A NEW METHOD OF ANALYZING LATIN HEXAMETER

1. *The Problem.*

The existence in Latin of a verse-intonation (Ictus) different from prose-accentuation (Accent) is accepted to-day by the majority of scholars. Although the relation between these intonations is an essential feature of Latin poetry, the implications of the fact that every word in Latin verse is thus subject to two sets of intonation, have not been evaluated so far.

Lately the connection between ictus and accent on one hand and syntax on the other has been shown and the importance of vowels in Latin poetry has been stressed.[1] As traditional metrical analysis does not express these factors, I have tried to find a new way to make their representation possible. The method proposed enables us to discover sound-relations and syntactic connections which could not be detected by the traditional method.

It should, however, be borne in mind that metrical analysis is but a means for understanding poetry by representing some of its important factors, and not an end in itself.

2. *Qualified Metrical Analysis (Q.M.A.).*[2]

As both ictus and accent are dynamic, equal in nature and in value, their actions in the verse may be compared and combined. Every word in Latin verse, except for certain monosyllables,[3] is intonated either by the ictus or by the accent or by both. A syllable bearing ictus *and* accent has a stronger intonation than others, which have ictus only or accent only and — of course — than those bearing neither of them.

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[1] Cf. my "Remarks on the Structure of the Latin Hexameter", *Glotta* 46 (1968) 293–316, especially 297f. See also Note 9 below.

[2] *Ibid.* 294ff, 304ff.

[3] Monosyllables present some difficulties: With regard to their prose accentuation we should distinguish three groups: (a) *With strong accent,* e.g. 'rex', ars'. (b) *With medium accent,* such as 'qui', 'hic'. (c) *Without accent*: 'per', 'ut' etc. As to their intonation in verse with regard to coincidence and clash, the first two groups hold an intermediate position. In many cases the intonation of a monosyllable can be determined by its sense or by considering the Intonation-Group (v. page 68 infra) of which the monosyllable is a part. Although I suspect that monosyllables, even if intonated fully, have weaker Sound-Levels than multi-syllables, I do not distinguish between these two classes.

Various "Sound-Levels" can thus be distinguished: strongest in sound are syllables bearing ictus as well as accent, i.e. syllables in words which retain their prose-accentuation in verse; weakest in sound are syllables which have neither ictus nor accent.

In view of the importance in Latin of the distinction between long and short *vowels*, as distinct from long and short *syllables*, we have to consider also the length of vowels.

There exist, therefore, 6 Sound-Levels, which can be marked by numbers 6-1.

TABLE 1: SOUND-LEVELS.[4]

Syllable Intonated by	Containing Vovels	
	Long	Short
Both Ictus *and* Accent	6	5
Either Ictus *or* Accent	4	3
Neither Ictus *nor* Accent	2	1

Examples:

6:
nobis,[5] oris, accepit

5:
alta, incipit

4:
deis, cano

3:
manet(nunc), erit(sub)

2:
nulli, bello

1:
posse, nescit(et)

The traditional metrical analysis, based on syllables, shows neither the length of vowels, which is important for the rhythm of the verse, nor coincidence and clash of ictus and accent. The method proposed, which I call Qualified Metrical Analysis (Q.M.A.), makes it possible to represent these factors and some others.

In order to explain the essence of the Q.M.A., we shall analyze 4 verses, which have the same structure according to the traditional analysis:

$$\acute{-}\cup\cup\,|\,\acute{-}\,-\,|\,\acute{-}\cup\cup\,|\,\acute{-}\,-\,|\,\acute{-}\cup\cup\,|\,\acute{-}\,\times$$

Vergil, *Aen.* 1.2   Italiam fato profugus Lavinaque venit

4   vi superum saevae memorem Iunonis ob iram[6]

8   Musa, mihi causas memora, quo numine laeso

9   quidve dolens regina deum tot volvere casus

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4   V. my *op. cit.* (n. 1 supra) 310ff.

5   ↓ = Accent, / = Ictus.

