second syllable

ble should be longer than with the stress on the first syllable not only in absolute terms, but also relative to their context. Indeed, in Figure 1 it is 175 msec long, in Figure 2 only 125 msec long. The duration of the whole verse line in Figure 1 is 3.258 seconds, in Figure 2 only 3.129 seconds. The duration of the phrase “her profuse locks” is 1.565 seconds in Figure 1, in Figure 2 only 1.375 seconds. In other words, the whole verse line is 1.04 times longer in Figure 1 than in Figure 2, the phrase “her profuse locks” is 1.13 times longer, whereas /s/ at the end of “profuse” is 1.4 times longer, indicating that the boundary of the syllable “-fuse” is more strongly articulated when it is a stressed than when it is an unstressed syllable in a weak position.

This example serves as an illustration of the theory of rhythmical performance outlined in Chapters 2 and 3. But it can also serve as an introduction to two more specific issues, which have become classics in metrical discussions. Here they will be treated within the foregoing theoretical framework. One issue concerns the question whether such a sequence of two stresses can be performed as “an accentual spondee (or ‘level’ foot)”; the other concerns the question whether such a sequence in which the stressed syllable of a polysyllabic occurs in a weak position is acceptable in poetry.

Two Consecutive Stresses

Consider the following two groups of verse lines:

Group I

2. To a gréen thóught in a gréen sháde (Marvell)
3. Nor shall Déath brág thou wonderest in his shade (Shakespeare)
4. To the wíde wómb of uncreated night (Milton)
5. Of the wíde wórlđ I stand alone and think (Keats)
6. Of the wíde wórlđ dreaming of things to come (Shakespeare)
7. With sanguine light, through the thíck, rágged skirt (Shelley)

Group II

8. In profúse stráins of unpremeditated Art
(Shelley, “To a Skylark”)
9. Another clipped her profúse lócks, and threw
(Shelley, “Adonais”, 93)
10. His extrémé wáy to her díml dwélling place
(Shelley, “Adonais”, 68)
11. Upon the suprémé thémé of Art and Song
(Yeats, “After long silence”)
12. And sat as princes, whom the suprémé Kíng
(*Paradise Lost*, I. 735)

13. Supposed as forfeit to a confined Dóom
(Shakespeare, Sonnet 107.4)
14. No, let the candied tongue lick absurd pómp
(Shakespeare, *Hamlet*)
15. O golden-tongued Romance with seréne lúte
(Keats, "On sitting down...")
16. Shall behóld Gód, and never tast Deaths woe
(Donne, Holy Sonnet 7.8)
17. Shall be óld Gód, and never tast Deaths woe

In both groups we find in each line a cluster of two consecutive stressed syllables. In the first group, the first one constitutes a monosyllabic word ("green thought", "green shade", "wide womb", etc.); in the second group it constitutes the last syllable of a polysyllabic. Such outstanding theoreticians as Wimsatt and Beardsley, and Halle and Keyser consider these two types as equally acceptable. Magnusson and Ryder (1970), on the other hand, claim that their prosodic theory is superior to that of Halle and Keyser in that it rules out such lines as the ones included in Group II, while they are metrical under Halle and Keyser's stress-maxima theory. Kiparsky too rules such verse lines unmetrical (see Barsch, 1987: 10; Youmans, 1989: 349-350 and passim). Halle and Keyser could, of course, reply that their theory is superior, because it admits both groups of lines and, indeed, both types are metrical. One cannot help asking if Shakespeare, Donne, Milton, Shelley, Keats and Yeats don't conform with Magnusson and Ryder's or Kiparsky's rulings, how can we tell who is right and who is wrong: the poets, or the theoreticians? The truth is that all rulings of "metricalness" are "irrefutable" (in Beryl Lake's [1967] sense). Halle and Keyser might claim that their theory is more adequate because it takes account of verse lines written by some of the greatest English poets. Magnusson and Ryder, in turn, may admit the existence of such instances, but claim that they don't refute their theory: they are, in fact, unmetrical lines (indeed, Halle and Keyser do rule some other verse structures as "unmetrical", by criteria that are no less irrefutable). It appears to be a matter of arbitrary decision, in Wittgenstein's sense, as to where to draw the limit between metrical and unmetrical, just as between "hills" and "mountains"—before or after Group II.¹

The present approach assumes that this is not the most illuminating way to handle the issue. "Metricalness" appears to be an empty notion: there is no fixed limit of acceptability. A verse line is acceptable if it can be performed rhythmically, in

¹ This Wittgensteinian notion was realised by a generative metrist over one decade after the publication of my 1977 book (where I use more fully Wittgenstein's terminology): "I believe that linguists, like metrists, should define central prototypes, establish relative degrees of deviation from these prototypes (linguistic markedness), and assume that the boundary between grammatical and ungrammatical strings is fuzzy rather than well defined [...] the boundary between grammatical and ungrammatical becomes rather arbitrary" (Youmans, 1989: 343-344).

the sense explained in Chapter 3. Some performers may be capable of performing rhythmically only Group I; some performers may be capable of performing both groups. The difference between Group I and Group II is not that one is “metrical” and the other is not, but that it is more difficult to perform the second than the first as rhythmical. If the performer is capable of performing the verse line rhythmically, lines in Group II will display greater tension than lines in Group I; if he fails, the verse line disintegrates in perception. The theory propounded here proffers principles for a rhythmical performance of such deviant lines. Thus, Wimsatt and Beardsley, and Halle and Keyser are right in assuming that both types of line are acceptable; but Magnusson and Ryder, and Kiparsky too are right in claiming that the two groups are different; but this is not an all-or-nothing choice: they are different in degree, not in kind. It is not a dichotomy of metrical/unmetrical, but a spectrum of mounting tension—provided that the verse lines are performed rhythmically. In other words, excerpt 16 is inadmissible for Magnusson and Ryder or Kiparsky, whereas excerpt 17 would be admissible; according to the present conception both are admissible, but excerpt 16 displays greater tension than excerpt 17.

It is interesting to notice how consistent professors of linguistics and literature are in their strategies to get rid of such nuisances as Group II constructions. I have asked many colleagues to record difficult lines for me; when they read excerpt 12, for instance, they frequently insist that Milton may have stressed the first syllable of *supreme*. I usually give them the following four answers:

- * The place of stress may have changed since Shakespeare, Donne and Milton, but there seems to have occurred little change since the days of Keats, Shelley and Yeats.
- * *Supreme*, in Milton’s time, was not pronounced with the stress on the first syllable; the word occurs twenty-one times in *Paradise Lost*, and it begins in a strong position only twice.
- * “A special rule of stress shift” some time in the history of language is unlikely. Such phrases occur in Shakespeare, Milton and Donne; they are absent from Pope, and recur in the age of Romanticism. This would suggest a rule of stress shift that appeared, disappeared, reappeared and is now virtually absent. Alternatively, one might assume that the reason is aesthetic. This metric figure is positively correlated with divergent metric style: it occurs only in the works of poets who have a high occurrence of stressed syllables in weak positions, who have a fair number of strings of stresses that end in weak positions, and a large number of compounds that begin in weak positions, as well as a high percentage of run-on lines (cf. Chapter 1).²

² Gilbert Youmans quotes Milton’s 1809 editor, Henry J. Todd: “I conceive that Milton also intended the last foot of the following verse to be a spondee, as more dignified and impressive than the accentuation, not uncommon indeed in our old poetry, of *supreme* on the first syllable” (Todd, 1970: 199), quoting then excerpt 12. Youmans comments:

- * It appears that a significant majority of these figures end at special points of grouping: in the fourth and last position of the line. These are “grouping points” on several grounds in English poems (however, in order to say anything reliable on this matter, a much larger sample of such lines must be collected).

How are such verse lines performed? Wimsatt and Beardsley (1958: 598) write: “The notion of an accentual spondee (or ‘level’ foot) in English appears to be illusory, for the reason that it is impossible to pronounce any two successive stresses in English without some rise or fall of stress—and *some* rise or fall of stress is all that is needed for a metrical ictus”. To substantiate this claim, the authors quote such lines as excerpts 8, 11, and 2. In excerpt 8, they believe, the crucial fact is that “strain” is *more* stressed than “-fuse”. In excerpt 11, “‘the’ and ‘su-’ are so weak only because ‘-preme’ is so strong; and because ‘-preme’ is so strong, ‘theme’ has to be yet stronger” (ibid., 594). As for excerpt 2, “whatever we do with the two pairs of syllables, it remains absolutely certain that ‘thought’ is stronger than ‘green’ and that ‘shade’ is stronger than ‘green’” (595).

This absolute certainty is not as well founded as it could be. Thus, for instance, in his investigation of eleven recorded readings of Shakespeare’s Sonnet XVIII, Chatman (1965) played excised segments of two syllables each to a panel of twenty one professors of English, asking them to make judgments on their relative stresses. The professors voted unanimously that, e.g., in four out of eleven performances, *Rough* and *winds* were performed with level stresses, in six *winds* was performed as slightly more prominent, whereas in one performance *Rough* was slightly more prominent. This I take as evidence that “the notion of an accentual spondee (or ‘level’ foot) in English” is *not* illusory (and there were additional instances unanimously voted as “level stresses”).

Consider the reading of excerpt 2 by DF, as represented in Figure 3. In this reading, “green” and “shade” are perceived as bearing equally heavy stresses. But, as the graph shows, the two stresses are produced by different acoustic cues (and this is typical throughout the corpus investigated): “green” and “shade” are over-articulated by distinctly separate intonation contours. As Fry (1958) established experimentally, perceived stress is a mixture of four kinds of acoustic cues: intonation inflection, pitch change, duration, and loudness—in this order of decreasing effectiveness. Chatman (ibid.) found exactly the same order of relative effectiveness, in his unique

Todd is almost certainly mistaken about Milton’s intention in this case. Kiparsky (1977) argues persuasively that in lines such as (12), adjectives such as *supreme* must have shifted their stress to the first syllable (in conformance with the rhythm rule). Otherwise, these lines would violate one of Kiparsky’s categorical rules for Milton, which requires iambic words to occupy iambic feet (rather than straddle foot boundaries) (Youmans, 1989: 349-350).

It would be, indeed, most inconsiderate on Milton’s part to violate the rules formulated for him by Kiparsky. At variance with Youmans, I think Todd may be right even about the possible contribution of the “spondee” to the perceived effect of the line.

experimental setup. The dominant acoustic cue of the stress on “green” is duration; a rising-and-falling pitch curve cues the stress on “shade”, falling long enough to break even with the duration of “green”.

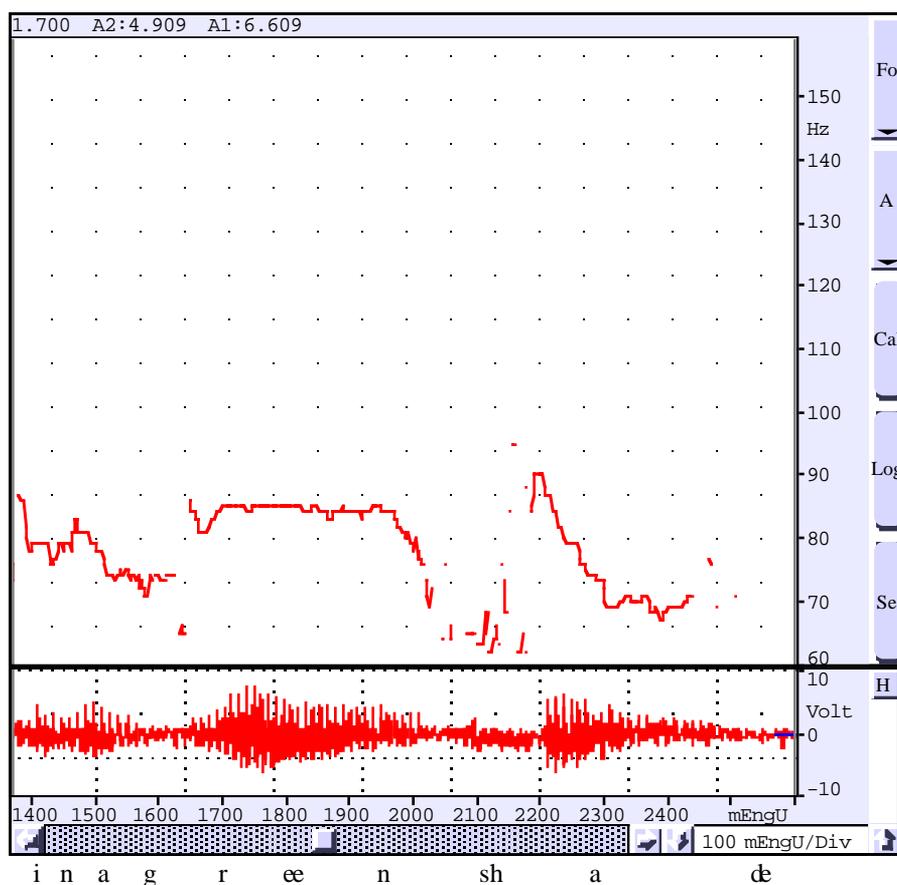


Figure 3 Wave plot and f_0 extract of "in a green shade" in DF's reading

[Listen to sound file](#)

Thus, we may have two typical performance patterns for such metric figures, in which a stress is displaced to the right, yielding a sequence of two unstressed syllables followed by two stressed ones: Wimsatt and Beardsley have described a gradually rising pattern of stresses, which may be called a "stress slope"; in Figure 3 we have encountered a stress pattern that can be called a "stress grade". British actors frequently have recourse to both but, during the past forty years or so, they display a distinct preference for stress grades. The Marlowe Society, in their readings of Shakespeare's sonnets overwhelmingly prefer stress grades; the early Gielgud had a strong predilection for stress slopes, but in his later readings of the Sonnets he had a considerably greater number of stress grades.

In the foregoing two groups, the reciters appear to have a free choice between two alternative performance patterns. But there are two additional types of consecutive stresses in the iambic metre (displayed in Groups III and IV) for which Wimsatt and Beardsley's solution would not be available. Consider Group III:

Group III

18. To eat the wórl'd's dúe, by the grave and thee
Shakespeare, Sonnet 1.14
19. And see thy blóod wárm when thou feel'st it cold
Shakespeare, Sonnet 2.14
20. Be scorned, like óld mén of less truth than tongue
Shakespeare, Sonnet 17.10
21. Resembling stróng yóuth in his middle age
Milton, *Paradise Lost*
22. Wasting of óld tíme, with a billowy main
Keats, "On Seeing the Elgin Marbles"

While in the first and second group the sequence of stressed syllables ends in an even-numbered (strong) position, in the third group it ends in an odd-numbered (weak) position. In the verse lines quoted above, the first one of the two consecutive linguistic stresses is subordinated to the second. In Groups I and II, this is in harmony with the requirements of the iambic metre, because they correspond to a sequence of a weak and a strong position. Quite frequently, however, in Shakespeare, Milton, Shelley and Keats (rarely even in Pope) there are strings of consecutive stresses whose rightmost, strongest stress occurs in a weak position (see Group III). The same is true for compounds like "blackbird" (where, as opposed to phrases like "black bird", the first word bears greater stress); these most frequently begin in a weak position in Shakespeare, Milton, Shelley and Keats, but never in Pope. Wimsatt and Beardsley do not mention the existence of such lines; at any rate, the stress-slope performance suggested by them would not apply to such verse structures. For Halle and Keyser such structures are "metrical", just like those in the other groups, as long as no stress maximum occurs in a weak position (and they say nothing of performance). It was, precisely, the existence of such lines that made them conclude (wrongly, I believe) that in British, but not in American English, the adjective and the noun bear equal stress in such phrases. Hayes, by contrast, rules such verse lines "unmetrical" (Barsch, 1987: 14). According to the present conception, this is not a difference of stress rules, but a stylistic difference. Shakespeare, Milton, Shelley, Keats and Yeats expect their readers to make a greater effort in performing their lines rhythmically than Pope. Logically, there are three options open to the reciter in such lines: 1. He may put a stronger stress on the rightmost stress of the string, and thus preserve the so-called "nuclear stress rule", but violate metre. 2. He may put a stronger stress on the last-but-one stress of the string, and thus conform with metre, but violate the linguistic rules of stress. 3. He may put equal stress on both words,

pace Wimsatt and Beardsley, and avoid the outright violation of either stress pattern or metre by slightly distorting both; by over-articulating their phonemes as well as word boundaries he may still afford the listener access to the metrical set behind the immediately perceptible stress pattern.

This may also explain why a reciter should ever want to prefer a stress grade with a “level foot” to the admittedly easier (and more natural) solution of a stress slope where available. There appear to be two reasons for this, one related to consistency, the other to doing justice to the aesthetic complexity of the line. As for consistency, reciters may have recourse to a “stylized” stress pattern, and “level” two consecutive stresses in anticipation of instances in which the relative strength of the stresses conflicts with the iambic lilt. As for aesthetic complexity, Beardsley (1958: 469) proffers three general canons for aesthetic evaluation: unity, complexity and some intense human quality. A work can be said to have greater aesthetic merit if it can be said to have, other things being equal, greater unity, or greater complexity, or display some intense human quality as a regional quality. A stress grade brings out more conspicuously the complexity of the verse line, and generates greater tension, provided that it is performed in such a way that the metric pattern too reaches awareness (according to the principles outlined above). Otherwise complexity is achieved at the expense of unity, and the verse line disintegrates in perception.

“Of the Wide World”

Now let us consider three performances of excerpt 6, from Shakespeare’s Sonnet 107, by leading British actors. In all three readings the stresses of “wide world” are perceived as heavily stressed; but the stresses are produced by different acoustic cues. In two of the readings the stresses are perceived as equally heavy; in one of them, contrary to expectation, the stress on “wide” is perceived as heavier. In Callow’s reading (Figure 4) the duration of “wide” is considerably longer than that of “world” (641 vs 544 msec) and the pitch of its rising-and-falling humpback intonation contour is considerably higher. Its amplitude too is roughly twice as high as that of “world”. The stress of “world” is cued by its long-falling intonation contour (from 137.812 to 74.493 Hz). This contour also serves for the over-articulation of the word boundary. The boundary of “wide”, by contrast, is over-articulated by an unduly long and loud release of the /d/: 44 msec long (almost five times longer than the release of /d/ after “world”), followed by a 56 msec pause perceived as over-articulation of the /d/ rather than a pause; and its amplitude is more than twice that of the /d/ at the end of “world”.

