

## Horace's Hexameters and the Date of the *Ars Poetica*

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In a recent article on Vergil's use of the sixteen possible metrical patterns, or combinations of dactyls and spondees in the first four feet (exclusive of spondaic verses),<sup>1</sup> I gave percentages for the first four and the first eight most frequently used patterns, and discussed with statistics such topics as variety in sixteen-line units, "repeat clusters" (the same pattern six or more times in sixteen or fewer lines), "repeats" (the same pattern in adjacent lines) and "near repeats" (the same pattern separated by one or two lines), also "opposite" and "reverse" patterns in adjacent lines (e.g. *sddd* is the opposite of *dsss* but the reverse of *ddds*).

In the *Georgics* Vergil developed a metrical uniformity lacking in the *Eclogues* and established norms which determined his metrical procedure also in the *Aeneid*.<sup>2</sup> This consistency in the metrical patterns and percentages is all the more surprising when we realize that the composition of these two works extended over a period of almost twenty years.

The hexameter poetry of Horace has an even greater chronological spread; between the earliest satires of Book I and his latest epistles there is an interval of at least twenty-five years, and perhaps thirty, if the *Ars Poetica* was composed near the end of his life, some years after the Letter to Augustus (II 1). In order to compare Horace's metrical procedure with that of Vergil, I first examined *Satires*, Book I (the earliest hexameter collection) and

<sup>1</sup> G. E. Duckworth, "Variety and Repetition in Vergil's Hexameters," *TAPA* 95 (1964) 9-65. This article illustrates from the *Aeneid* the various metrical patterns and defines and illustrates the terms which reappear in the present discussion of Horace's hexameter poetry, e.g. "repeat clusters," "repeats" and "near repeats," "opposite" and "reverse" patterns, "homodyne" and "heterodyne." Section I of the Vergil article, "The Hexameter Patterns," will serve as an introduction to this study also.

<sup>2</sup> There are, however, numerous metrical irregularities and abnormalities in *Aeneid* x-xii; these are best explained by the hypothesis that Vergil did not live long enough to give to the three final books the same careful metrical revision which the other books had received; see Duckworth (above, note 1) 49-53.

*Epistles*, Book II (the fourth and latest collection); the statistical results were sufficiently at variance to justify also the study of *Satires* II and *Epistles* I. This article (with the accompanying tables) is thus not only a comparison of certain metrical procedures of Vergil and Horace but an examination of the changing trends in the four collections of Horace's hexameter poetry, and also an attempt to apply new criteria to the problem of the dating of the *Ars Poetica*.<sup>3</sup>

### I. THE PATTERNS IN HORACE

The four books of hexameter poetry contain 4,081 lines, from which I deduct one spondaic verse (*A. P.* 467). I also exclude *Sat.* 1.10.1a-8a, rejected by all editors as spurious.<sup>4</sup> All statistics concerning Horace in the article and the accompanying tables are based upon the Oxford Classical Text.<sup>5</sup>

Horace's favorite metrical pattern, in each of the collections, is *dsss*. This is also the most frequent pattern in Vergil's *Georgics* and *Aeneid*, likewise in Cicero's *Aratea*,<sup>6</sup> Catullus LXIV, and Lucretius (as a whole and in each of the six books).<sup>7</sup> But Horace

<sup>3</sup> This last point will be discussed in Section III. In Sections I and II, Book II of the *Epistles* (including the *Ars Poetica*) is treated as a unit.

<sup>4</sup> Several scholars, however, have favored the authenticity of these eight verses; see G. L. Hendrickson, "Horace and Valerius Cato," *CP* 11 (1916) 249-69; M. Rothstein, "Die Anfangsverse der Satire I, 10 des Horaz," *Hermes* 68 (1933) 70-83; G. D'Anna, "Oraziani i primi versi della decima satira?" *Maia* 7 (1955) 26-42; G. Pennisi, "Quando lo scrittore parla di se' stesso, ovvero Horat., Serm. I, 10, 1a-8a," *Helikon* 2 (1962) 112-30.

<sup>5</sup> E. C. Wickham, second edition by H. W. Garrod (1912). My totals for the sixteen patterns differ slightly from those of D. Bo which appear in *Q. Horati Flacci Opera*, Vol. III (Torino 1960) 58-62 and are based upon his text of the *Satires* and *Epistles* (Vol. II, Torino 1959). Bo includes the few hexameter lines in the *Odes* and *Epodes*, but does not give percentages.