6   Prepositions not bearing the ictus are represented as part of the substantive if they are monosyllables and precede the noun immediately: '*ob iram*' — **161**

The Q.M.A., however, brings out the differences:

$$
\begin{array}{l}
2\quad 4\,_{31}\,|3 \quad\quad 4\,|4\quad _{31}|3 \quad\quad 2\,|6\,_{11}\quad\quad |6\,_1 \\
4\quad /6\backslash\,_{31}\,|3 \quad\quad 4\,|4\quad _{31}|3 \quad\quad 2\,|6\,_1 \quad\quad 1\,|6\,_1 \quad\quad \triangle = \text{Monosyllable} \\
8\quad 6\,_1\,_3\,|4 \quad\quad 4\,|4\quad _{31}|4 \quad\quad /\!\triangle\!\backslash\,6\,_{11} \quad\quad 6\,_2 \quad\quad \smile = \text{Word-Length} \\
9\quad 5\,_1\,_3\,|4 \quad\quad 2\,|6\,_1\quad _3\,|3 \quad\quad /\!\triangle\!\backslash\,5\,_{11} \quad\quad 6\,_2
\end{array}
$$
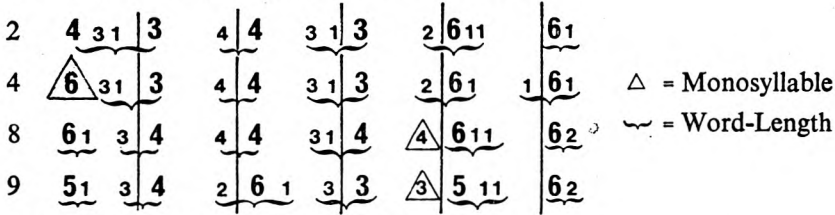
The following factors can be recognized immediately:

(1)   SYLLABLES:

Intonation:	(a) *Ictus and Accent*	:	Large Numbers (6,5)
	(b) *Ictus only*	:	Large Numbers (4,3)
	(c) *Accent only*	:	small numbers (4,3)
	(d) *Without Intonation*	:	small numbers (2,1)
Vowel-Content:	(a) *Long-vowelled*	:	Numbers 6,4,2
	(b) *Short-vowelled*	:	Numbers 5,3,1

(2)   WORDS:

(a) *Coincidence*	:	Large Numbers (6,5)
(b) *Clash*	:	Numbers (4,3)
(c) *Monosyllables*	:	
(1) *Bearing Ictus*	:	Large Numbers (6,5)
(2) *Bearing Accent*	:	small numbers (4,3)
(d) *Length and number of words*		

TABLE 2:   SUMMARY OF DATA.

Verse	Syllables						Words			
	bearing			without Int.		long short				
	Ict.+Acc.	Ict.	Acc.		Total	vowelled	Coinc.	Clash	Mon.	Tot.
1.2	2	4	3	6	15	6 9	2	3	-	5
4	3	3	3	6	15	6 9	2	3	1	6
8	3	3	4	5	15	9 6	3	3	1	7
9	4	2	3	6	15	9 6	4	2	1	7

I shall now try to apply this method to analyzing a continuous passage.

3. Application of the Q.M.A.

TABLE 3: ANALYSIS OF A PASSAGE (Verg. *Aen.* 6. 372–383).

372 *Talia fatus* erat coepit cum *talia vates*:

$$6_{11} \mid 6_1 \quad {}_3\lfloor 3 \rfloor \lfloor 4 \rfloor 3 \quad \triangle 3 \mid 6_{11} \mid 6_2 \mid$$

Unde haec, o Palinure, tibi *tam dira cupido*?

$$\lfloor 5' \rfloor \triangle 4 \, / 6_{\backslash 11} \mid 6_1 \parallel {}_3 \lfloor 4 \triangle 3 \mid 6_1 \quad {}_1 \lfloor 6_2 \mid$$

tu Stygias *inhumatus* aquas amnemque[7] *severum*

$$/6 \quad {}_{31} \lfloor 4 \parallel {}_{11} \mid 6_1 \quad {}_3 \lfloor 4 \parallel {}_3 \lfloor 3_1 \quad {}_1 \lfloor 6_1 \mid$$

375 Eumenidum aspicies ripamve *iniussus adibis*?

$$4 \quad {}_{31} \mid {}_3 \lfloor 3_1 \lfloor 4 \parallel 4 \lfloor 3 \quad {}_1 \lfloor 5_1 \quad {}_1 \lfloor 6_1 \mid$$

desine fata deum flecti *sperare precando.*

$$6 \,{}_{11} \mid 6_1 \quad {}_3 \lfloor 3 \parallel {}_3 \lfloor 4 \, {}_2 \mid 6_1 \quad {}_1 \lfloor 5_2 \mid$$

sed cape *dicta* memor, duri *solacia casus.*

$$/5 \quad {}_{31} \mid 6_1 \quad {}_3 \lfloor 3 \parallel {}_4 \lfloor 4 \quad {}_2 \mid 6_{11} \mid 6_2 \mid$$