Callow’s reading of this phrase brought to our attention a paradoxical phenomenon. When we listened to the two words “wide world”, we imagined to have discerned something that was hard to believe. So we asked several colleagues to listen to the line and make certain judgments. There was no doubt: they confirmed our impression. When asked whether one of the two syllables was more strongly stressed

than the other, they were quite certain that “wide” was more strongly stressed. When, however, asked whether this interfered with the acceptability of the verse line as iambic, they were, again, quite certain that it didn’t. This was our impression too. It should be noticed that “wide” occurs in a weak position, “world” in a strong position. I have quoted above Wimsatt and Beardsley’s dictum: “The notion of an accental spondee (or ‘level’ foot) in English appears to be illusory, for the reason that it is impossible to pronounce any two successive stresses in English without some rise or fall of stress—and *some* rise or fall of stress is all that is needed for a metrical ictus”. If they were right, the greater stress on “wide” ought to destroy the iambic line. The present research has assumed all along that “an accental spondee (or ‘level’ foot)” *is* possible in English. It also predicted that a considerable number of qualified performers would have recourse to a “stress grade” where Wimsatt and Beardsley predict a “stress slope” in performance, and that listeners experienced in poetry reading would perceive such performances as legitimate actualizations of iambic metre.

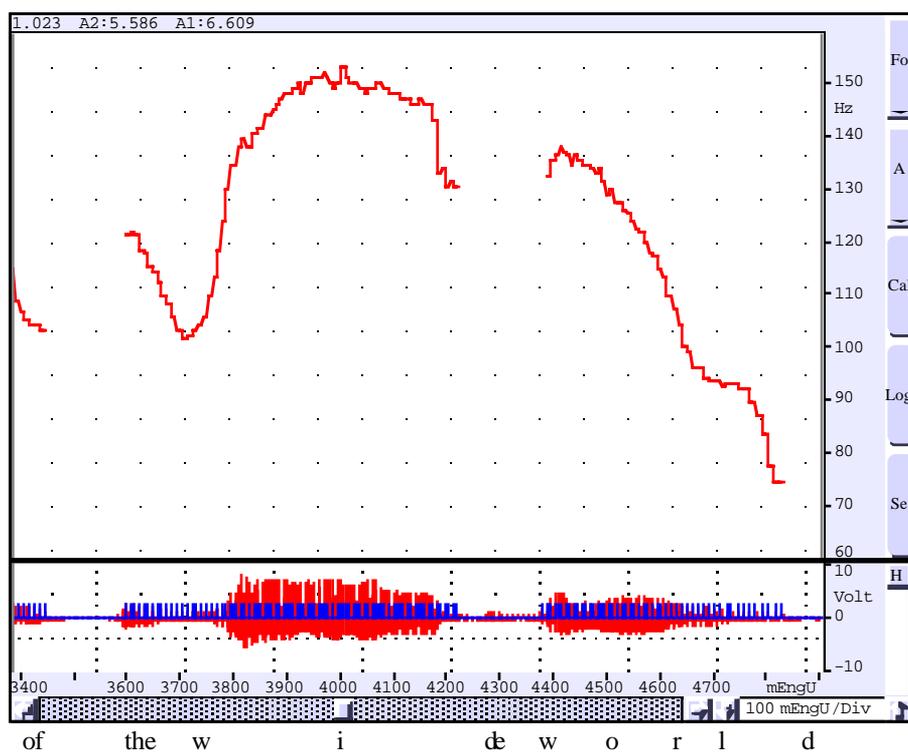


Figure 4 Wave plot and F₀ extract of “of the wide world” in Callow’s reading

[Listen to sound file](#)

Our research has amply confirmed these predictions (what is more, contrary to our expectations, leading British actors during the past four decades at least tend to

prefer the stress grade to the stress slope, even though the latter is an easier and more straightforward solution to the perceptual problem). Now the judgments reported here may call in doubt even the second part of Wimsatt and Beardsley's dictum ("and *some* rise or fall of stress is all that is needed for a metrical ictus"). These judgments strongly suggest that in such instances our rhythmic response works in a different way (very much in harmony with the present conception). The issue at stake is what it is that determines the rhythmic effect of the line: the heavy stresses on both syllables, or the slight difference between them. It would appear that in such instances the listener tends toward the former possibility, and it makes little difference which one is more strongly stressed (such an assumption would also be compatible with the revised version of the Halle-Keyser theory). It would appear (in harmony with the present theory) that rather than making a direct comparison between the two stresses, the listener perceives that the heavily stressed syllable in the weak position disturbs metric regularity and arouses anxiety in the listener, whereas the heavily stressed syllable in the strong position (before the caesura) reinstates metre and the listener is relieved. In other words, the two stresses are not linearly compared to one another, but via the process of disturbance and reinstatement of metre.

In Gielgud's reading the equal stresses are indicated by different cues. The intonation contour of "wide" is somewhat higher than that of "world"; its amplitude is almost three times greater. The duration of "world", by contrast, is 1.84 times longer than that of "wide", compensating for its lower pitch and amplitude. By the same token, this excessive duration has an additional function here, displaying a peculiar interaction with the intonation contour. There is no measurable pause between "world" and "dreaming". However, when listening to the whole line, the listener may feel some distinct discontinuity after "world" indicating a caesura and, at the same time, some "promise" of continuity, suggesting that the perceptual unit is, nonetheless, larger. The "promise" of continuity is generated by the intonation contour that fails to fall, even forms a "trough" with a slightly rising edge on the /l/. Discontinuity, at the same time, is suggested in two ways: by pronouncing two distinct /d/s at the end and at the beginning of the two consecutive words, and by the disproportionately prolonged syllable. The boundary between the words "wide world" too is over-articulated: The release of the /d/ at the end of the first word is considerably longer and louder than that at the end of the second one.

In the Marlowe Society's reading too the two words are perceived as of equal prominence. And again, the two stresses are cued by different means. Again, the intonation contour of "wide" is higher than that of "world", and its amplitude is 1.7 times greater. "World", in turn, is clearly over-articulated by a rising-and-falling intonation contour; and is somewhat longer than the preceding adjective. The boundary between the words "wide world", again, is over-articulated, and in the same way: the release of the /d/ at the end of the first word is considerably longer and louder than that at the end of the second one. In addition, a late peak on "wide" effectively groups the adjective with the ensuing noun.

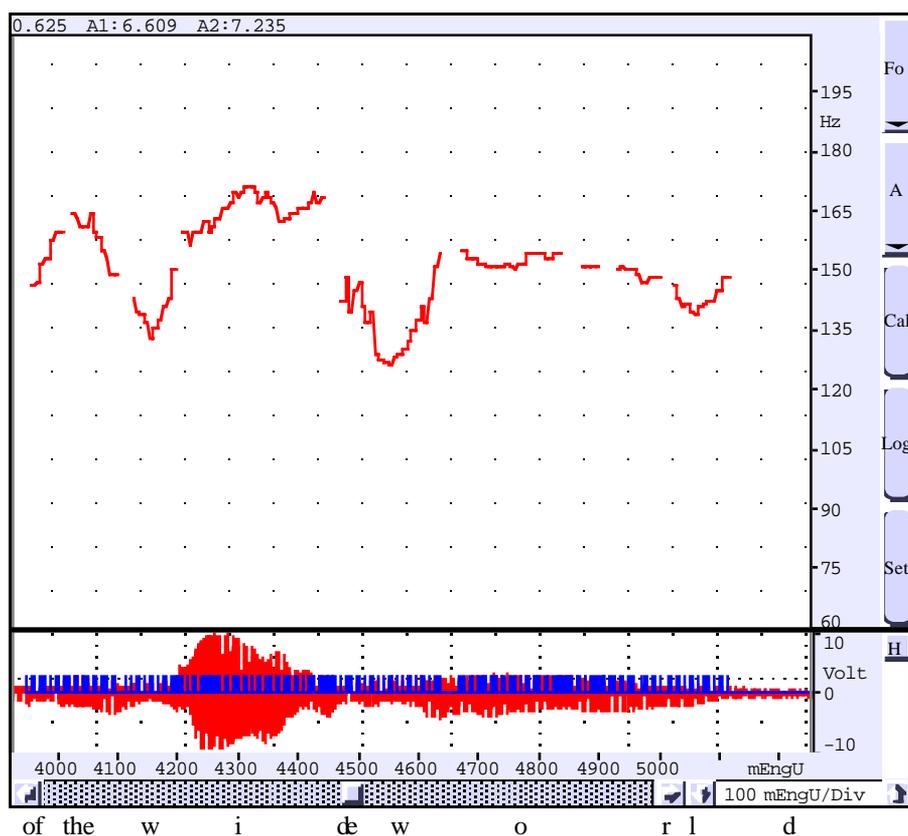


Figure 5 Wave plot and f_0 extract of “of the wide world” in Gielgud’s reading

[Listen to sound file](#)

The foregoing brief comparison of three readings of one verse line demonstrates, then, several of my contentions. First, two consecutive stresses *can* be performed in English as equally prominent, provided that the phonemes and boundaries of the words are properly articulated. Second, three leading British actors do tend to perform two consecutive stresses in this verse line as equally prominent (one of them even puts a slightly stronger stress on “wide”). Third, all three actors typically cue the two stresses by different cues. Fourth, the results are perceived by listeners as perfectly acceptable parts of an iambic pentameter line. The first and fourth point depend on listener judgment. In the present instance, judgments were made by persons involved in the research. As for the first point, members of the panel of twenty one professors of English in Chatman’s experiment were in unanimous agreement in judging certain strings of stressed syllables as “spondaic”. Unfortunately, Chatman did not ask them whether the results were acceptable as iambic. In this respect, fur-

ther large scale experimentation is required; but the findings of such a project would not change the methodology presented here.

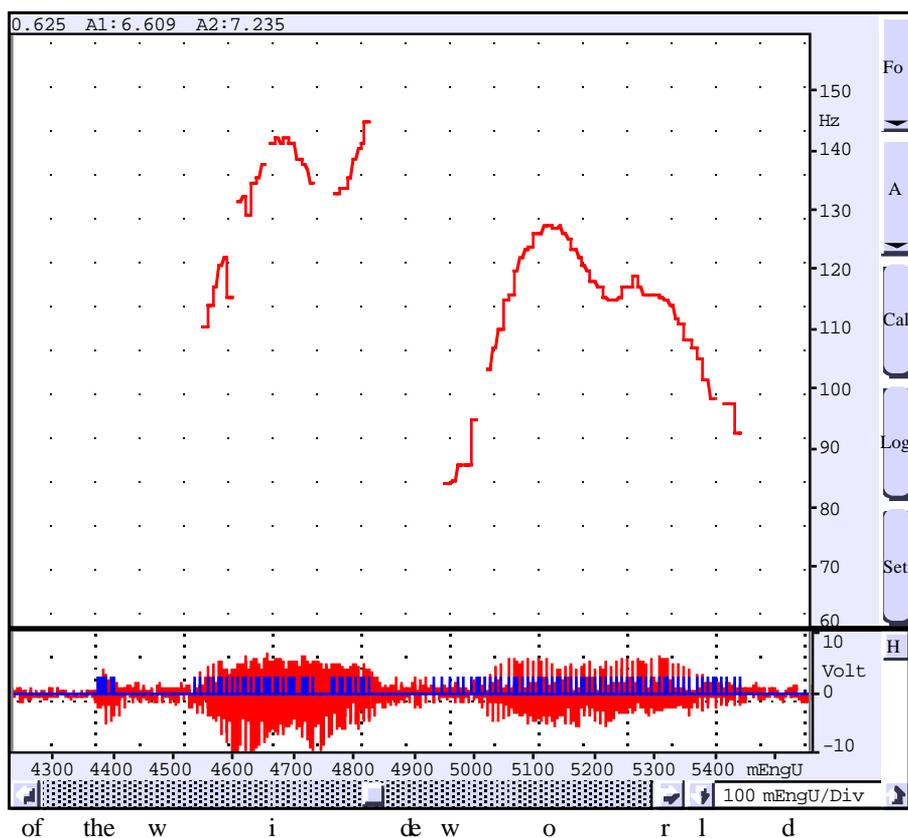


Figure 6 Wave plot and f_0 extract of “of the wide world” in Marlowe Society’s reading

[Listen to sound file](#)

Excerpts 4, 5 and 6 raise an interesting issue. Both Shakespeare and Keats have recourse to the phrase “wide world”, with “wide” in a weak position; Milton has recourse to “wide womb”. In “wide world” the two words have the same consonantal rhyme w—d, and differ only in the syllabic crest, which is a diphthong in the adjective, a long vowel with two sonorants in the noun. “Womb” too alliterates with “wide”, the /w/ being followed by a long vowel with a sonorant. This forces the sound structure of the phrases to our attention, and groups their two words strongly together. Whether the three poets invented this pattern independently, or whether the later poets adopted it from the earlier ones, this structure may have an expressive affect. It should be noted that none of the reciters attempted to “squeeze down” the adjective into a weak position; on the contrary, all of them over-articulate it. Thus, the adjective is perceived as exceptionally “wide”, precisely because it occurs in a

weak position. The perceptual requirements of the stress grade as discussed above allow this over-articulation without destroying the iambic pattern. We don't know how Shakespeare, Milton or Keats performed such verse lines, but whatever their performance, the similarity indicates that they may have realized this "expressive" potential of these phrases.

"To a confined Doom"

In the fourth line of the same sonnet we encounter excerpt 13, a strong representative of Group II above. Callow avoids the metric complexity of this line, by a straightforward inversion of the stress on "confined", with a rather prominent stress on "con-", causing the stress pattern to comply with the metric pattern. Gielgud's and the Marlowe Society's performances offer here a solution which I have not encountered so far elsewhere in my corpus. This is a performance which, I assume, is meant by some critics when they speak of "hovering stress".

Listen to sound file: Callow

Listen to sound file: Gielgud

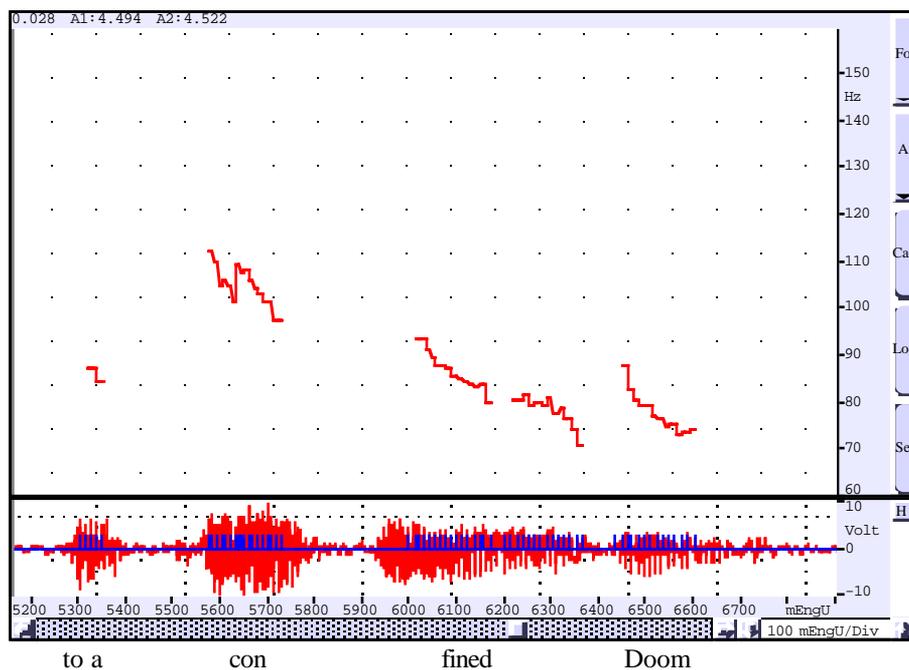


Figure 7 Wave plot and f_0 extract of "to a confined Doom" in the Marlowe Society's reading

Listen to sound file

The Marlowe Society performs the three syllables "confined Doom" as three separate intonation phrases (Figure 7). Nonetheless, the intonation contour of "fined" constitutes "good continuation" (in Gestalt terminology) of the intonation contour

of “con-”. The two stresses are perceived as roughly equal, and it is only the listener’s grammatical knowledge that differentiates between them. They are cued by conspicuously different cues. The stress of “con-” is cued by high pitch and intonational inflection, reinforced by amplitude; whereas the stress of “-fined” is cued by excessive duration and a long, falling, terminal contour. “Doom” has been assigned another separate terminal contour. Gielgud offers essentially the same kind of solution.

Many years ago DF too recorded this verse line. On first sight he pronounced “confined” as trisyllabic (with “-ed” as a separate syllable), to avoid the two consecutive stresses. Then, being unsatisfied, immediately repeated this line; this time he performed “confined Doom” as a perfect stress grade. One hears that the three syllables “confined doom” are over-articulated, and the two syllables “-fined doom” are excessively over-stressed too.

Before going into the details of this reading, I wish to make a comment. It has been observed frequently that, in several languages, the same sequence of sounds is pronounced as shorter in a disyllabic than in a monosyllabic, as, e.g., *tail* and *tailor*. Fónagy and Magdics (1960) found that this tendency was stronger in poetry than in any other type of discourse.³ This tendency throws some light on the difficulty that so many readers experience with rhythmic figures like “shall behóld Gód” (excerpt

w s w s

³ This was usually regarded as support for the theory of “equal timing”, as evidence for a “tendency to equalisation” (cf. Chapter 9). Fónagy and Magdics, however, found that this was only a small part of the real story: “The speed of phrases depends on their length. The shorter phrases are uttered more slowly. The dependence of speed on length gets much less, however, in phrases consisting of more than 2 or 3 syllables. The lengthening is considerable in quite short phrases” (192). The authors offer no specific explanation (except for a vague Freudian notion of “rhythmic impulse”).

I suggest that the “tendency to equalisation” works in the direction of slowing down monosyllabics rather than speeding up disyllabics. Rubenstein, Decker and Pollack (1960) conducted intelligibility tests with monosyllabic, disyllabic and trisyllabic words. Longer words were found to be more intelligible than shorter words. The authors interpret these differences in intelligibility in terms of “acoustic discriminability and relative word frequency”. The first of these two factors has direct bearing on our problem. “It is reasonable to believe that the longer the word, the more cues, i.e., phonemic differences, are given for its discrimination (177). “Assuming the average energy per phoneme to be independent of word length, the proportion of phonemes properly recognized would be the same in long words and short words. Since, however, there are indications that the average redundancy per phoneme increases with word length, the number of correct word reconstructions would be greater in the case of long words than in short words” (177n.)