<sup>6</sup> By *Aratea* I mean the connected passage of 480 lines (less line 3, a spondaic verse). The *Aratea* fragments and the other fragments of Cicero's poetry provide a total of 265 more hexameters and *dsss* is the most frequent pattern here also. My statistics are based on the text of A. Traglia, *Ciceronis Poetica Fragmenta* (two volumes, Rome 1950-52). See below, note 9.

<sup>7</sup> It is perhaps Cicero who first established *dsss* as the favorite pattern for the poets of the first century B.C. Statistics based on disconnected fragments are unsatisfactory, but the most frequent pattern in Ennius (404 verses) is *ssss*, and that in Lucilius (605 verses) is *sdss*. Ovid in the *Metamorphoses* is usually cited as preferring *dsss* also, but actually *dsss* varies from book to book, occasionally even in fourth or fifth place; for the *Metamorphoses* as a whole, *dsss* has second place, with *ddss* first; see Duckworth (above, note 1) 24, note 31. The most frequent pattern in Vergil's *Eclogues* is also *ddss*.

does not concentrate on this one pattern to the extent that Vergil does; the percentage is 12.67, with a range from 14.03 (*Satires* II) to 10.82 (*Epistles* II);<sup>8</sup> Vergil's percentage for the *Georgics* is 15.81 (range from 17.38 to 14.16) and for the *Aeneid* a slightly lower 14.39 (range from 16.30 to 13.33). Vergil himself, however, is much lower than the earlier first century poets (Cicero, *Aratea*, 17.95; Catullus LXIV, 27.59; and Lucretius, 20.20, with a range from 23.10 to 17.88).

The second most frequent pattern in Horace is *sdss* (also in each of the four collections; in *Epistles* II, *sdss* is tied for second place with *dsds*). In the *Georgics*, *dsds* is second; in the *Aeneid*, *ddss*. Horace's predilection for *sdss* is probably to be explained by Lucilius' use of *sdss* as his most frequent pattern.<sup>9</sup>

The first four patterns (*dsss*, *sdss*, *dsds*, and *ddss*) have in Horace a frequency of 42.16 per cent, with a range from 43.95 (*Satires* II) to 39.96 (*Epistles* II); these percentages are again low when compared with those for Vergil's *Georgics* (48.99) and *Aeneid* (46.95). Horace thus concentrates on four favorite patterns considerably less than does Vergil, and this is true also of the first eight patterns: Horace, 67.97 per cent, with a range from 71.16 (*Satires* I) to 66.30 (*Epistles* I); Vergil, *Georgics*, 73.42, and *Aeneid*, 72.78, with a range from 77.09 (*Aeneid* XII) to 71.09 (*Aeneid* II). Both Vergil and Horace differ strikingly, in the use of their eight most frequent patterns, from the earlier hexameter poets: Cicero, *Aratea*, 82.88; Catullus

<sup>8</sup> M. W. Drobisch, "Weitere Untersuchungen über die Formen des Hexameter des Vergil, Horaz und Homer," *Berichte säch. Gesellsch. Leipzig* 20 (1868) 33-39, gives the percentage for *dsss* as 12.8, with a range from 14.1 (*Satires* II) to 11.3 (*Epistles* II).

<sup>9</sup> See above, note 7. The second pattern in Catullus LXIV is also *sdss*. In Lucretius it is *ddss*, the same as in Vergil's *Aeneid*, but in Cicero's *Aratea* it is *ssss* (the influence of Ennius?); *ddss*, however, is a very close third and, with the fragments added (see above, note 6), *ddss* moves into second place. W. W. Ewbank, *The Poems of Cicero* (London 1933) 47, lists *ssss* in fifth place, after *dsss*, *ddss*, *sdss*, and *ddds*; he includes the short fragments in his calculations, but even so he is in error, for if we add the fragments, *ssss* is in fourth position: 87 occurrences in 744 verses, 11.69 per cent; and *ddds* is not fourth but eighth, with 44 occurrences and 5.91 per cent. Ewbank's percentages for *ssss* and *ddds* are 7 and 8.3 respectively. His other percentages are also inaccurate; e.g. *dsss* for Cicero (including the fragments) is 18.28, not 21.4, and *ddss* is 14.66, not 18.6. See T. Peck, "Cicero's Hexameters," *TAPA* 28 (1897) 60-74, who lists (p. 62) the total of *dsss* as 132 (out of 740 lines), that of *ddss* as 108; these produce percentages of 17.84 and 14.59, very close to mine as given above. M. W. Drobisch, "Ein statistischer Versuch über die Formen des lateinischen Hexameters," *Berichte säch. Gesellsch. Leipzig* 18 (1866) 95, gives percentages even lower for *dsss* (16.4) and *ddss* (13.2), but his statistics are based on a total of 560 verses.