nam tua finitimi longe lateque *per urbes*

$$/5 \quad {}_{31} \lfloor 4 \, {}_{31} \lfloor 4 \parallel {}_3 \lfloor 4 \quad 4 \lfloor 4_1 \quad {}_1 \lfloor 5_2 \mid$$

prodigiis acti *caelestibus ossa piabunt*

$$4_{31} \lfloor 4 \quad {}_4 \lfloor 4 \parallel {}_2 \lfloor 5_{11} \parallel 5_1 \quad {}_1 \lfloor 6_1 \mid$$

et statuent tumulum[8] et tumulo *sollemnia mittent*

$$/5 \quad {}_{31} \lfloor 3 \quad {}_{31} \lfloor 3' \parallel {}_{31} \lfloor 4 \parallel {}_1 \lfloor 5_{11} \quad 5_1 \mid$$

aeternumque locus *Palinuri nomen habebit.*

$$4 \, {}_3 \lfloor 3_1 \quad {}_3 \lfloor 3 \parallel {}_{11} \mid 6_2 \mid 6_1 \quad {}_1 \lfloor 6_1 \mid$$

his dictis curae emotae pulsusque *parumper*

$$/6 \quad {}_4 \lfloor 4 \, /4' \quad 4 \, {}_4 \lfloor 4 \parallel {}_3 \lfloor 3_1 \quad {}_1 \lfloor 5_1 \mid$$

corde dolor tristi; gaudet *cognomine terra.*

$$5_1 \quad {}_3 \lfloor 3 \quad {}_3 \lfloor 4 \parallel {}_4 \lfloor 3 \quad {}_1 \lfloor 6_{11} \mid 5_1 \mid$$

REMARKS: (1) Words *in Italics* have Sound-Levels 5,6 (coincidence). (2) - - - - - means that the word is in clash, but on account of its structure it can nowhere in the hexameter be in coincidence. ("Structural Clash", see below.) (3) ' = Synaloephe, $\boxed{4'}$ = a bisyllable turning monosyllable by synaloephe. (4) | = end of verse-foot, ‖ = caesura.

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[7] For Enclitics *v.* my *op. cit.* (n. 1 supra) 301f.

[8] '*et*' has its problems, especially if it has the ictus without being important in sense. In another paper I have tried to show that ictus-bearing '*et*' following an elidable

Three facts emerge clearly from this analysis:[9]

(1)   Words in sound-levels 6 and 5 form the bulk of the passage and it is seen that they are important in sense.

(2)   There are a considerable number of words which cannot retain their prose-accentuation in the hexameter because of their structure, i.e. because their prose-accentuated syllable is short, e.g. '*érăt*', '*tĭbĭ*', '*Stў̆gĭăs*'. We call this Structural Clash.

(3)   Syntactic word-groups can be discerned which are composed of words in sound-levels 6 and 5 together with monosyllables and with words in Structural Clash (Intonation-Groups),[10] e.g.: '*Talia fatus erat*' (372); '*unde haec, o Palinure, tibi tam dira cupido?*' (373)

The remainder is made up of: (a) Bisyllables filling the second half of the dactyl, bearing the accent, but not the ictus: '*căpe*' — (377), '*tŭa*' — **31** (378). They are rather scarce and do not seem especially important. (b) Words in clash which is not necessitated by word-structure; by changing the word order the could have avoided clash: he could have chosen coincidence, but preferred clash; we propose to call this Voluntary Clash. In the above passage the following words are in Voluntary Clash: '*cŏepit*' — **43** (372), '*ămnémque*' — **331** (374), '*rĭpămv(e)*' — **431** (375), '*flĕcti*' — **34** (376), '*dŭri*' — **44** (377),

syllable loses its vowel. " '*Et*' *in arsi* after Elidable Syllables in the Vergilian Hexameter", *Studii Classiçe* 14 (1972), 67–84, Bucharest. I, therefore, propose to read '*tumulum eᵗ*' instead of '*tumulᵘ et*', thus preserving the correspondence of '*tumulum*' and '*tumulo*' so important to this verse.

9   The present paper is a continuation and an elaboration of "Remarks", (for which v. note 1 supra) especially of its Chap. C, 310ff. Since the publication of that article, I have had to make certain corrections. It seems that I then somewhat overestimated the importance in sense of words in Sound-Level 6, while I gave less than their due to those in Sound-Level 5. Furthermore, the distinction between structural and voluntary clash made it possible to see that words in clash may be of similar importance in sense. In addition to sound-strength there seems to be another difference between words in coincidence and in clash: while the intonation is *concentrated* on one syllable in the former, it is *scattered* over two syllables or more in the latter. The effect in terms of sense-content may be equally strong in both groups.