The tendency for lengthening, e.g., *tail* as compared with the same sequence of sounds in *tailor* may be interpreted as a tendency to compensate for the loss of “redundancy per phoneme” as compared with longer words. The fact that this tendency is strongest in the reading of poetry supports the assumption of the present study that the perception of rhythm in poetry demands clear-cut articulation, so that every phoneme should be uniquely identifiable, as quickly as possible.

16), as opposed to “shall be óld Gód” (excerpt 17). According to the conception presented above, there is a tendency to pronounce the two consecutive stressed syllables (of a “stress grade”) as equal, with parallel articulation. At the same time, the cuing of *behold* as a single semantic unit demands, on the contrary, the shortening of *-hold* (and to equalize *God* with the whole disyllabic), so that the paralleling of the two stressed syllables “-hold God” is disturbed.

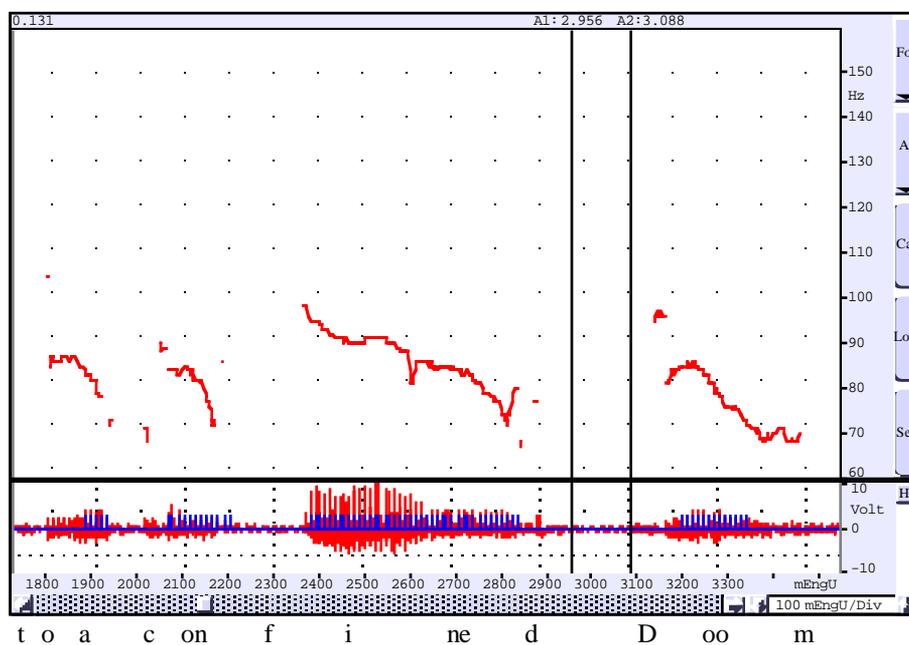


Figure 8 Wave plot and f_0 extract of “to a confined Doom” in DF’s reading

[Listen to sound file](#)

There is a feeling that the boundary of “-con” is over-articulated (but unstressed). When it is isolated on the computer, one does hear the falling intonation contour shown in the graph (Figure 8); in context this is merely heard as the over-articulation of the boundary. Likewise, the over-articulation of the boundary between “-fined” and “Doom” is most remarkable. One word ends, and the other begins with a /d/. In ordinary speech one would expect only one /d/ to be articulated. In this reading, two very distinct /d/s are heard. As the wave plot shows, there is a 131-msec pause between the two tokens of the /d/, interpreted by the listener as an articulatory refraction period; and both tokens are strongly over-articulated, both by duration and amplitude. Furthermore, the excessive duration of the /n/ in “-fined” suggests termination after the syllable. This syllable is over-stressed by excessive duration, by amplitude, and by a long-falling and slightly-swerving intonation contour. Pertaining to a polysyllabic, we would expect “-fined” to be shorter than “Doom”. In the pre-

sent instance, contrary to expectations, it is considerably longer (and is heard as such). From merely looking at the graph one would infer that “-fined” is more strongly stressed than “Doom”; but one *hears* that the two syllables are equally stressed. Perhaps, the story is again as follows: “-fined” with its higher initial pitch, greater amplitude and duration grossly disturbs metre in a weak position; “Doom” reinstates it in a strong position. It is perhaps the rising and falling intonation contour that is sufficiently lengthened to “break even” with the perceived prominence of the preceding syllable. Thus, a flawless “stress grade” is obtained.

Intruding Schwa

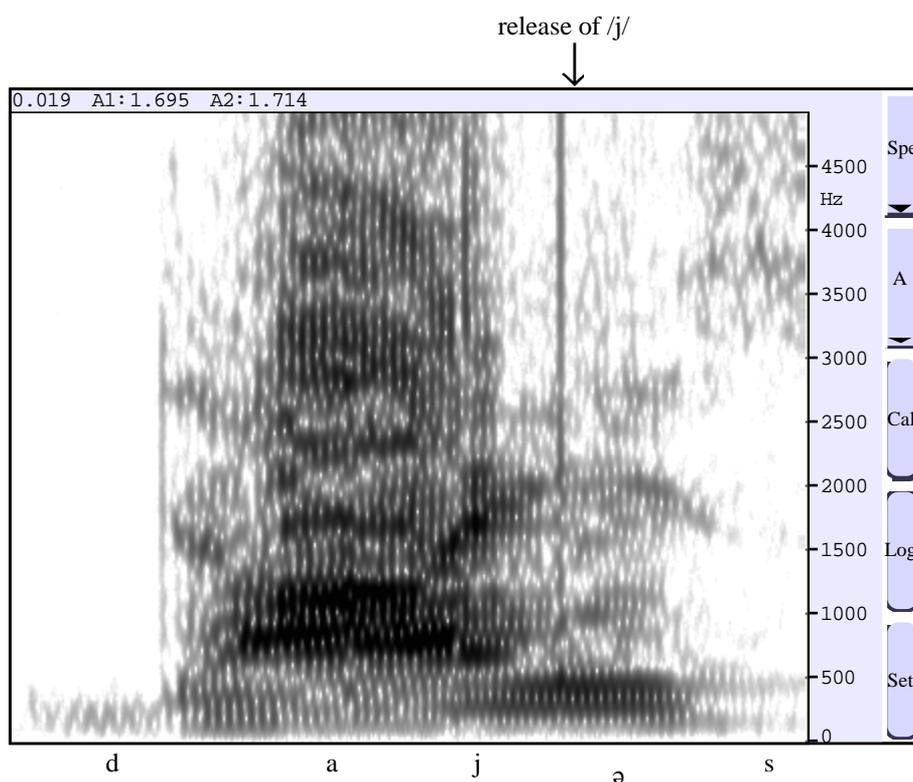


Figure 9 Spectrogram of “die s” in the Marlowe Society’s performance

[Listen to sound file](#)

The present theory predicts that in a sequence of two or more consecutive heavily stressed syllables a rhythmical performance would require over-articulation of the phonemes as well as of the syllable boundaries; and an emphatic forward grouping of the stressed syllable in the weak position, to the following stressed syllable (in a strong position). Such manipulations would be especially conspicuous in cases in

which the syllable in the weak position bears a stress that is as strong as, or stronger than, the stress on the subsequent syllable. This sometimes involved us in quite dramatic and unexpected discoveries. Consider the last line of Shakespeare's Sonnet 3, in the Marlowe Society's reading:

23. Die single and thine image dies with thee.

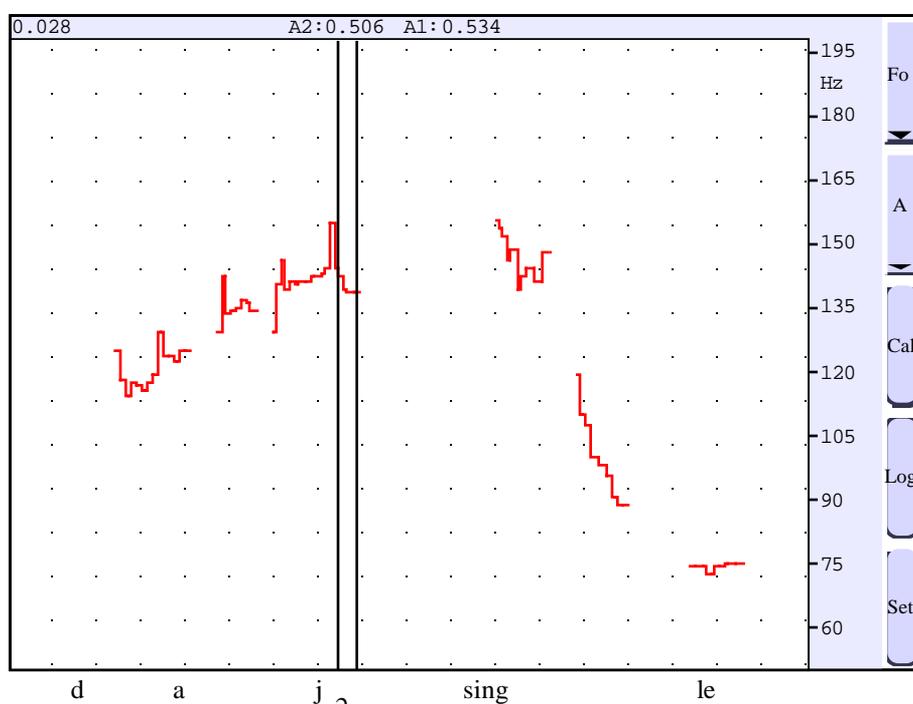


Figure 10 In "Die" F_0 peaks at the very end, on the /j/.

I cannot include here a full discussion of this line. Here only a few observations on the phrase "Die single" will be made. In the performance of this phrase both requirements are amply fulfilled. An impetuous forward drive is perceived in the word "Die"; in such instances, we now know, late peaking should be suspected. The F_0 track reveals, indeed, that the peak is as late as on the /j/ of the diphthong. However, to our great surprise, our spectro-analysis also revealed that the reciter released the stricture after the /j/, generating a brief *schwa* as an extra syllable, between the two words. This sort of thing, as Gerry Knowles told me, has never been observed in the English of native speakers. This reciter was obviously a native speaker, and obviously "well-nurtured in his mother tongue". This extra syllable couldn't be accounted for by ordinary English prosody, only by the needs of a rhythmical performance of two consecutive heavily stressed syllables: the need for over-articulating the boundary between the two words, or the need to release the

stricture after the glide /j/ after an exceptionally late peak (which, in turn, was required by the need for emphatic forward grouping), or both. This was dramatic enough; but a few minutes later we discovered a second instance, in the compound “new-made” (with “new” in the weak position), in line 13 of Sonnet 2, read by a different reciter (see Figure 25 below). In this delivery instance, the reciter uttered the rounded /u/, and then further narrowed the stricture of his lips, into a /w/, and then released it, generating again a brief *schwa* as an extra syllable between the two words.

In both instances, a word-final glide is involved. But until we find additional instances, we cannot say more about it. The present theory of metre predicts that in cases of serious deviance the reciter will over-articulate both the phonemes and the syllable boundaries. We expected that we would be able to demonstrate this on the graphic output with reference to the syllable boundaries only, on the intonation contour. Surprisingly enough, the phenomenon discussed here might be an instance of the former. To this, one might add instances of glottal stops before word-initial vowels and release of word-final plosives we have encountered.

The “Nuclear Stress Rule” and its Discontents

Two Oxford alumni meet after 20 years. “What are you doing for a living?” “Teaching machines”. “Oh! And do they learn well?” This joke cannot be told, only written, because the phrase “teaching machines” was meant with different stress patterns by the two speakers. One of them intended it with the compound stress rule, i.e., “machines that teach”, with greater stress on “teaching”. The other understood it with the nuclear stress rule, with greater stress on “machines”. The compound stress rule assigns the greatest stress to the leftmost member of the phrase; the nuclear stress rule to the rightmost member.

Now consider line 2 of Sonnet 12:

24. And see the brave day sunk in hideous night

In this verse line, *brave* occurs in a strong position, whereas *day* in a weak position; such constructions are ruled unmetrical by quite a few metrists (among them Hayes). In divergent poetry of some of the greatest masters, however, such constructions do occur sometimes (in Shakespeare’s sonnets they usually occur in positions 4-5, that is, immediately preceding the caesura). The existence of such constructions in English poetry led Halle and Keyser to believe that only in American English is the linguistic stress of the adjective in such phrases subordinated to the rightmost stress; in British English the stress pattern is “level”. The present claim is that in British English too the linguistic stresses of such phrases are subordinated to the rightmost stress, and the explanation is aesthetic rather than linguistic.

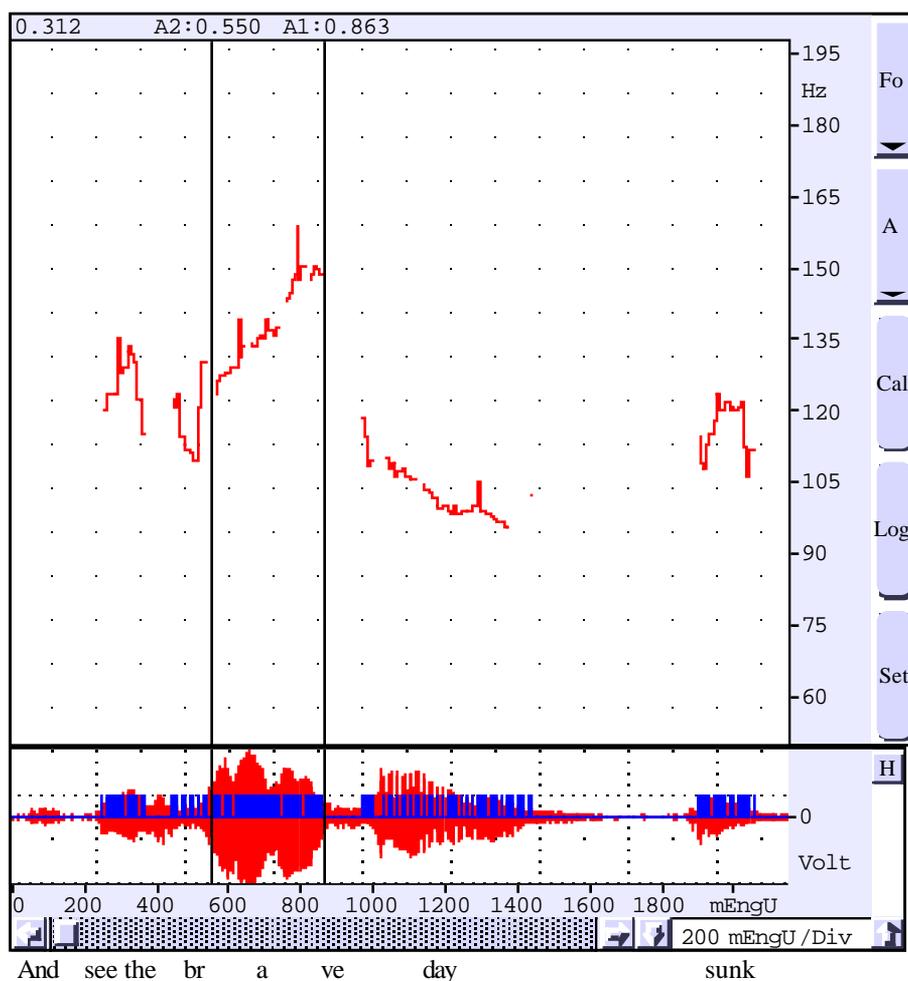


Figure 11 Wave plot and F_0 extract of "And see the brave day sunk" in Gielgud's reading. The two markers indicate the vowel boundaries.

[Listen to sound file](#)

In the phrase *brave day* the second, rightmost, stress is, then, the greater one; but it occurs in a weak position. However, for a metrical theory which rules lines that contain such constructions unmetrical, this need not necessarily pose a problem: it is followed by *sunk*, which becomes the rightmost, most strongly stressed member of the phrase, and occupies a strong position. Such an approach, if it is sensitive at all to matters of caesura, would assign a caesura after *brave*, or after *sunk*. Intuitively, however, the most natural place to assign caesura is after *day*. This is because, intuitively as well as arguably, *sunk* is more closely related to the succeeding than to the preceding phrase. It takes a highly sophisticated performer like the Marlowe Society to observe a caesura after *sunk*, group the stress of this word backward

with the preceding stresses, and still preserve the integrity and perceptual separation of the phrase “sunk in hideous night”.

As I have said, little is known about the integration of amplitude with pitch and duration into the perceived stress. But Gielgud, more than others, appears to make ample use of this resource. As Figure 12 indicates, the over-stressing of *brave day* by pitch and duration is reinforced in his performance by a disproportionate increase of energy level.