LXIV, 90.98; Lucretius, 79.81, with a range from 82.99 (Book v) to 78.19 (Book II).<sup>10</sup> However indebted Vergil was to Catullus and especially Lucretius, he took the important step of reducing the heavy concentration on the eight most frequently used metrical patterns and thus he eliminated monotonous repetition to a considerable degree. It is interesting to note that the sharp break with the earlier tradition appears first in the *Eclogues*, where the percentages for the first four and the first eight patterns are 41.45 and 69.09 respectively, much lower than in either the *Georgics* or the *Aeneid*. Horace carries this innovation even farther and his works in chronological order reveal a steady decrease in the percentages for the first four and the first eight patterns.<sup>11</sup>

We find in Horace's first eight patterns a total distribution in the first four feet of twenty spondees and twelve dactyls, the same as in Vergil's *Georgics* and *Aeneid* (also in Cicero's *Aratea* and Catullus LXIV; Lucretius has eighteen spondees and fourteen dactyls); in the individual collections, except for *Satires* II, the distribution is twenty-one spondees and eleven dactyls, identical with that in the fragments of Lucilius.<sup>12</sup> The fourth foot is a spondee in seven of the eight favorite patterns in the *Satires*, but in only six of the eight in the *Epistles*; Vergil, on the contrary, shows a steady increase: six (*Eclogues*), seven (*Georgics*), eight (*Aeneid*).

The pattern used least often by Vergil is *sddd*, the opposite of *dsds*. As a general rule, the more frequent a pattern, the less frequent its opposite. The same pattern, *sddd*, is sixteenth in *Satires* I and *Epistles* I, but for the four hexameter books as a whole *sddd* is fifteenth and *dddd* has last place, with a percentage of 2.06,

<sup>10</sup> The corresponding percentages for the fragments of Ennius (404 verses) and Lucilius (605 verses) are 65.35 and 74.21 respectively. The abnormally high percentage in Catullus LXIV (90.98) is apparently imitated by Vergil in *Eclogue* IV, where we have 91.93, a percentage such as we never find elsewhere in the *Eclogues* or in his later poetry; see Duckworth (above, note 1) 17–22. It is worth noting also that the first four patterns in Catullus LXIV have a frequency of 67.90 per cent, identical with the percentage of the first eight patterns in Horace's hexameter poetry as a whole. I shall discuss Cicero, Catullus, and Lucretius in more detail on a later occasion.

<sup>11</sup> See below on the *Ars Poetica*, page 87.

<sup>12</sup> Ennius, at the beginning of Latin hexameter poetry, had been even more heavily spondaic, with twenty-two spondees and ten dactyls—the exact opposite of Homer (twenty-two dactyls and ten spondees); see Duckworth (above, note 1) 13–15. S. E. Winbolt, *Latin Hexameter Verse* (London 1903) 114, says of Ennius: "He over-emphasises the contrast with Greek, in the manner of pioneers."

approximately the same as those for the sixteenth pattern (*sddd*) in Vergil: *Eclogues*, 2.42; *Georgics*, 1.97; and *Aeneid*, 1.98.<sup>13</sup>

The statistics for Horace's four hexameter books may be summarized in brief as follows:<sup>14</sup>

	<i>Satires</i>		<i>Epistles</i>		TOTAL
	I	II	I	II	
First ( <i>dsss</i> ):	12.82	14.03	12.82	10.82	12.67
First four:	43.59	43.95	40.85	39.96	42.16
Second four:	27.57	25.85	25.45	27.26	25.81
First eight:	71.16	69.81	66.30	67.22	67.97

## II. VARIETY AND REPETITION; OPPOSITE AND REVERSE PATTERNS

By initial variety I mean the number of verses at the beginning of each poem before a metrical pattern is repeated; the results for Horace's hexameter collections are as follows:

<i>Satires</i> I:	4.8 (range from 2 to 7)
<i>Satires</i> II:	4.0 (range from 1 to 8)
<i>Epistles</i> I:	4.0 (range from 1 to 7)
<i>Epistles</i> II:	6.3 (range from 4 to 9)