The limited aim of his paper is to serve as an introduction to the new method, to show its application and present some results. Wider conclusions can be obtained from analyses of larger passages coupled with philological and aesthetic interpretation, examples of which will be given in another paper. So far this method has been applied to the hexameter only, but with small modifications it may be used to represent other meters as well. The gathering of data for this kind of research may be advanced by the use of a computer, after preparation of a suitable program.

10   This phenomenon is being dealt with by the author at present; *v.* also my *op. cit.* (n. 1 supra) 314–6.

'longe láteque' — **34 44**₁(378), 'acti' — **44** (379), 'aeternumque' —**433**₁(381), 'dictis' — **44** (382), 'cur(ae) emotae' — /**4**⟩/**444**(382), 'pulsusque' — **33**₁(382).

So far I have been unable to find an answer to the question *why* Vergil, or for that matter, any Roman poet, used words in Voluntary Clash. I am not quite satisfied with the explanation that clash makes the verse more lively; Structural Clash alone would be sufficient. The close study of intonation-groups will perhaps shed some light on this problem. There is also the fact that words in Voluntary Clash, mostly bisyllables, can be used in coincidence as well as in clash and are thus more convenient than words in Structural Clash which can appear in the hexameter in one intonation only; their use is, therefore, limited. In any case, I am not of the opinion that Voluntary Clash was forced upon the poet[11]; this holds for Structural Clash only.

Although I am so far unable to explain the reasons for Voluntary Clash, I can point to a few facts connected with clash, voluntary and structural alike. It appears that clash occurs under one or more of the following conditions: (Examples are from the passage discussed above).

(1)   Before a caesura[12]: 'acti', dictis', 'tristi'; 'erat', 'aspicies';

(2)   In hyperbaton[13]: 'duri' — 'casus', 'gaudet' — 'terra', 'Stygias' - 'aquas'.

(3)   In enclitic expressions: 'amnemque', 'ripamve', 'longe láteque'.

(4)   *Anastrophe*: 'coepit cum'.

Sometimes the same expression belongs to two groups: 'Stygias' - 'aquas' has caesura and is in hyperbaton as well.

4.   *Relations of Coincidence and Clash.*

It appears that all words in the verse can thus be classified as follows:

(1)   *Coincidence*: SOUND-LEVELS 6 AND 5.[14]   (a) *Multisyllables*.
(b) *Monosyllables* intonated by ictus, including *bisyllables* in synaloephe.

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11   It seems that the extent of the so-called "metrical necessity" has been much exaggerated. It is quite improbable that *mere* metrical considerations could have influenced selection and arrangement of words, although there were certain limitations imposed by the meter.

12   Cf. H. Drexler, *Einführung in die römische Metrik* (Darmstadt 1967) 89; he distinguishes between *Sperrungscaesur* and *Interpunktionscaesur*.

13   The question of hyperbata will have to be examined further: several patterns can be distinguished: (a) Both parts in coincidence: 'desine' — 'sperare'.   (b) Coincidence — Clash: 'corde' — 'tristi'.   (c) Clash — Coincidence: 'duri' — 'casus'.   (d) Both parts in clash: 'Stygias' — 'aquas'.

14   To be exact, not all words in coincidence have Sound-Levels 6 and 5, this apart from monosyllables. (*V.* n. 3 supra). Bisyllables filling the second half of the dactyl (*v.* page 68) are in fact in coincidence, but having the accent only, they are in Sound-Levels 4 or 3 (tua – **31**). but their number seems to be rather small.

(2) *Clash:* SOUND-LEVELS 4 AND 3. (a) *Structural:* Such words belong actually to Group (1) (a), because they would have coincidence, unless their structure prevented it. (b) *Voluntary.*

(3) *Without intonation:* SOUND-LEVELS 2 AND 1. Mainly monosyllabic prepositions and conjunctions.

I shall now try to find an approximate quantitative relation between coincidence and clash.

TABLE 4: SOUND-LEVELS ACCORDING TO VERSE-FOOT (ICTUS-BEARING SYLLABLES)
(Aen., 6.372–383)

Sound-Level	3		4		5	6	Monos.[15]		Total
	Clash				Coincidence				
Foot	Struct.	Vol.	Struct.	Vol.			5	6	
1	0	0	2	1	1	2	4	2	12
2	3	1	3	1	0	3	0	1	12
3	4	0	2	3	0	2	1	0	12
4	0	3	3	4	1	1	0	0	12
5	0	2	0	1	3	6	0	0	12
6	0	0	0	0	5	7	0	0	12
Total	7	6	10	10	10	21	5	3	72

TABLE 5: CLASSIFICATION OF ICTUS-BEARING SYLLABLES.
(*Aen.* 6.372–383).