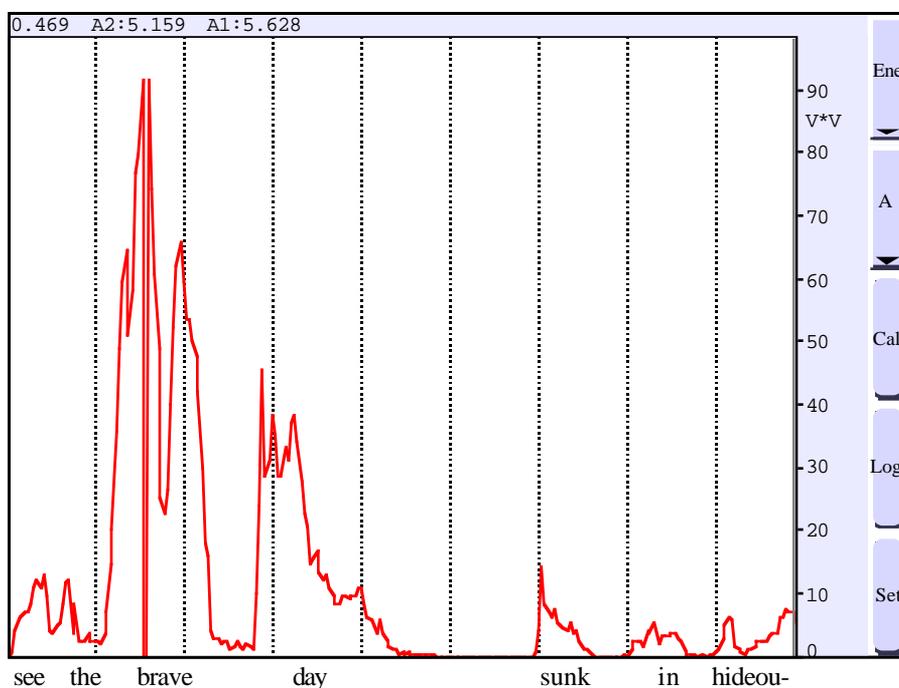
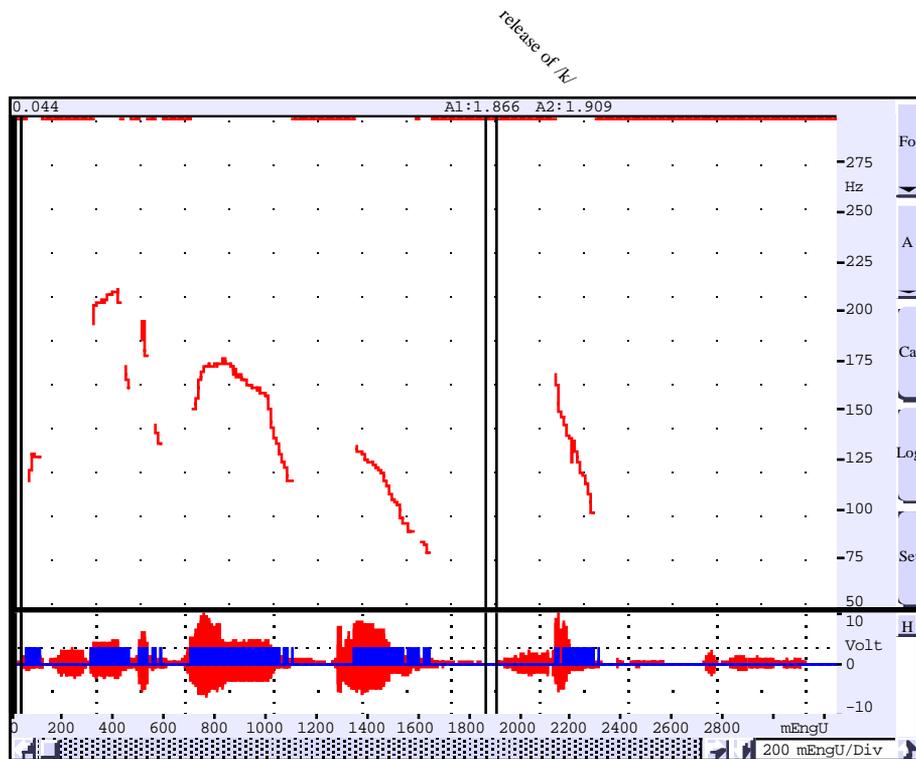


Figure 12 Energy plot of “see the brave day sunk in hideou-” in Gielgud’s reading.

The approach advocated here predicts that the line would be clearly articulated into two segments after “day”; that the consecutive content words *brave day* will be equally and strongly stressed; that their boundaries will be more than usually articulated; and that the two words will be emphatically grouped together. On the acoustic cues level it predicts that the stress of the first word will probably be cued by a conspicuous pitch discontinuation, whereas that of the second word by a considerable lengthening as compared to the preceding word, so as to “break even” with its heavy stress cued by pitch; at the same time, its pitch contour, though relatively flat, will be heavily falling, so as to over-articulate the word boundary (and, by the same token, the caesura). Grouping will probably be effected by an exceptionally late peak on the vowel of *brave*, and a relatively early peak on the vowel of *day*. Now this is exactly what happens in Gielgud’s performance of this line (Figure 11). As

predicted, the pitch contour of *brave* steeply rises from 109.628 to 158.961 Hz (the vowel from 122.953 Hz), ending in an exceptionally late peak; after a discontinuity, the pitch of *day* falls from 118.375 to 95.513 Hz, yielding a rather elongated, but still clearly falling contour, beginning with an exceptionally early peak. While the heavy stress of the former word is cued by a steep rise of pitch, that of the latter is cued by a proportionately greater length (494: 681 msec), breaking even, so to speak, with the greater rise of pitch (enhancing, by the same token, the ensuing break at the caesura). The phrase is separated from *sunk* by a longish pause, unambiguously tilting the scales in favour of the predictions propounded here.



and s ee the brave day s unk ↑ in hideous
 Figure 13 Wave plot and F₀ extract of "And see the brave day sunk in hideous", in Callow's reading. The markers indicate a minute 44 msec pause

[Listen to sound file](#)

It should be noted, further, that such phrases as *world's due*, *blood warm*, *brave day*, or *old men* with their weaker stress in a strong position typically occur in Shakespeare's sonnets in positions 4 or 5, heralding an immediately ensuing caesura. This, in turn, may support my stronger claim concerning the acceptability of phrases whose strongest stress occurs in a weak position; alternatively, it may support only a weaker claim, concerning the placement of caesura: one may rule un-

metrical all iambic pentameter lines in which such phrases occur with their weaker stress in a strong position, except in position 4-5 (before a caesura), where they sound, for some reason, more acceptable. Had we only this little piece of statistical evidence, this might be quite plausible. However, the consistency with which Gielgud's performance conforms on all levels with the predictions of the present work strongly suggests that of the two theories the perception-oriented one is supported. In what follows, however, we shall obtain strong support for the weaker claim as well.

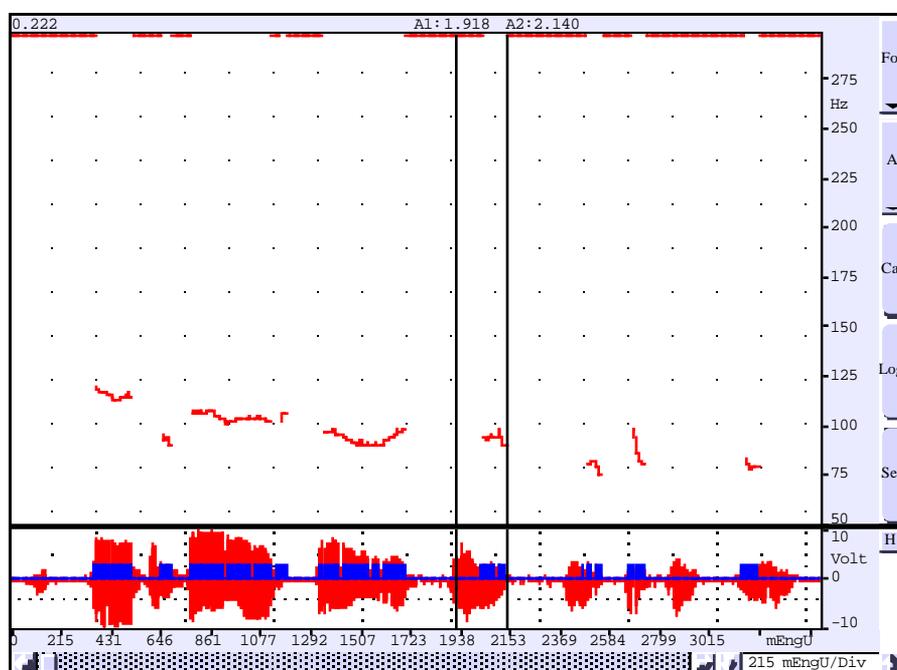


Figure 14 Wave plot and F_0 extract of “And see the brave day sunk in hideous night” in the Marlowe Society’s reading. The markers indicate the boundaries of the nasal vowel.

[Listen to sound file](#)

Simon Callow offers in his reading a very similar general conception, but some of the details of the above predictions are less thoroughly realized (Figure 13). On the other hand, this performance lays greater store by word boundary articulation through long-falling word-final intonation curves. The three words “brave day sunk” all have a conspicuously early peak; and the grouping of *brave day* together is indicated only by a roughly continuous movement of pitch peaks. The new beginning at *sunk* is indicated by a straightforward minute 36 msec pause (perceived as over-articulation), as well as pitch, which resets from 77.915 to 168.321 Hz, whence it falls again to 98.438 Hz. Thus, the boundaries of these three words are clearly articulated:

brave by a slightly rising and long-falling intonation contour (150.000-176.400-114.249 Hz); and the rest by long-falling contours. There is only one (very) late peak in this line, on *see*; this is not required by any metric deviance, but it imposes a general forward drive on the line (reinforced by the reset of pitch from *and* to *see*, which has a “forward-leading” effect). In addition to the long-falling contour, *sunk* is segregated from *in* by a release of the /k/. In this example at least, Gielgud resorts to more sophisticated vocal resources than Callow, and makes a more controlled use of late peaking; but their general conception is identical.

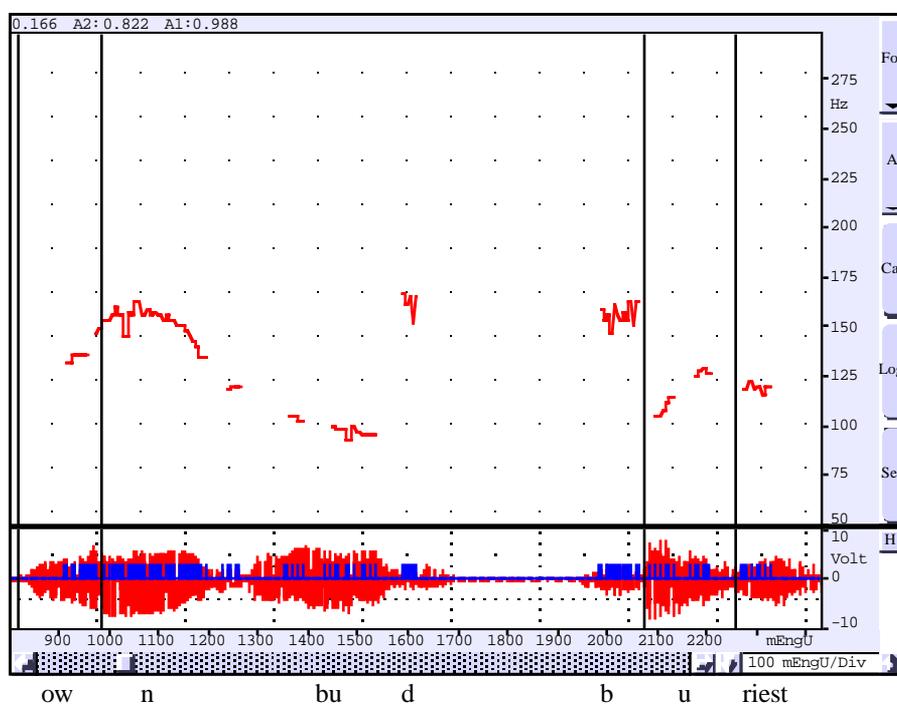


Figure 15 Wave plot and F_0 extract of “own bud buriest” in the Marlowe Society’s reading. The pairs of markers indicate vowel boundaries.

[Listen to sound file](#)

Considering the Marlowe Society’s notoriously divergent delivery style, one would have expected them to offer a reading that is at least as divergent as Gielgud’s. But, *apparently*, the opposite happens (Figure 14). Their reading *seems* not only less divergent, less sophisticated, but is also based on a radically different conception. A glance at the F_0 extract of “And see the brave day sunk” reveals a smoothly falling “internally defined” intonation pattern. The word boundaries are not over-articulated as in the other two readings. Listening to the reading reveals that *day* bears considerably less stress than the adjacent words; with respect to intonation, this seems to be indicated by the trough in the F_0 curve assigned to “day”: *apparently*, a veritable convergent performance, insensitive to the syntactic forward grouping of

sunk. This impression is corroborated by the longish (202 msec) pause forcing, quite “brutally”, a caesura after the sixth position. Listening, however, to the whole line gives a very different impression, at this very point of *sunk* followed by a caesura. As Figure 14 shows, there is an exceptionally late peak on the nasalized portion of the vowel of *sunk*. It has been repeatedly argued throughout the present study, and listening to this reading too confirms this, that a late peak may generate an impetuous forward drive perceived in the line—in this case, across the pause indicating the caesura, and in spite of the grouping of stress with the preceding stresses. Thus, the word *sunk* becomes, perceptually, part of two different groupings at the same time: as the rightmost stress of the phrase *brave day sunk*, and as the run-on portion of the syntactic group “sunk||in hideous night”. As Roger Fowler (1966) suggested, the shorter the segregated part of a phrase stretched over a metric boundary, the greater the tension it generates.

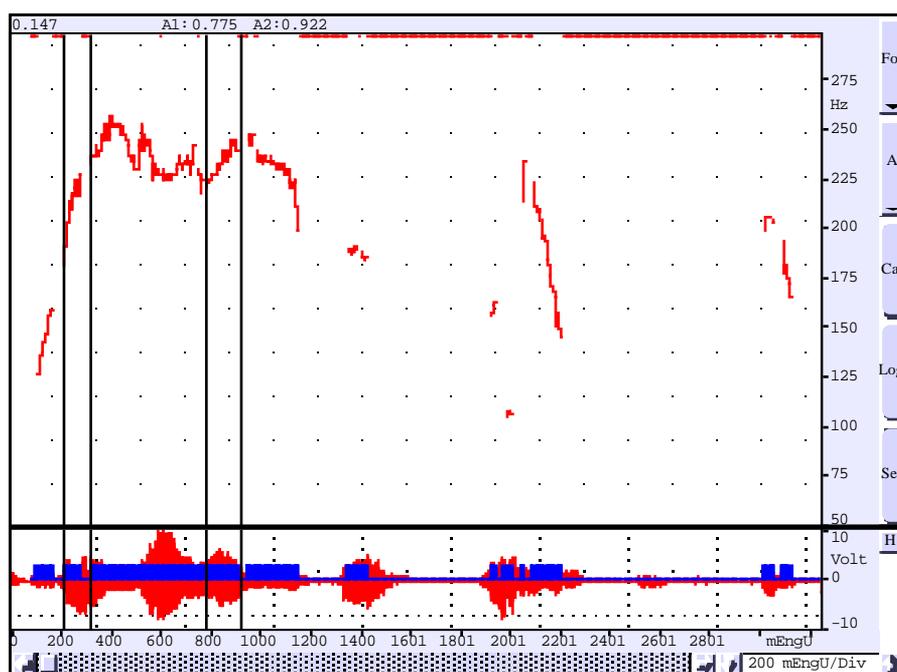
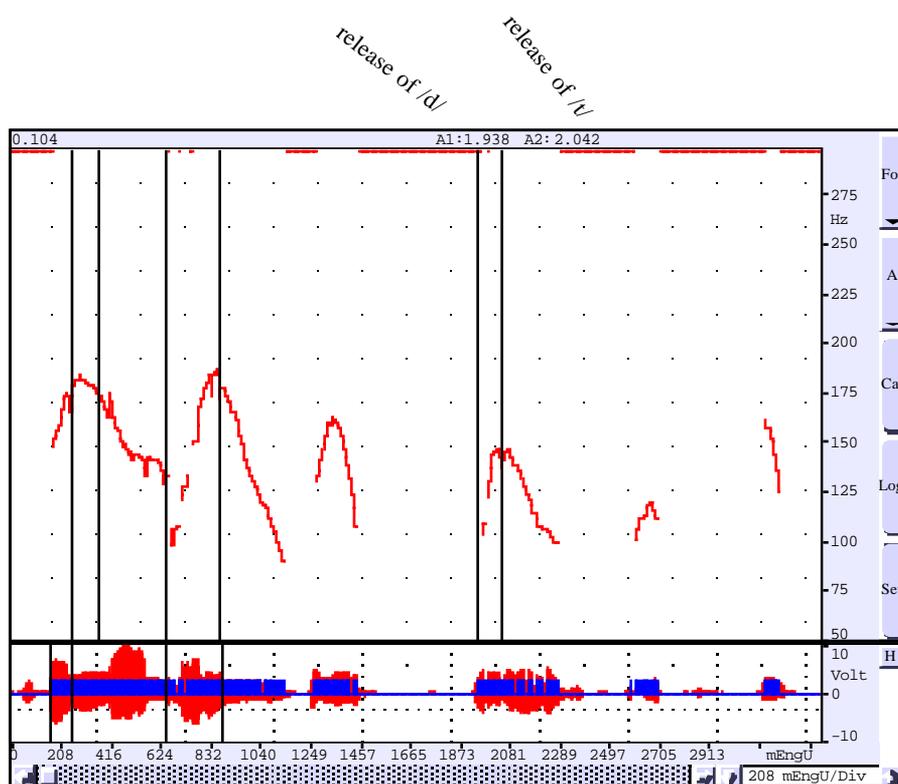


Figure 16 Wave plot and F_0 extract of “within thine own bud buriest thy content” in Gielgud’s reading. The pairs of markers indicate vowel boundaries.

[Listen to sound file](#)

Similar problems are involved in line 11 of Sonnet 1:

25. Within thine own bud buriest thy content



with i n thine ow n bud ↑ buries t ↑ thy con tent
 Figure 17 Wave plot and F₀ extract of “within thine own bud buriest thy content” in Callow’s reading. The pairs of markers indicate vowel boundaries.

[Listen to sound file](#)

Here too there is a string of three consecutive stressed syllables: *own búd bú-*. Here too there is a feeling that the first two syllables are strongly grouped together, whereas the third one is segregated from them, grouped with the subsequent phrase. This time the Marlowe Society chose a solution that is more in harmony with their general style (Figure 15). As so frequently in their readings, the stress on the first one of two consecutive stressed syllables is cued by a (moderately) rising-and-falling humpback F₀ curve; the stress of the second word is cued by duration, which seems to “break even” with the cuing by pitch (398: 475 msec). The grouping together of the two syllables is effected by a smoothly continuous “internally defined” intonation pattern and, most notably, by an unusually late peak on “own” (which occurs after the diphthong, on the nasal). By contrast, *bu-* is conspicuously segregated by a straightforward 253-msec pause, and grouped forward by a moderately late peak. Segregation is enhanced by an emphatic release of /d/ in *bud*.