This compares with Vergil: *Eclogues*, 5.8; *Georgics*, 3.5; *Aeneid*, 3.8. Although *Epistles* II contains only three poems, the increase in variety is not without interest, for it is supported by the results based on an examination of Horace's hexameters when divided into units of sixteen verses. The percentage of complete units containing eight to eleven different patterns is constant in Vergil's works (*Eclogues*, 87.23; *Georgics*, 87.41; *Aeneid*, 86.89) but this is not the case with Horace:

<i>Satires</i> I:	78.18 (units with nine patterns most frequent)
<i>Satires</i> II:	78.33 (units with nine patterns most frequent)
<i>Epistles</i> I:	90.70 (units with ten patterns most frequent)
<i>Epistles</i> II:	80.33 (units with ten patterns most frequent)

<sup>13</sup> By way of contrast with these percentages, the sixteenth pattern in Catullus LXIV (*dddd*) does not appear at all, and the fifteenth (*sddd*) has a percentage of 0.53. The sixteenth pattern in Cicero is also *dddd*, not *dsdd* (as Ewbank [above, note 9] 47, wrongly states) and has a frequency of 0.81 per cent. The pattern appearing least often in Lucretius is *ssdd* and has a percentage of 1.06.

<sup>14</sup> See below, Table 1, for details concerning the individual patterns, which are listed in the order of their frequency in Vergil's *Aeneid*.

These percentages reveal a striking difference between the *Satires* and the *Epistles*, but the figures for *Epistles* II are misleading; in the *Satires*, 68 per cent of the remaining sixteen-line units have less than eight patterns; in the *Epistles* the percentage falls to 23.1; in other words, if we determine the percentages for eight or more patterns per sixteen-line unit, we have a clearer picture of the change from the *Satires* to the *Epistles*, as follows: *Satires* I, 83.64; *Satires* II, 86.67; *Epistles* I, 97.67; *Epistles* II, 96.72. When we consider that, even in Horace, the eight most frequent patterns occur over two-thirds of the time, it is surprising to find such a high proportion of sixteen-line units with eight or more different patterns. His desire for greater metrical variety in the *Epistles* is apparent.

The numerical average of the different patterns per sixteen-line unit gives an even more accurate picture.<sup>15</sup> The figures for Vergil are 9.7 (*Eclogues*), 9.3 (*Georgics*), and 9.4 (*Aeneid*). In the case of Horace we have a steady increase from his earlier to his later poetry: 9.0 (*Satires* I), 9.6 (*Satires* II), 9.7 (*Epistles* I), and 9.9 (*Epistles* II); this is of course consistent with the increasing percentages of sixteen-line units with eight or more patterns, as given above, and also with the corresponding decrease in the percentages of the eight most frequent patterns, as stated in Section I. Horace, even more than Vergil, seems to have sought for a steadily increasing variety in his use of metrical patterns.<sup>16</sup>

I turn now to patterns repeated in adjacent lines. The fourfold repetition of the same pattern appears in Vergil eleven times (*Georgics*, four; *Aeneid*, seven), a fivefold repetition twice (*sdss* in *Ecl.* 10.36–40; *dsss* in *Georg.* 1.46–50). Horace is far more strict in this respect: the fourfold repetition never appears, and only once does he have the same pattern five times in succession (*sdss* in *Sat.* 2.5.96–100). Repeated patterns and “near repeats” (the same pattern separated by one or two lines) produce “repeat clusters” (which I define as the same pattern occurring six or more times in sixteen or fewer lines). Horace has twenty-six such clusters (seven each in *Satires* I, *Satires* II, and *Epistles* II; five in *Epistles* I). For Horace’s hexameter poetry as a whole, we have one cluster every 156.9 lines, but they are slightly more frequent in

<sup>15</sup> See Duckworth (above, note 1) 29, note 43.