(1) COINCIDENCE: 31⎫   *Ratio:* (Coincidence in broadest sense):
  Monosyllables (5,6)   8⎬56   Voluntary Clash = (approx.) 3.5:1.
(2) STRUCTURAL CLASH 17⎭

(3) VOLUNTARY CLASH 16 16

In order to find whether or not this ratio of words in coincidence and in clash is accidental, we examined at random about 600 hexameters by various poets.[16] The results, listed in the following table, show that the overall relation of words in coincidence and in clash in the Latin hexameter seems to be fairly constant.

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[15] This column also includes bisyllables in synaloephe, e.g. '*und(e)*'.

[16] The following passages have been examined (number of verses in brackets) : Enn. *Ann.*, 35-51, 77-96 Vahlen (37). Lucr. 1.1 – 20, 62–79, 483–502, 705–733 (87). Catull. 64.265–302 (38). Verg. *Ecl.* 1.1–17, 64–83, 6.1–30; *Georg.* 1.118–159, 2.1–8; *Aen.* 1.1–11, 2.77–104,

TABLE 6:

QUANTITATIVE RELATIONS OF COINCIDENCE AND CLASH

Number of Verses	Coincidence	Clash		Monosyllab.	Total Ictus-Bearing Syll.
		Struct.	Volunt.		
609 ½	1712(47.11%)	635(17.09%)	859(23.49%)	451(12.31%)	3657(100%)
(Various)[17]					
12	31(43.06%)	17(23.61%)	16(22.22%)	8(11.11%)	72(100%)
(Aen. 6. 372–383)					

5. *The Pattern of the Hexameter.*

As a result of this examination of about 3600 ictus-bearing syllables these relations can be summarized as follows:

About one half of all ictus-bearing syllables have coincidence, about one fifth show structural clash, approximately one seventh are monosyllables. This means that some two-thirds of the words in the Latin hexameter retain their prose-accentuation: this includes words which have to change their intonation in the hexameter owing to their structure and are, therefore, to be considered as having coincidence. If we add the ictus-bearing monosyllables, i.e. words which *prima facie* retain their prose-accentuation, we arrive at some 80% of all words. Only about 20% have Voluntary Clash. This seems to show that the Latin hexameter is based mainly on coincidence of ictus and accent.

It should, however, be borne in mind that we arrived at these results by the examination of a comparatively small number of verses, that these are average values and that statistical data in poetry cannot be interpreted with mathematical accuracy. These relations may differ in various poets, in various poems of the same poet, even in the same poem, but they at least give some information on the composition of the verse with regard to intonation.

The Latin hexameter — this should be stated with all due caution — consists mainly of words which are arranged in such an order that they retain their prose-accentuation or would have retained it, were it not for their structure and the Law of the Penult. Retention of prose-accentuation means stronger sound and greater prominence of such words in relation to others; the sound-strength is greatest when a word has both intonations — ictus as well as

3.655–681, 4.651–662 (194½). Hor. *Sat.* 1.1.1–19, 5.1–29, 9.1–34; *Epist.* 1.2.1–31, 2.1.69–101 (146). Ov. *Met.* 1.89–124 (36). Pers 1.1–35 (35). Iuv. 1.1.1–36 (36).

[17] The ratio (Coincidence+ Struct. Clash+ Monosyll.):(Volunt.Clash) in the passages examined ranges from 13:1 (Verg. *Ecl.* 6.1–12) to 2:1 (Enn. *Ann.* 77-96, Verg. *Ecl.* 1.1–17, Hor. *Sat.* 1.5.1–29). The average ratio of the 24 passages is about 3.5:1.

accent — on a long-vowelled syllable. The fact that the hexameter terminates as a rule in words in coincidence, i.e. those strongest in sound, demonstrates that this verse gravitates towards its end.[18]

The metrical analysis sketched in this paper appears to be an adequate means of representing all essential factors in the Latin hexameter and could be suitable for examination of the relations of sound and intonation to content and syntax in Latin poetry.

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[18] Hexameter endings in Sound-Levels 4 or 3, i.e. in a monosyllable or a multisyllable with an enclitic are weaker, but on the other hand are more emphatic because of their relative rarity.