In Gielgud’s performance, unfortunately, crucial pitch and spectral information is missing precisely on *bud* and *bu-*; hence, any comments on it must be sketchy

(Figure 16). Among the few significant phenomena one may point out the double humpback intonation curve assigned to “within thine own”, in a high pitch region characteristic of Gielgud (moving between 126.724-253.448-198.649); the exceptionally long /n/s in *-thin* and *own* contributing to the clear-cut articulation of the words and word boundaries; and the exceptionally late peaks occurring in these syllables on the /n/, generating an impetuous forward drive.

As for Callow’s reading, Figure 17 reflects a performance extremely well articulated by a series of rising-and-falling F_0 curves. This articulation is further enhanced by an exceptionally long /n/ in *own*, and the release of /d/ and /t/ in *bud* and *buriest*. The release of /d/ is especially interesting, since it occurs after a 202 msec pause, and is followed by another, 150 msec pause. Thus, the interrupted phonetic click of the plosive /d/ is artificially lengthened, suggesting discontinuity with the ensuing syllable, further enhanced by the subsequent pause.

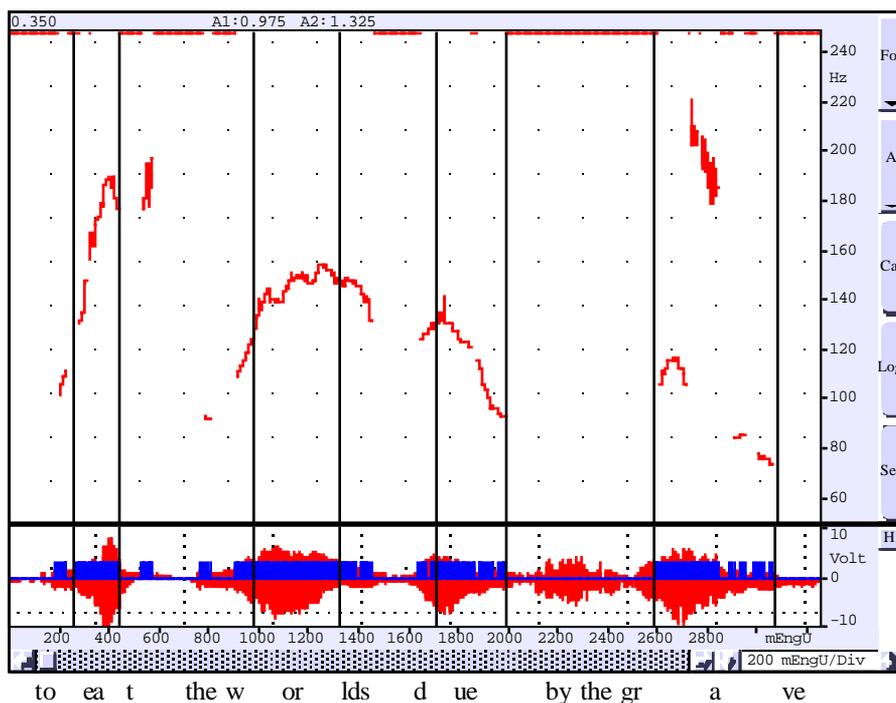


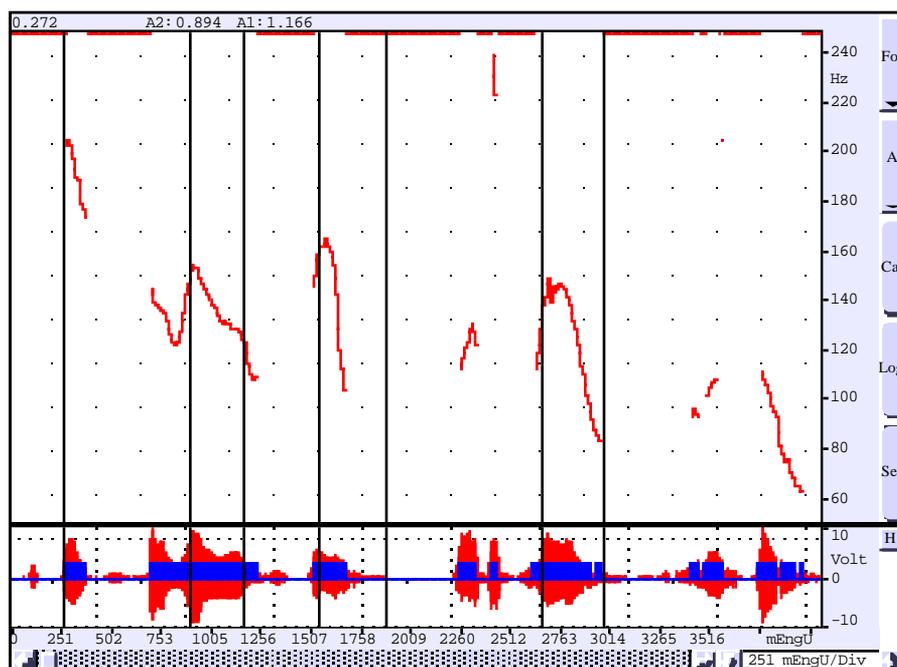
Figure 18 Wave plot and F_0 extract of “to eat the world’s due by the grave” in Gielgud’s reading. The pairs of markers indicate vowel boundaries.

[Listen to sound file](#)

A classical instance in Shakespeare’s sonnets of the “nuclear stress rule” conflicting with the iambic pattern, that is, when the string of stresses ends in a weak position, would be 1.14:

26. To eat the wórl'd's dúe by the grave and thee.

w s w s w s w s w s



to ea t the w o rld's d ue by the gr a ve and thee
 Figure 19 Wave plot and F_0 extract of “to eat the world’s due by the grave and thee” in Callow’s reading. The pairs of markers indicate vowel boundaries.

[Listen to sound file](#)

Here in “wórl'd's dúe” the second syllable is more strongly stressed, but occurs in a weak position, while the first one occurs in a strong position. Such constructs are ruled unmetrical by, e.g., Hayes; but occur quite frequently in Shakespeare’s sonnets, mostly in positions 4-5. The present work predicts that such configurations *can* be performed rhythmically; that performers will tend to assign exceptionally strong, equal stresses to both words and to over-articulate their boundaries by intonation. The intonation contours cuing the boundaries and stresses of the two words will probably have different shapes: “world’s”, most likely, an obtuse, wide, hump-back; “due” a rising and very long-falling steep contour, indicating a quasi-terminal break. The two words will be, most probably, grouped together, by a late peak on “world’s” and an early peak on “due”. This is exactly what we have in Gielgud’s performance (Figure 18), and more or less so in the Marlowe Society’s performance (the pitch-plot of this reading is rather deficient, and is not reproduced here). Notice the similar sharp angles at the peaks of “due” and “grave”, with the similar long-falling steep curves indicating termination (that is, clear boundary articulation).

[Listen to Sound file: Marlowe Society](#)

Callow's performance (Figure 19) resembles Gielgud's in that it over-stresses the two consecutive stressed words and over-articulates their boundaries. It differs from it in that it resorts to no late peaks, but rather to an unusual number of early peaks; and that it over-articulates the boundaries of all the key-words by long-falling, steep, terminal curves. Consequently, its underlying conception appears to be the same, but more simplistic in its actualization.

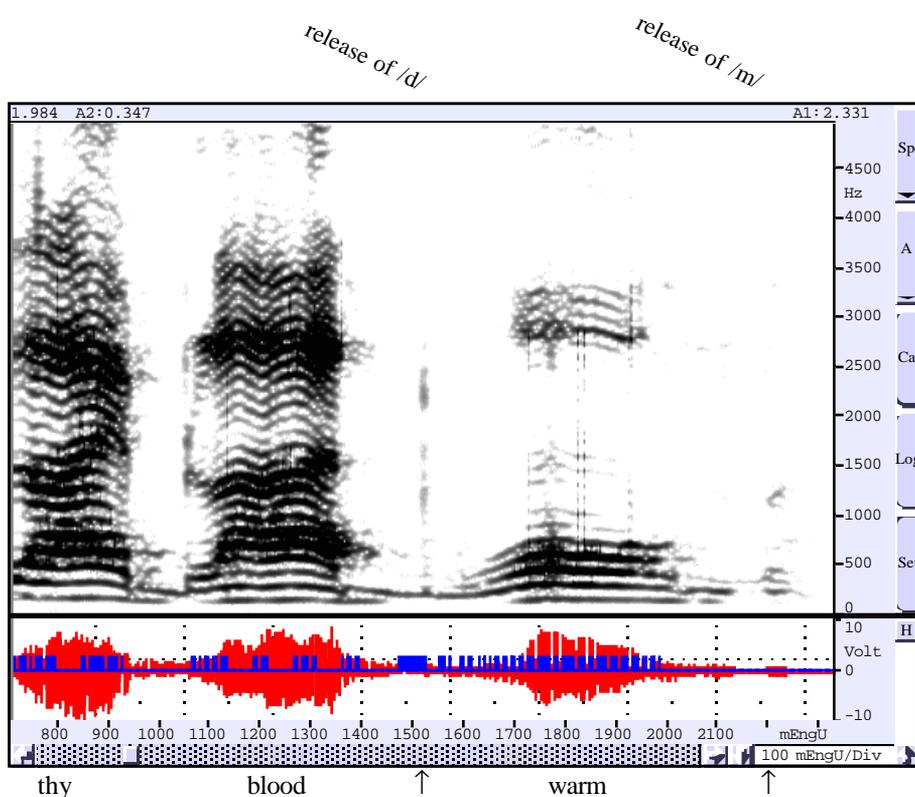


Figure 20 Wave plot and Spectrogram of "thy blood warm" in Gielgud's reading.

[Listen to sound file](#)

One of my central claims throughout the present study is that deviations on lower architectonic levels may be tolerated as long as the perceptual integrity of the unit at higher levels is preserved, especially at the level of the hemistich and the line. In the present context, the over-articulation of the caesura can be regarded as such preservation of the higher architectonic level: two hemistiches that constitute a line. I said above that such phrases as *world's due*, *blood warm*, *brave day*, or *old men* with their stronger stress in a weak position typically occur in Shakespeare's sonnets in positions 4-5, heralding an immediately ensuing caesura. This, in turn, may support our stronger claim concerning the acceptability of phrases whose strongest stress occurs in a weak position; alternatively, it may support only a

weaker claim, concerning the placement of caesura: one may rule unmetrical all iambic pentameter lines in which such phrases occur with their weaker stress in a strong position, except in positions 4-5 (before a caesura), where they sound, for some reason, more acceptable. In the foregoing instance, the over-stressing and over-articulation of the words' boundaries in all three performances supports the stronger claim; the occurrence of this configuration with its long terminal boundary in precisely positions 4-5 (that is, before the caesura) seems to support the weaker claim.

The problem of two consecutive heavy stresses in positions 4-5 becomes further complicated in the three readings of Sonnet 2.14:

27. And sée thy blóod wárm when thou féel'st it còld.

w s w s w s w s w s

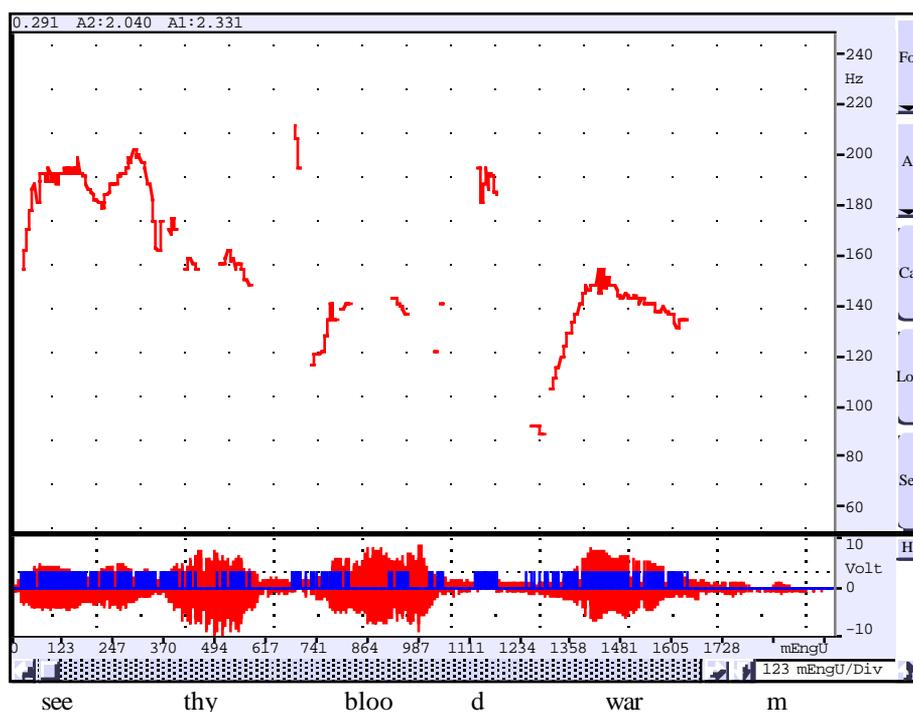


Figure 21 Wave plot and F_0 extract of “see thy blood warm” in Gielgud’s reading.

Gielgud performs “blood warm” exactly as the theory predicts (Figures 20-21). To the ear, he places very heavy stresses on both words, somewhat heavier on the second; and he gives a very clear articulation to both the phonemes and the word boundaries. As a result, metre is confirmed by a strong stress in the fourth (strong) position, and the clear articulation spares the mental processing space required for the perception of the weak position conflicting with the more strongly stressed

“warm”. By the same token, it clearly articulates the caesura as well (after the fifth position). The greater stress on “warm” is indicated by the higher and more elaborate intonation pattern. The intonation contours over-articulate the word boundaries; the emphatic release of /d/ and /m/ contributes to both phoneme articulation and word boundary articulation.

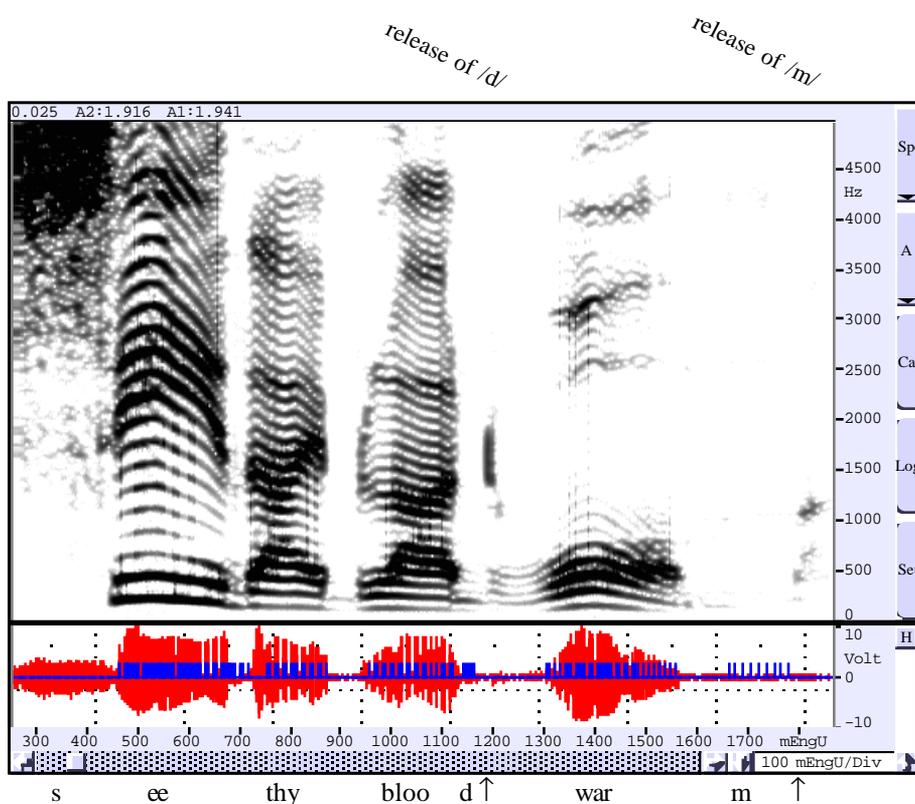


Figure 22 Wave plot and Spectrogram of “see thy blood warm” in Callow’s reading.

[Listen to sound file](#)

However, Callow’s and the Marlowe Society’s performances pose a serious problem to the theory. In these readings the listening ear hesitates over whether “blood” is stressed or not. But even in case it *is* stressed, it is certainly not overstressed as the theory would predict. Thus, one cannot claim that “blood” emphatically asserts metre in a strong position, so as to balance the infringement in the next weak position by “warm”. This does not only contradict the predictions of the theory; but the listening ear gets the impression that their (non)solution *does* work: the performance is perceived as rhythmical. In Callow’s reading (Figure 22), there is an exceptionally salient stress on “see” in the second (strong) position, and another, less salient one, on “warm” in the fifth (weak) position. The stress on “blood” in the fourth (strong)

[Listen to Sound file: Marlowe Society](#)

position is demoted, and is only slightly (if at all) more salient than on the preceding “thy”. (When one isolates on the computer only “blood warm”, “blood” sounds unstressed; listening to it as part of “thy blood warm”, it is perceived as slightly more stressed than the pronoun). Consequently, the question is whether metre is confirmed in this performance only in the second, eighth and tenth positions, as in excerpt 28,

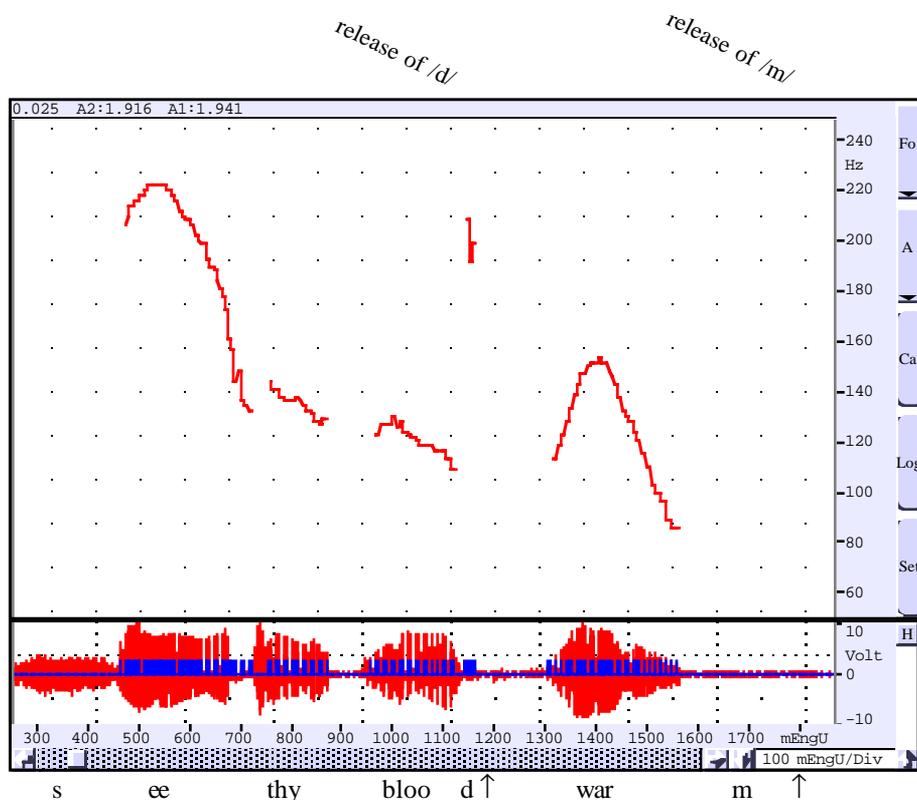


Figure 23 Wave plot and F_0 extract of “see thy blood warm” in Callow’s reading.