<sup>16</sup> The numerical averages per sixteen-line unit in the earlier poets is as follows: Cicero, *Aratea*, 8.5; Lucretius, 8.6; but Catullus LXIV, only 7.0.

the *Satires* (one every 150.7 lines) than in the *Epistles* (one every 163.9 lines); cf. Vergil's procedure: *Georgics*, one every 145.5 lines; *Aeneid*, one every 200.1 lines). Unlike Vergil, who decreases the number of clusters in his latest work, Horace in *Epistles* II shows a greater concentration of clusters (one every 137.1 lines) than in *Epistles* I (one every 201.2 lines, the same as in the *Aeneid*). But both poets differ surprisingly in this respect from Lucretius, who has 149 such clusters, an average of one every 49.2 lines, or three to four times as many as in Vergil and Horace.<sup>17</sup>

The frequency in Horace of both the repeats and the near repeats is about the same as in Vergil:

	REPEATS	REPEATS AND NEAR REPEATS
<i>Satires</i> I:	one in 11.2 lines	one in 4.2 lines
<i>Satires</i> II:	one in 15.5 lines	one in 4.8 lines
<i>Epistles</i> I:	one in 12.1 lines	one in 5.3 lines
<i>Epistles</i> II:	one in 13.9 lines	one in 5.1 lines
Horace total:	one in 13.0 lines	one in 4.8 lines
<i>Eclogues</i> :	one in 13.1 lines	one in 5.1 lines
<i>Georgics</i> :	one in 12.3 lines	one in 4.5 lines
<i>Aeneid</i> :	one in 12.4 lines	one in 4.6 lines
Vergil total:	one in 12.5 lines	one in 4.7 lines

Again the difference between the Augustan poets and their predecessors is noteworthy:

	REPEATS	REPEATS AND NEAR REPEATS
Cicero, <i>Aratea</i> :	one in 11.4 lines	one in 3.9 lines <sup>18</sup>
Catullus LXIV:	one in 7.0 lines	one in 3.0 lines
Lucretius:	one in 8.8 lines	one in 3.6 lines

<sup>17</sup> Cicero in the *Aratea* has eight clusters, one every 59.6 lines, and they are even more frequent in Catullus LXIV: thirteen in all, or one every 29.0 lines. Here too Vergil and Horace avoid the repetition found in the earlier hexameter poets. The *Eclogues* are unique in that we find only three such clusters (one every 275 lines); did Vergil in his early poetry deliberately attempt to eliminate the repetition which was so noticeable in Catullus and Lucretius?

<sup>18</sup> If we include the short fragments, the results for Cicero are as follows: repeats, one every 13 lines; repeats and near repeats, one every 4.2 lines. These figures, although closer to those for Vergil and Horace, are nevertheless misleading, as many of the fragments have only one line and repeats as well as near repeats cannot be determined. I therefore consider that the statistics for the *Aratea* passage of 479 lines more accurately reflect Cicero's procedure.

In his use of repeats Cicero is by far the most restrained of the earlier poets, whereas Catullus has the most, almost twice as many as we find in either Vergil or Horace.

Vergil introduces variety into his repeats and near repeats by changing the fourth-foot texture from homodyne to heterodyne, or from heterodyne to homodyne.<sup>19</sup> His percentages of fourth-foot homodyne are low, and the percentage of change in the repeated passages shows a definite increase over the homodyne percentages, as follows:

	<i>Eclogues</i>	<i>Georgics</i>	<i>Aeneid</i>
4th-foot homodyne, %:	39.73	36.08	37.78
Repeats, % of change:	49.21	43.50	44.49
Differs from homodyne %:	+9.48	+7.42	+6.71 <sup>20</sup>
Repeats and near repeats, % of change:	44.10	47.10	45.83
Differs from homodyne %:	+4.37	+11.02	+8.05

Horace seems less interested in this type of metrical variety; at least, there is no comparable increase over the percentages of fourth-foot homodyne, which are much higher than in Vergil, i.e. a total of 48.54, with a range from 43.77 (*Satires* II) to 52.49 (*Epistles* II).<sup>21</sup> The statistics for Horace are as follows:

<sup>19</sup> On the importance of fourth-foot texture and Vergil's increased use of fourth-foot heterodyne (clash of ictus and accent), see W. F. Jackson Knight, *Accentual Symmetry in Vergil* (Oxford 1939) 36-43; cf. L. P. Wilkinson, *Golden Latin Artistry* (Cambridge 1963) 120-32; Wilkinson prefers the term "Pulse-Accent theory" to "Ictus-Accent theory." For Vergil's shift of fourth-foot texture in repeated patterns, see Duckworth (above, note 1) 46-49, and Table 4.

<sup>20</sup> *Aeneid* x-xii differs from the remainder of the poem in this respect (fourth-foot homodyne, 36.64 per cent; percentage of change in repeats, 34.85, or -1.79); this is one of many reasons for my belief that Vergil did not live long enough to give the final metrical revisions to the last three books; see above, note 2.