28. And *sée* thy *bloo wárm* when thou *féel*’st it *cóld*,

or whether “blood” does reassert to some extent metre in the strong position. But even in the latter case, “warm” deliberately infringes upon metre in the fifth position, while “blood” fails to balance it in the fourth. The Marlowe Society offer a similar reading. And, as I have noted earlier, these performances *are* perceived as acceptable. One crucial aspect of the present theory is that the perceived effects of poetry must be accepted as *given*, and not *deduced* from some theory. The theory predicts that excerpt 19 in Callow’s and the Marlowe Society’s performances would

be perceived as unrhythmical; it isn't. One may only attempt to account for this acceptability *after the event*.

I suggested above that in excerpt 18, "wórl'd's dúe" ending in a weak position is rendered acceptable by two elements: the two words are over-articulated; and the (metrically anomalous) phrase ends at the caesura break. The elaborate intonation curve on "due" contributes to both. I spoke above of a stronger and a weaker claim concerning the acceptability of phrases whose rightmost, strongest stress occurs in the fifth, weak position. I suggested above that these two aspects lended support to both these assumptions. In the present instance, by contrast, only the second, weaker assumption is supported, namely that one may rule unmetrical all iambic pentameter lines in which such phrases occur with their weaker stress in a strong position, except in positions 4-5. Two aspects of the data shown in Figure 23 seem to be relevant to an explanation; both have to do with articulation or over-articulation. The boundaries of some crucial words (most notably for our purpose, "warm") are strongly over-articulated by rising-and-falling intonation contours; and the release of /d/ and /m/ contribute to the clear-cut articulation of phonemes and boundaries of "blood" and "warm". By the same token, these devices contribute to an over-articulation of the caesura after "warm". We might add here one more observation, relevant to all three readings of excerpts 18 and 19 and of some of the other lines as well. We have interpreted the falling intonation contours after position 5 as a terminal contour. By the same token, however, this shape entails an early peak, emphatically grouping the word backward (according to the present conception), manipulating the stress weight of the phrase into the fourth position.

I have suggested above that deviations on lower architectonic levels may be tolerated as long as the perceptual integrity of the unit at higher levels is preserved, especially at the level of the hemistich and the line. In these two performances the theory is only partially applicable: the word "blood" is not over-stressed and its boundary not over-articulated as the theory would anticipate. But the over-articulation of the caesura after "warm" can be regarded as just such preservation of the units at the higher architectonic level: two hemistiches that constitute a line.⁴ A provisional attempt to shorten the falling contour on "warm" seems to support this assumption: though by no means unnatural as speech, a feeling of rhythmic dissatisfaction is generated; a shortening of the /m/ too enhances this effect.⁵

⁴ The signal of "cold" is too faint to provide a pitch extract. But when the two words "warm" and "cold" are excised and played one after the other, one may hear two roughly similar rising-and-falling contours, reaching down, roughly, to the same "basic tone".

⁵ The computer could be used to generate stimuli for a well-controlled experiment in which various versions of this delivery instance would be presented to a panel of qualified listeners, who would rate the rhythmicality of these versions, or rank-order them according to their acceptability. The versions would differ in the length of the falling intonation contour and of the /m/ in "warm".

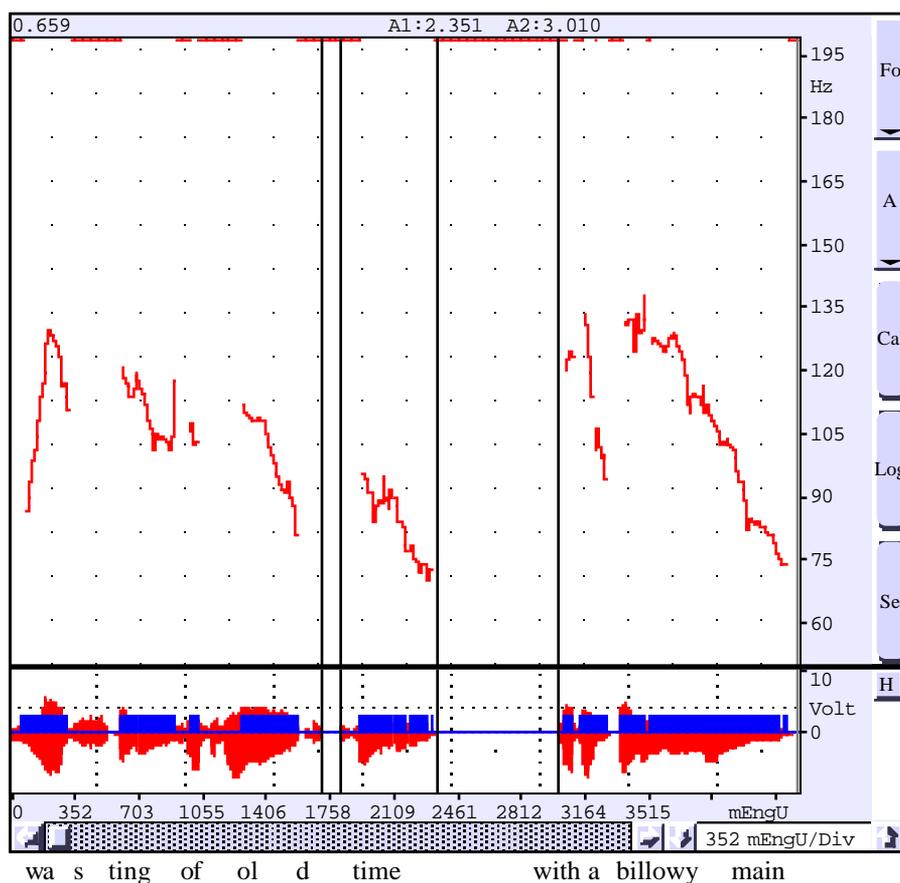


Figure 24 Wave plot and pitch contour of “Wasting of old time, with a billowy main”

[Listen to sound file](#)

Finally, consider excerpt 22, as performed by Douglas Hodge. I wish to point out two problems in this excerpt, as handled by its performance reflected in Figure 24. First, in the sequence “old Time” the second word is more strongly stressed, but it occurs in a weak position. We have found throughout the present study that such constructions do occur in the poetry of Shakespeare and Milton, usually at the caesura. Here too it occurs at the caesura. The present theory predicts that such sequences *can* be performed rhythmically, if they are uttered with equally heavy stress, and their boundary is over-articulated. This is, precisely what happens here. Each one of the two words has been assigned a separate, terminal intonation contour, which both overstress the syllables and over-articulate their boundaries. In addition, there is a conspicuous “temporal” and “segmental” discontinuity between the two words, enhancing over-articulation. In normal speech, the first word of “old time” is run into the next one, “oltime”, as it were. In the present instance, there is an 85 msec pause between them, and an exceptionally emphatic release of /d/. The

second word is followed by a 659 msec pause, contributing to the over-articulation of both the word boundary and the caesura. As we shall see in Chapter 8, it may have a third function as well.

Compounds

In English, then, in adjective + noun phrases, possessive phrases and subject + predicate constructions, the stresses of content words are subordinated to the stress of the rightmost word. In compound nouns, by contrast, the first noun bears greater stress. Thus, in “black board” the word “board” is more stressed, whereas in “blackboard”, “black” is. In the first three of Shakespeare’s sonnets there are five compounds: “self-substantial” (1), “deep-sunken”, “all-eating”, “new-made” (2), and “self-love” (3). In the first of these there is an intervening unstressed syllable, so both stressed syllables may occupy a strong position. In the rest, however, it is precisely the stronger stress that occurs in a weak position, and the subordinated one in a strong position.

Consider now Group IV:

Group IV

29. This were to be ⁵néw-máde when thou art old
30. To say within thine ⁷ówn déep-súnken eyes
31. Were an ³áll-éating shame and thriftless praise
32. To dry the rain on my ⁷stórm-béaten face
(Shakespeare, Sonnet 34)
33. Some fresher stamp of the ⁷tíme-béttering days (ibid., 82,)
34. And his ³lóve-kíndling fire did quickly steep (ibid., 153)
35. And tricks his beams, and with ⁷néw-spángled ore
(“Lycidas”, 170)
36. And perfect witness of ⁷áll-júdging Jove (“Lycidas”, 83)
37. By his ³thóught-éxecuting ministers
(*Prometheus Unbound*, 1. 387)

- 5
38. Requitest the knée-wórship, prayer and patience
(ibid., 1,6)
- 3
39. Of their móon-fréezing chrystals the bright chains
(ibid., 1. 32)
- 3
40. Before hígh-píled books in charac'try
Hold like rich garners the fúll-rípened grain
(Keats, "When I have fears")

I submit that the greater naturalness of forward-grouping than of backward grouping may account for compounds beginning in *w* positions, *provided that we assume two lexical stresses*. Insofar as the number of *w*-beginning compounds equals or exceeds the number of the *s*-beginning ones, it may be interpreted as an indication that the tendency for forward grouping overrides, with these poets, the tendency for subordinating the second lexical stress of a compound to its first lexical stress. Three features of compounds are of special interest for us: 1. The stresses of "blackbird" are normally grouped together more strongly than those of "black bird". 2. Both adjacent words of the compound bear lexical stress. 3. The second stress is subordinated to the first.

The present work assumes that whenever stress-pattern and metric pattern conflict, the reader is inclined to make stronger groupings of stresses, so as to make "mental space" for the perception of both patterns at one and the same time. The three features of compounds can be exploited in two different hierarchies. Poets who usually capitalize on conflicting patterns of stress and metre, like Shakespeare, Milton, Keats and Shelley, tend to exploit the first two features and "suppress" the third, as in "But doth súffer a séa-chángo". It is impossible to subordinate the stress of "sea" (according to the demands of metric pattern) without "wrenching" the stress-pattern of the language. Therefore the reader will be inclined to pronounce both words with heavy stresses. This is an instance where exceptionally high tension occurs between stress-pattern and metre.

For poets who capitalize on the convergence of stress-pattern and metre, three possibilities are open: (a) to exploit features I and III of compounds, as if they were one disyllabic word, with a single main stress ("suppressing" the second feature). In this case, the word can be expected to begin in an *s* position: e. g., $\underset{s}{s}éa\text{-}\underset{w}{c}hángo$; (b) to resort only to compounds that have an unstressed syllable between the two stresses; (c) to refrain altogether from using compounds.

If this is true, we may expect to find in poems that tend to metrical regularity, either no compounds at all, or compounds, the majority of which have the first or both stresses in *s* positions. This appears to be precisely the case. "Kubla Khan" is one of the most metrically regular major poems in the English language. Most of

its compounds have two stresses in *s* positions, as “Pléasure-dóme” (twice), “incense-béaring”, “démon-lóver”, “hóney-déw”, or one stress as in “floated midway”. There is one curious exception, unique in its kind: “half-intermitted”.

In Pope, the proportion seems to be significant: In the first five hundred lines of “An Essay on Criticism” and Canto I of “The Rape of the Lock” I found ten compounds with their first stress in an *s* position, and nine compounds with both stresses in *s* positions. There is one line with a compound beginning in a *w* position (with another compound beginning in an *s* position).

41. Amidst their kindred cobwebs in Duck Lane
s w s w s
 (“An Essay on Criticism”, 445)

(“Duck Lane”, being a place-name, may have been pronounced differently; as it appears in the rhyme, in Pope, one may take this almost as a certainty). The only scattered examples in Pope of compounds with the first stress in a *w* position are when the first stress is subordinated as in “self-love” (“An Essay on Man”, II, 291) or when it constitutes a legitimate “inversion of the first foot” as in:

42. Lóng-sóunding isles and intermingled graves
w s w s
 (“Eloisa to Abelard”, 164)

“Elegy Written in a Country Churchyard” is another exceptionally regular poem (in its 128 lines there are only three stressed syllables in *w* positions in midline). Of its eleven compounds, three have two stressed syllables in *s* positions, seven have their first syllable only in an *s* position, and one has its first syllable in a *w* position. Compare these proportions to compounds in Keats’s five Odes, and “To Autumn”, twenty-two have both their stressed syllables in *s* positions. Twenty three begin in a *w* position, and only twenty-one have their first syllable in an *s* position. More strikingly, in *Paradise Lost*, Book I, fifteen compounds begin in *w* positions, and only five in *s* positions.

A further comment seems pertinent. An assignment like “blackbird” is open to different interpretation in Milton, who deliberately allows “black bird” and “blackbird”, than in Pope, who would not allow either. In Milton, it may (though not necessarily) be conceived as of the backward grouping of two heavy stresses counterpointed to metre. In Pope, “blackbird” as well as “black bird” appear to be the nearest choices to allow the convergence of stress-pattern and metre.

In perceptual terms, we might describe Milton’s handling of compounds as a tendency for “levelling” the contrast between stresses (treating the stresses of, e.g., *blackbird* as level) and, by the same token, as a tendency for “sharpening” the discrepancy between stress pattern and metric pattern. Pope, on the contrary, shows

a tendency for sharpening the contrast between stresses (going as far as treating the second component of, e.g., *blackbird* as an “unstressed” syllable); by the same token, he “levels” the discrepancy between stress pattern and metric pattern.

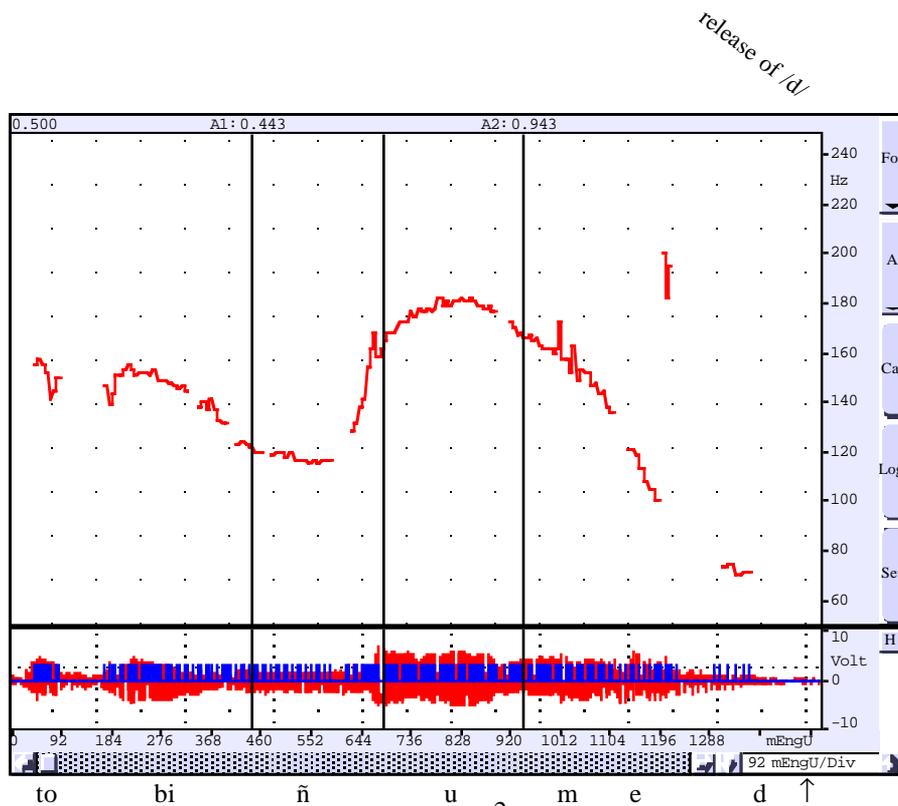


Figure 25 Wave plot and F_0 extract of “to be new-made” in the Marlowe Society’s performance

[Listen to sound file](#)

At this point, again, some critics and linguists say that stress rules may have been different in Shakespeare’s and Milton’s time from our time. May have indeed. In this case, however, we have to account for a more embarrassing historical phenomenon. Stress rules have changed from Shakespeare’s and Milton’s time to Pope’s. Then, in Shelley’s and Keats’s time stress rules changed back to those prevailing in Shakespeare’s and Milton’s time. Then, again, in our time, stress rules have changed back to those prevailing in Pope’s time—in spoken, but not necessarily in poetic language. It would be much more parsimonious, as I have said, to assume that stress rules did not change during these periods; what did change is aesthetic norms: Shakespeare, Milton, the Romantics and some modernist poets preferred a divergent metric style, whereas Pope preferred a convergent style.

The present work assumes that whenever stress pattern and metric pattern diverge, the reader is inclined to over-articulate the stressed words, and group them more strongly together, so as to make “mental space” for the perception of both patterns simultaneously. The three features of compounds can be exploited in two different hierarchies. Poets who usually capitalize on metric divergence, like Shakespeare, Milton, Keats and Shelley, tend to exploit the first two features, and “suppress” the third. Consider the line

43. This were to be néw-máde when thou art old

w s w s w s w s w s

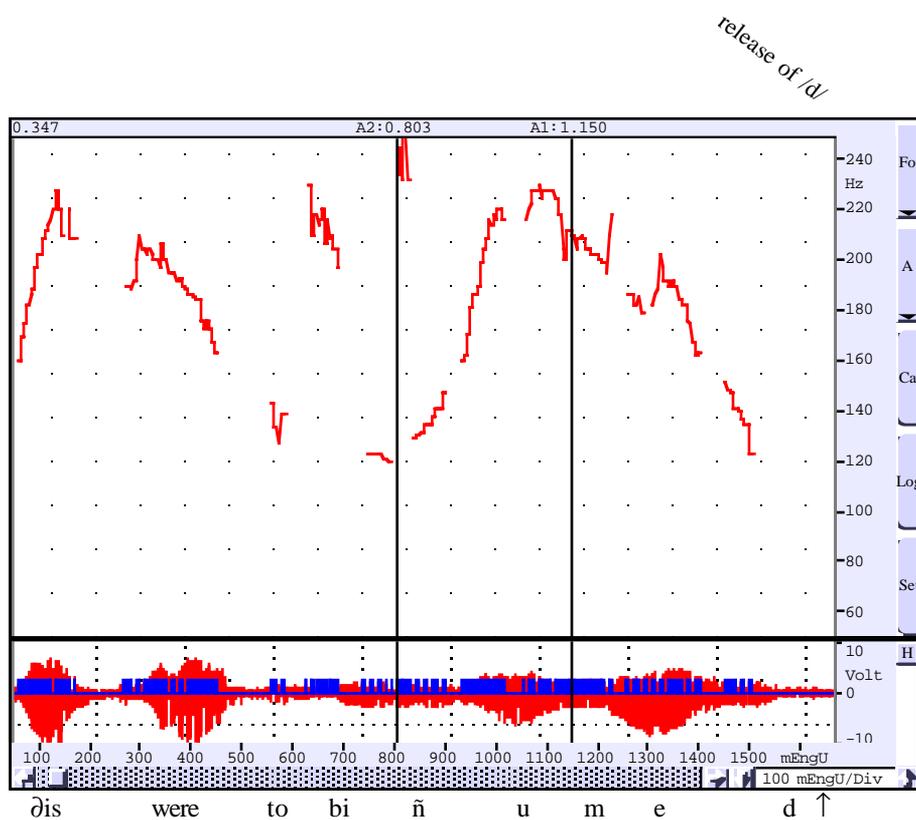


Figure 26 Wave plot and F_0 extract of “this were to be new-made” in Gielgud’s performance

[Listen to sound file](#)

It is impossible to subordinate the stress of *new* (as the metric pattern demands) without “wrenching” the stress pattern of the language. Therefore the reader will be inclined to pronounce both words with heavy stresses. This is an instance where exceptionally high tension arises between stress pattern and metre.

Listening to the readings, the Marlowe Society's players perform the two consecutive stresses of such compounds by heavily stressing both syllables, over-articulating them, and grouping them together very tightly. In some instances there is an additional curious feeling that the first of the two stressed syllables would bear the stronger stress, as required by grammar, and then, the second stress somehow "breaks even". In Figure 25, "new-made" is pronounced on a single but very complex intonation curve. The intonation contour on /ñ/ begins at 119.837 Hz, falls to 116.053 Hz, and resets to 164.552 Hz, whence an obtuse, wider than high humpback contour marking /u/, rises from 164.552 Hz to 182.231 Hz, and then falls again to 164.552 Hz. From here, the intonation contour of "made" falls in a rapidly elongated arch, almost a straight line, to 69.778 Hz. In the intonation contour of /u/ there are three minute obtrusions, to 182.231 Hz each; the last one constituting a fairly late peak. "New" is perceived as steeply rising, culminating in late peaking (this, of course, could not be predicted from the shape of the obtuse hump with three obtrusions, that is, whether the first, second or third one would determine the perceived peak; alternatively, if we ignore the minute obtrusions, whether the onset or the end of the obtuse peak-arch determines the perceived peak). The lack of pause and the continuous pitch contour contribute to the feeling that the two words are tightly grouped together. At some variance with the graphic information, the perceived pivotal point of pitch directions is at the "late" peak on "new". In fact, we have discovered that the short slope immediately following the peak indicates a minute *schwa* that has no linguistic justification. The drastic change of pitch direction contributes to the feeling of over-articulation of the boundary between the two words. The perceived late peaking contributes both to a clear articulation of the word boundary, and to an impetuous drive across the pitch discontinuity, effecting an emphatic sense of forward grouping. The minute *schwa* may also contribute, as we have seen above (Figure 9), in both directions (the need for over-articulating the boundary between the two words, or the need to release the stricture after the glide /w/ that "completed" the rounded /u/ after an exceptionally late peak which, in turn, was required by the need for emphatic forward grouping, or both).⁶

"Made" is only slightly longer than "new" (516: 459 msec); the breaking-even makes use of two additional factors: the long-falling contour (over-articulating, by

⁶ This paragraph may well illuminate the difficulty I encountered during all these years in my quest for an instrumental investigation of poetic rhythm. As long as I hoped to account for rhythmic intuitions by predicting the perceived pitch and perceived stress from the spectrogram and the F_0 curve, it was a hopeless case. In the present instance, it is impossible to predict from the F_0 curve that the perceived accent point would be near the end rather than near the beginning of the vowel in "new". What I did here, instead, was to review the pitch graph in light of the perceived peak. This suggested that the perceived peak is at the end of the humpback rather than at its beginning or its middle. After that, the graphic evidence can be used to account for one's intuition that the words "new" and "made" are very strongly articulated and very strongly grouped together, at one and the same time.

the same token, the word boundary), and the two minute obtrusions (159.783-172.266-157.500 Hz and 152.069-163.333-148.986 Hz respectively) that generate perceived emphasis. The rising-and-falling contour as well as the late peak on “new” arouses a feeling that it is the main accent of the phrase (but in a weak position), threatening to ruin the metre. But there is a point at which the falling pitch sequence of “made” breaks even, and eventually exceeds the prominence of “new”, reinstating metre. But until then, there is a strong feeling that it is “new” that bears the main stress. Thus, “new” does and does not bear the main stress at one and the same time.

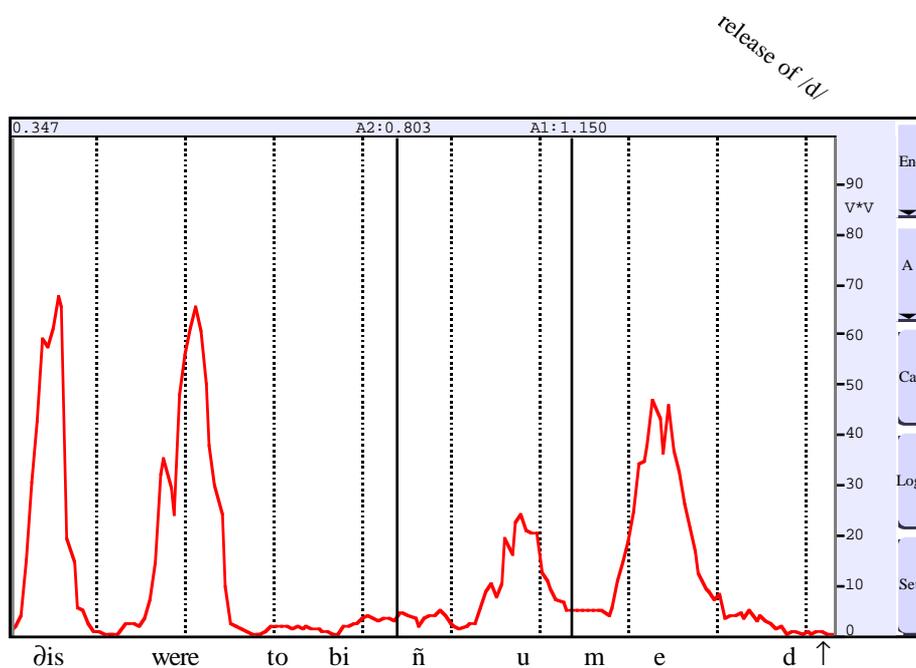


Figure 27 Energy contour of “this were to be new-made” in Gielgud’s performance

Though much more dramatically agile in its pitch movement, Gielgud’s intonation contour for “new-made” has essentially the same shape as the Marlowe Society’s. Indeed, he achieves the same kind of rhythmic solution, but much more dramatic in character. Here, the late peak on “new” is much more in evidence, both in graph and listening, than in the Marlowe Society’s reading. This enhances both the stress and forward grouping. This pitch reset and forward grouping indicate, again, that “new” (in a weak position) is the most strongly stressed syllable in the phrase, or even in the line, threatening the line with disintegration. Now segmental prominence is a relative phenomenon—relative to the adjacent segments. So, when the next syllable (“made”) bears exceptionally strong stress too, the exceptional prominence of “new” must be revised after the event, and the two syllables are perceived as equally stressed. Thus, the anxiety of returning to chaos generated by the heavily

stressed syllable in the weak position is resolved by the next stressed syllable emphatically confirming metre in a strong position.

release of /d/

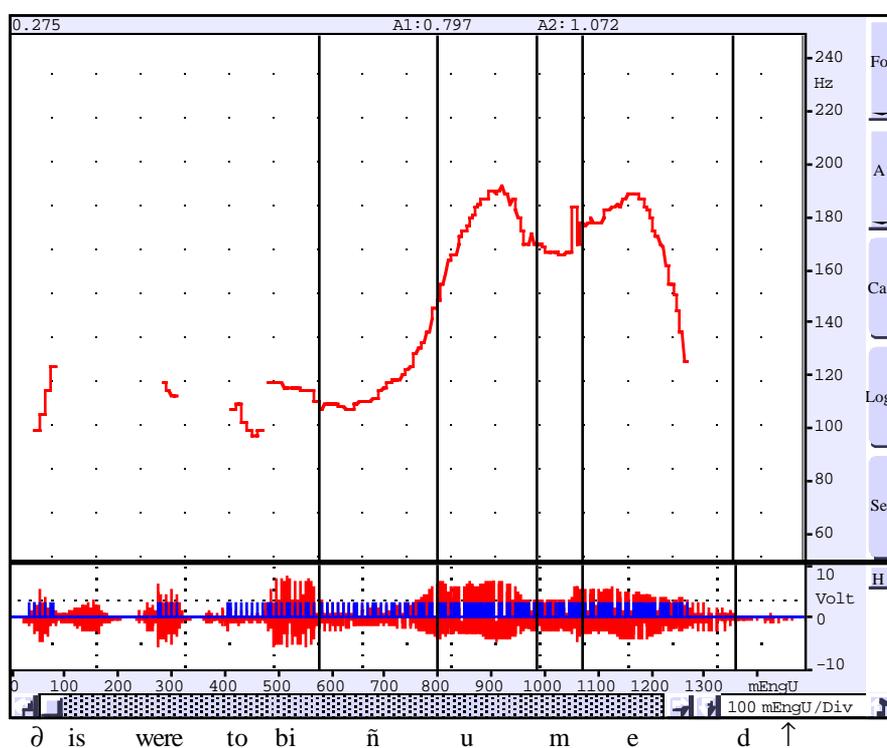


Figure 28 Wave plot and F_0 extract of “this were to be new-made” in Callow’s performance

[Listen to sound file](#)

This restructuring of prominences after the event is most effective; and restructuring of elements is characteristic of aesthetic processes in general. This process is most obtrusive, since the prominence of the second syllable is produced by means that are very different from that of the first one. First, there is a very significant difference in duration: “new” is 350 msec, “made” 513 msec long; second, there is the long-falling contour, over-articulating the word boundary of “made”; third, there is a conspicuous pitch obtrusion at the beginning of the vowel in “made”, imposing a strong perceptual emphasis upon this syllable. This peak obtrudes about twice as high as the Marlowe Society’s peaks (23.026 vs. 12.483 and 11.264 Hz); and falls slightly less deep than the Marlowe Society’s peaks (12.208 vs. 14.766 and 14.347 Hz). Indeed, when isolated on the computer, one may even hear here a rising-and-

falling contour; in context, one may only hear an exceptional emphasis on this prominent syllable. This emphasis is reinforced by a device which we have encountered so far only in Gielgud's readings. As Figure 27 shows, the intensity contours of the two words do not run parallel with their pitch contours, but run counter to them: while the pitch of "new" is rising and of "made" falling, "made" is almost twice as intense as "new".

In Callow's reading, both conception and performance are quite different. While both Gielgud and the Marlowe Society carefully articulate the function words "this were to be" and assign to them elaborate intonation contours so as to preserve consistency with the rest of the line, Callow utters these function words as one would in plain prose speech, fast, carelessly articulated, and with flat, low intonation. He switches to the "rhythmic mode" only when he comes up against the conflict between the stress pattern of "new-made" with the metric pattern. Furthermore, he too assigns a single continuous intonation contour to the two words, and there is even a slightly late peak on the vowel of "new", and a slightly early peak on the vowel of "made". But, though the shape of the intonation contour of his "new" is rather similar to the other two reciters', he does not attempt to match their subtlety. Instead of the sophisticated production of the two stresses by conspicuously different means resulting in a drastic restructuring of prominence-perception, Callow produces the two consecutive stresses by roughly the same means, by two rather similar, straightforward pitch obtrusions. Thus, though this performance too frustrates metric expectations by "new" in a weak position and then reinstates metre by "made" in a strong position arousing relief and satisfaction, this process does not involve the same thoroughness in the restructuring of prominence perception after the event, and is experienced as much more superficial.

Now consider the following two lines from Shakespeare's sonnets (2: 7-8), the first of which contains some almost insurmountable complexities:

44. To say, within thine ówn déep-súnken eyes,
Were an áll-éating shame and thriftless praise.

The most conspicuous and most difficult complexity in this line is the compound "deep-sunken", beginning in a weak position. Furthermore, there is here a rather unusual kind of syntactic complexity mentioned above: the whole of this line is the subject phrase of the predicate that occurs in the next line; and the subject phrase consists of a reporting phrase ("to say"), and a reported phrase (the rest of the line). But there is another difficulty here too, namely, that the assignment of caesura is quite problematic. I discussed at great length in Chapter 4 (excerpt 23) issues involved in the caesura in this line.

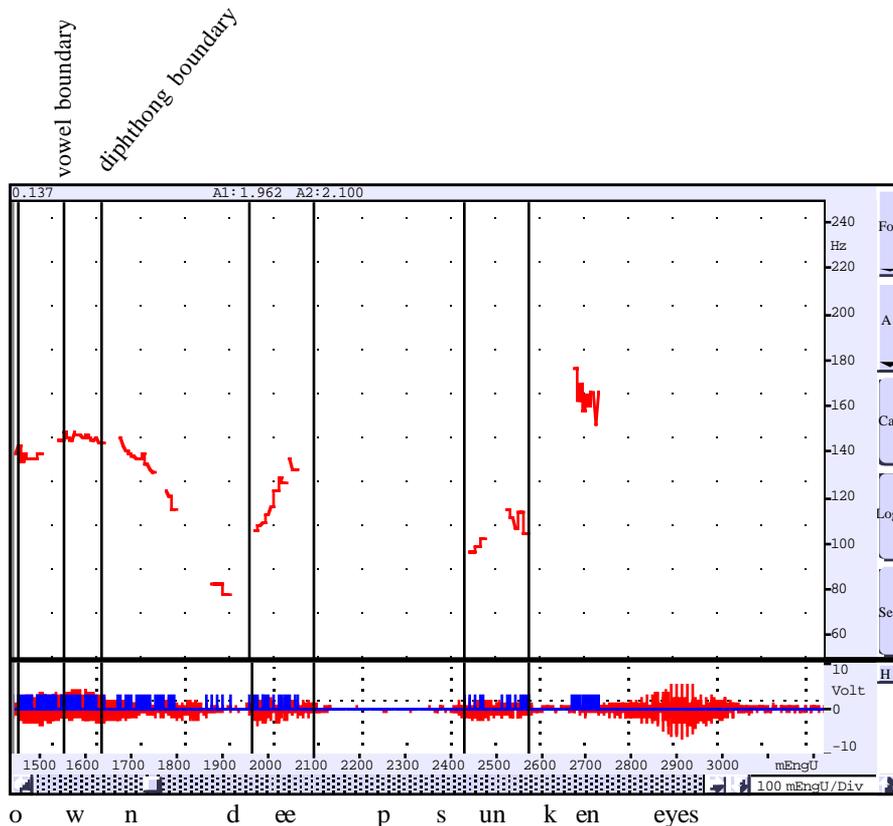


Figure 29 Wave plot and F₀ extract of “own deep-sunken eyes” in the Marlowe Society’s reading. The markers indicate diphthong and vowel boundaries. Notice the late peaks on *own*, *deep* and *sun*.

[Listen to sound file](#)

In the Marlowe Society’s reading, “own” is marked by an assortment of devices that suggest both a pause and a drive across it. Meaningwise, the word ought to be grouped with “deep-sunken”; the over-articulation of its boundary may serve one of two purposes, or both: to suggest a second (marked) caesura, and to contribute to the over-articulation of the compound with its stronger stress in a weak position. Acoustically, “own” is part of the preceding internally defined prosodic pattern (see Chapter 4, Figure 10), but is probably separated from it by a “segmental discontinuity” (the phonetic correlates of this could not be established beyond doubt). From “deep” it is separated by a very complex pitch discontinuity and a longish /n/. As a result, “own” is perceived as bearing exceptionally strong articulation and stress.

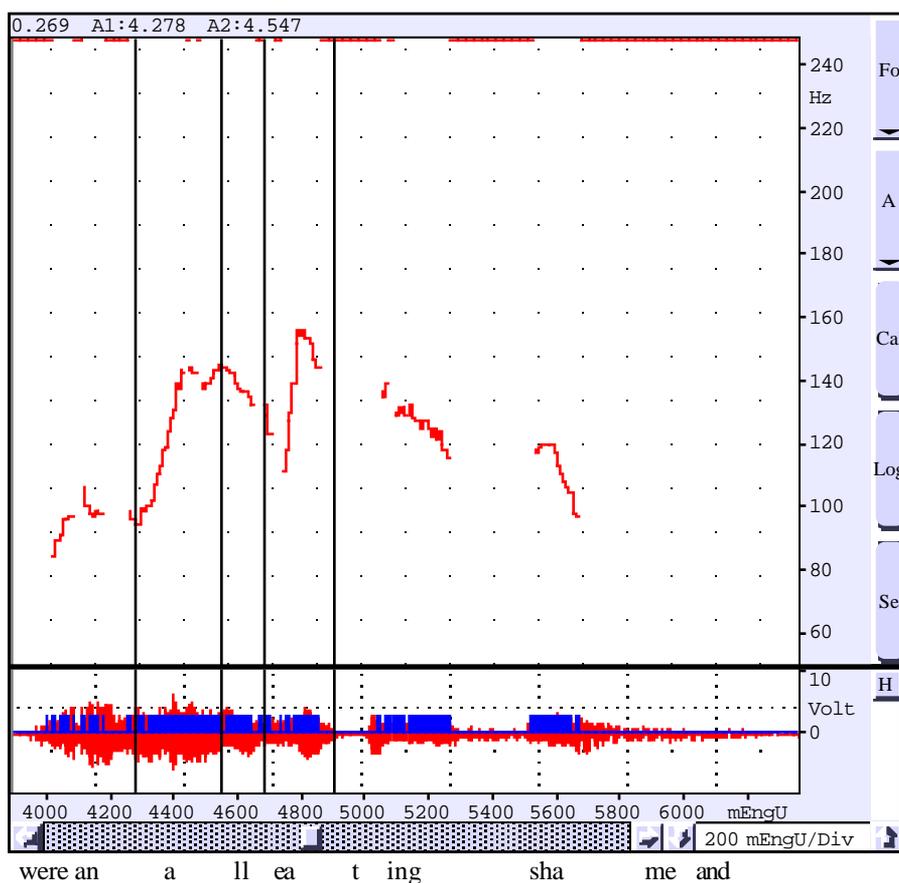


Figure 30 Wave plot and F_0 extract of “were an all-eating shame and” in the Marlowe Society’s reading. The markers indicate vowel boundaries. Notice the late peaks on *all* and *eat*.

“Own” is, then, over-articulated by a longish /n/ with a falling intonation curve; its forward-grouping is secured by a relatively late peak, occurring on the second phoneme of the diphthong. The boundary of “deep” is over-articulated by a perceived prolongation of the /p/. Now /p/ is an abrupt plosive, and cannot be prolonged; this effect has been generated by a short pause *before* it. Its forward grouping, again, has been secured by a late peak on /i:/. The rising intonation curve and duration effect the heavy stress on “deep”. “Sun-” too bears heavy stress, generated by a rising-and-falling contour, the peak of which is considerably lower than those of “deep” and “n”. Since the reduced vowel cannot bear stress, this downward deviation of pitch is perceived as a cue for heavy stress. Thus, we have got here three consecutive, heavily stressed syllables in “own deep-sunk-”, with the heaviest linguistic stress on

“deep”. This is, precisely, the syllable that occurs in a weak position, threatening the line with disintegration.

The Marlowe Society provide a rhythmical performance of these syllables, in harmony with the predictions of the present work, by putting equally heavy stresses on the three syllables, by a variety of phonetic devices; by over-articulating the syllable boundaries; and by conspicuously grouping them together (in spite of the over-articulation) by late peaks on “own”, “deep” and “sun-”. As we shall see in a moment, Callow, for instance, did not attempt to face up to this problem at all.

In the next line too there is a compound with its first, strongest stress in a weak position, “all-eating”. Here, again, the two syllables bear equally heavy stresses, cued by long-rising and slightly-falling intonation contours; “all” has longer duration, but “eat” reaches higher up, and the stresses are perceived as roughly equal. In both words, the syllable boundaries are over-articulated by intonation contours; and forward grouping is effected by a very late peak on “all”, and a slightly late peak on “eat-”. Thus, in both compounds, “deep-sunken” and “all-eating”, the rhythmical performance is in harmony with the predictions of the present work.⁷ On the dynamics level, the first, linguistically greater stress infringes upon metre in a weak position and arouses longings for confirmation; when the next (stressed) syllable confirms metre in a strong position, the listener experiences relief and satisfaction.

As I have argued in Chapter 4, in spite of some slight differences, the first six syllables in Callow’s reading indicate a strikingly similar conception to that of the Marlowe Society. Callow adopts the same exceptionally rising-and-falling pitch contour, with a similar, though shorter, “internally defined prosodic pattern” (cf. Figure 13). There is, however, a second pitch peak (right in the middle of the diphthong of *own*) in this performance. The rising curve indicates a forward movement (even in the absence of a late peak), whereas the long-falling intonation curve strongly articulates the word boundary. The /n/ in “own” too is longer here than usual. In “deep-sunken”, however, Callow’s reading becomes quite different. This is a compound; in ordinary speech, according to the compound stress rule, the stress of the second word is subordinated to that of the first one. Here, the greater stress oc-

⁷ It is impossible to predict from the pitch extracts whether these stresses will “break even” or not. It is only the listener who may judge whether they are even, after the event. Pitch plot and other spectral evidence can only support or contradict such judgments after the event. This is not a specific weakness of the present theory; this appears to be the case, according to semiotician Bierwisch (1970) with reference to all poetic qualities, and according to philosopher Sibley (1962), with reference to aesthetic qualities in general. What is more, this is the case according to Köhler’s (1972) analysis in all creative thinking, even insights into geometric problems. So one need not be apologetic about this procedure, as being “unscientific”. As Walter Weimer commented in a Minnesota University seminar, the title of Sir Karl Popper’s book *The Logic of Scientific Discovery* is a misnomer: it should have been called *The Logic of the Completed Scientific Report*; scientific discoveries are made according to very different logic(s).

curs in a weak position. This poses a challenge to the reciter, which Callow simply does not take up: he subordinates the stress of “deep” to that of “sunken”.⁸ There is, then, a rhythmic problem here, but the reciter does not attempt to solve it; and thus, the study of rhythmic performance has nothing to explore in the present instance.

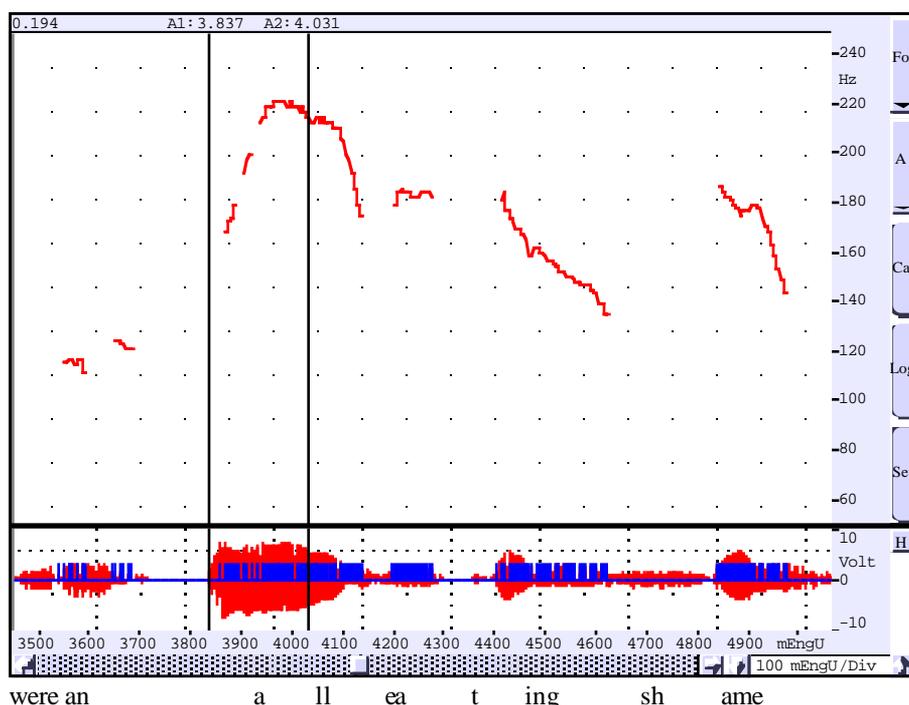


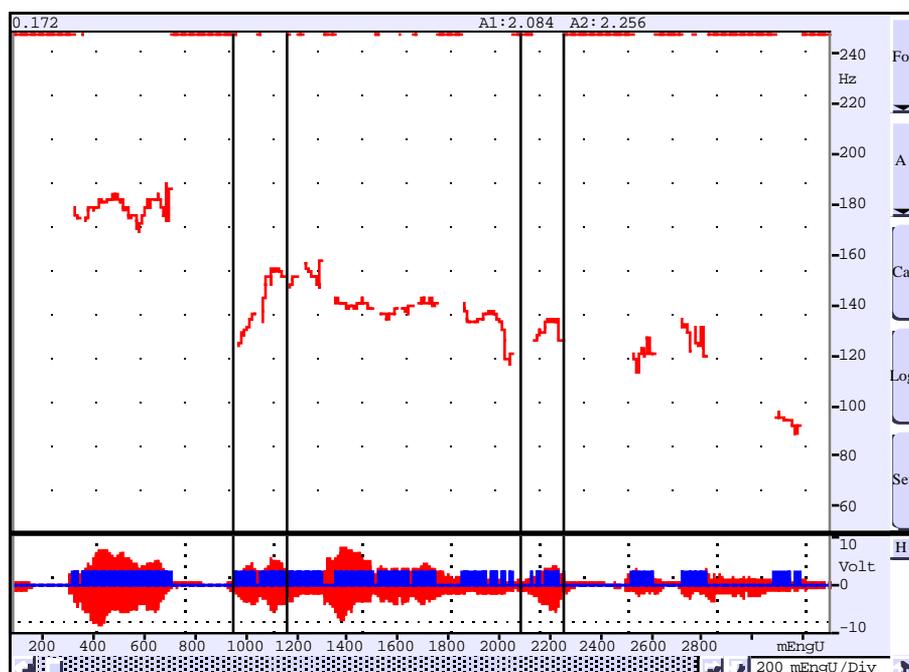
Figure 31 Wave plot and F_0 extract of “were an all-eating shame” in Callow’s reading. The markers indicate the vowel boundaries. Notice the late peak on *a(ll)*.

[Listen to sound file](#)

Not so in the compound in the next line: “all-eating”. This time Callow does no justice to the stress of the second word; it is almost unstressed. As a result, the listener perceives the stress of “all” as something like a stress maximum in a weak position. Indeed, the solution to this problem is exactly of the sort we have encountered in relation to stress maxima in weak positions (cf. Chapter 6, Figure 10). The reciter foregrounds in his performance a stress valley in the last four syllables, and segregates it by most conspicuous means from the preceding function words. First, there is in mid-phrase a straightforward 122 msec pause after “an”. Second, the exceptionally high-rising intonation curve and the late peak generate a strong forward drive; the rising-and-falling intonation curve on “all”, with the late peak, renders it more than usually stressed in, precisely, a weak position, strongly violating metre.

⁸ This may serve as an example of Callow’s occasional carelessness in matters of prosody.

The resulting four-syllable-long perceptual unit comes to a rest when the stressed syllable “shame” occurs in a strong position. The F_0 extract on “shame” strongly over-articulates the word boundary, suggesting by the same token a (marked) caesura (after the sixth position). Thus, the listener experiences a period of anticipation, and then a point of arrival when tension is resolved. With reference to this solution, two different questions may be asked. First, whether the reciter can be excused for demoting the second stress of the compound; and second, whether the resulting stress valley does solve the problem. As for the second question, listening to the delivery instance confirms that the perceptual problem is solved—assuming that the demotion of stress on “eat-” is acceptable.



to say with i n thine ow n d ee p sunk en eyes

Figure 32 Wave plot and F_0 extract of “to say within thine own deep-sunken eyes” in Gielgud’s reading. The pairs of markers indicate vowel boundaries. Notice the late peaks on *-thin* and *deep*.

[Listen to sound file](#)

The pitch plot of Gielgud’s performance of “to say within thine own deep-sunken eyes” shows that he produces the stress sequence on “deep-sunken” exactly like the Marlowe Society: “deep” has a rising-and-falling contour with a late peak; and “sunk” has a pitch (with a late peak) that is *lower* than that of either “deep” or “n”. Unlike in the Marlowe Society’s or Callow’s performance, a gradually falling “internally defined prosodic pattern” is assigned to the whole phrase “within thine own deep-sunken eyes”. Consider now “own” in the sixth position. It is 536 msec long

(by comparison, the immediately following “deep” is 294 msec long). A falling intonation contour and an exceptionally long (287 msec) /n/ indicate here a very clearly articulated word boundary followed by a discontinuity—suggesting a second (marked) caesura. At the same time, the intonation contour and the lack of pause take care of continuity in the phrase “own deep-sunken eyes”.

The phrase “were an all-eating shame” is assigned a dramatically rising and falling contour, with a late double peak on the vowel of “all”, reaching up to 237.097 Hz. The most dramatically elaborate contour belongs to “all”, and it is perceived as bearing the strongest stress in the group, indicating an infringement upon metre in a weak position; the humpback inflection on “eat-” is just enough to indicate a stress on this word (while still conforming with the long-falling contour), faintly confirming metre in a strong position. But here too, not unlike Callow’s solution, something similar to a stress valley is generated, emphatically confirming metre by “shame” in the sixth, strong position, at the caesura. When the wave plot of “shame” is amplified, a longer-falling intonation contour is obtained, indicating an emphatic closure of the whole group. The rising contour and late peak at the beginning of the Group indicate an impetuous forward drive, toward this position.

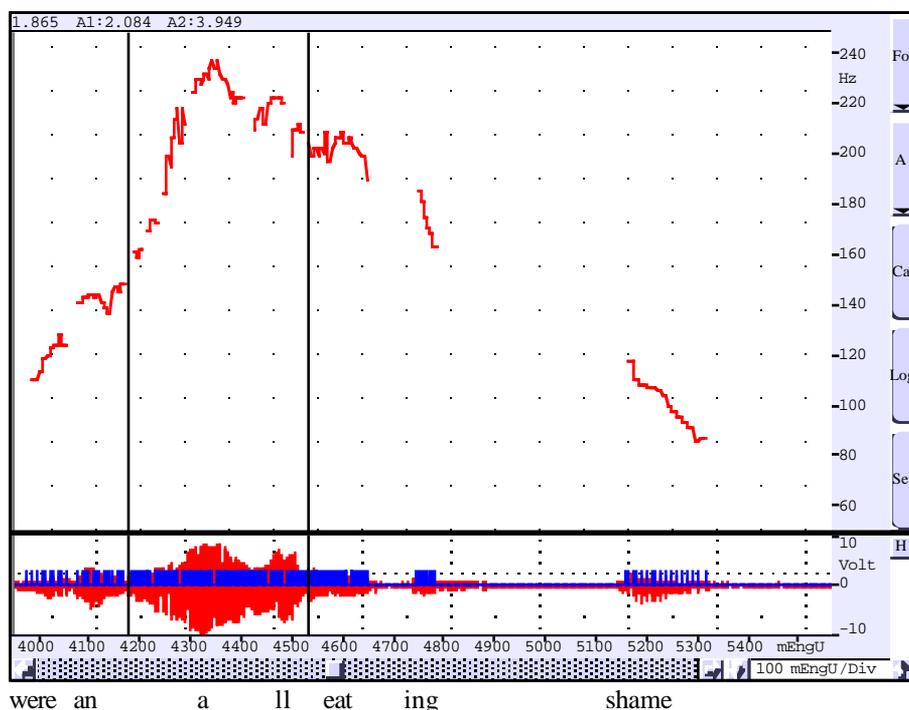


Figure 33 Wave plot and F₀ extract of “were an all-eating shame” in Gielgud’s reading. The markers indicate the boundaries of “all”.

I have given an elaborate description of three performances of two consecutive lines from Shakespeare's Sonnet 2. The reciters were great British actors. They remarkably conformed with the predictions of the present theory. Where Callow deviated from these predictions, he grossly violated, in fact, not the theory, but the compound stress rule of the English language, in order to avoid rhythmic complexity. What seems to be quite significant about this comparison is that their solutions overlap to a considerable degree, even (or especially) where they cannot be predicted from spoken English prosody. This may indicate either that the performers share a living tradition, or that they implement some shared principles shaped and constrained by the human cognitive system. While a shared living tradition as the final cause for these overlaps cannot be ruled out, two observations must be made on this possibility. First, Callow's artistic focus appears to be very different from Gielgud's and the Marlowe Society's. Second, and more important, a shared tradition is not an arbitrary invention imposed on a cultural community by way of conditioning. It is more likely that in the course of repeated cultural transmission the tradition assumed a good fit to the natural constraints of the human brain; that is why it became acceptable and accepted by a wide range of individuals who constitute the community.

Summary

I propounded in Chapters 2 and 3 a model that confers psychological meaning to the phrase "rhythmical performance of poetry", and also allows to make specific operational predictions. The key devices are "grouping", "over-articulation" and "over-stressing" (in certain instances, to be discussed in Chapter 8, the key device is precisely the opposite, "under-articulation"). Such a conception may explain why stressed syllables in weak positions are so frequently over-stressed and over-articulated rather than under-stressed. In light of this conception I have discussed in the present chapter sequences of stressed syllables, some of which *must* occur in weak positions. I considered at some length the displacement of stress to the right in English iambic metre, resulting in a sequence of two unstressed syllables followed by two stressed ones. On the theoretical level, instances in which the displaced stress is a monosyllabic or part of a disyllabic word are equally admissible for Wimsatt and Beardsley, or Halle and Keyser. Magnusson and Ryder as well as Kiparsky, by contrast, admit the former but not the latter. I have argued that such notions of "metricalness" are "irrefutable". Instead, I have transferred the utmost limit of acceptability from verse structure to the reader's "rhythmic competence", his ability or willingness to perform the verse line rhythmically. If the reader is capable of performing Group II verse lines rhythmically, greater tension is perceived in them than in Group I lines; if not, the verse line disintegrates. Wimsatt and Beardsley predict a linear performance pattern (which I have called a "stress slope") for the performance of Group I and Group II lines, and ignore those types of lines for which such a pattern would not work. The three-dimensional conception propounded here envisages a

“stress grade”, in which the stressed syllable in a weak position impinges upon metric regularity arousing anxiety in the reader or listener; and then, the second stressed syllable (in a strong position) reinstates metre, and the listener may experience relief. The analysis of our corpus strongly suggests that present-day performers (in fact, British actors during the past few decades) tend to prefer stress grades to stress slopes, even though the latter are easier and more straightforward. A similar performance pattern is usually applied, with the necessary changes, to strings of stresses ending in a weak position, or compounds beginning in a weak position. Linguists and critics have suggested that stress placement in Milton’s time may have been different. This appears to be an attempt to avoid complexity in metre; it seems more plausible that the instances of extremely deviating stress encountered above result from aesthetic conceptions rather than from stress shift.