<sup>21</sup> Jackson Knight (above, note 19) gives no percentages for fourth-foot homodyne in Horace or in Cicero's *Aratea*; his figures (page 39) for Lucretius, Book I, and Catullus LXIV are 51.49 and 61.25 respectively; my calculations give somewhat lower percentages: Lucretius I, 47.60; Catullus LXIV, 60.44. On the other hand, my statistics for fourth-foot homodyne in Vergil are slightly higher than those of Jackson Knight (as are those of E. L. Brown for the individual *Eclogues*; see his *Numeri Vergiliani: Studies in "Eclogues" and "Georgics"* [Bruxelles-Berchem 1963 = *Collection Latomus*, Vol. 63] 63, note 1). This does not alter the fact that, as Jackson Knight points out, Vergil reduced the amount of fourth-foot homodyne considerably below that found in any of the earlier poets. The percentage for Cicero's *Aratea* is 44.79, lower than in either Catullus LXIV or Lucretius (47.66 per cent for the *De Rerum Natura* as a whole). Was Vergil influenced by Cicero in this respect and did he as a result increase still more the percentage of heterodyne in his poetry?



	<i>Satires</i>		<i>Epistles</i>		TOTAL
	I	II	I	II	
4th-foot homodyne, %:	46.80	43.77	51.69	52.49	48.54
Repeats, % of change:	46.74	45.71	53.01	43.48	47.45
Differs from homodyne %:	-0.06	+1.94	+1.32	-9.01	-1.09
Repeats and near repeats, % of change:	49.79	47.56	48.42	51.08	49.17
Differs from homodyne %:	+2.99	+3.79	-3.27	-1.41	+0.63

The lack of change in the repeats of *Epistles* II is striking (-9.01 below the percentage of fourth-foot homodyne); even more unusual is the fact that the *Ars Poetica* differs to a surprising degree from the other two *Epistles* of Book II:

	<i>Epist.</i> II 1-2	II 3 (= <i>A. P.</i> )
4th-foot homodyne, %:	54.12	50.84
Repeats, % of change:	50.0	38.46
Differs from homodyne %:	-4.12	-12.38

This is one of several important features where the *Ars Poetica* differs from the other two epistles of Book II and which will perhaps provide new criteria for the much-discussed problem of the date of its composition. I return to this topic in the final section of this paper.

In my treatment of repetition in Vergil, I analyzed in detail the repeats and near repeats of *dsss* and *dsds*. In the case of *dsss*, the most frequent pattern, the repeats are 29.38 per cent of the total repeats in the *Georgics*, 22.18 of those in the *Aeneid*; Horace is somewhat lower: the *dsss* repeats account for 20.06 per cent of his total repeats. The same is true of *dsds*: percentage of total repeats, *Georgics*, 15.25; *Aeneid*, 18.76; but Horace, 11.15 (*Satires*, 14.20; *Epistles*, 7.89).<sup>22</sup>

Opposite patterns in adjacent lines (e.g. *sddd* and *dsss*, *ssdd* and *ddss*, *sdsd* and *dsds*) appear in Vergil's works with a remarkable consistency (but slightly less often in the *Aeneid*): *Eclogues*, one every 19.6 lines; *Georgics*, 20.9; *Aeneid*, 23.1. The total for Horace's hexameter poetry is similar (21.4), but his procedure is quite different. In the earliest book (*Satires* I) the adjacent opposites are much less frequent than in Vergil, but we find a

<sup>22</sup> For additional percentages of *dsss* and *dsds* in Horace (repeats and near repeats), see below, Table 3, and compare Table 2 in Duckworth (above, note 1).

steady increase, and in *Epistles* II the opposites occur considerably more often than in Vergil:

<i>Satires</i> I:	one in 32.1 lines
<i>Satires</i> II:	one in 20.8 lines
<i>Epistles</i> I:	one in 21.0 lines
<i>Epistles</i> II:	one in 16.3 lines

The intensive use of opposites in adjacent lines to provide variety is apparently an Augustan innovation, first introduced by Vergil in the *Eclogues* (once every 19.6 lines), and is carried farther by Horace in his latest collection, where they appear almost twice as often as in *Satires* I. The figures for the earlier poets are the following: Lucretius, one every 30.8 lines; Catullus LXIV, one every 37.7 lines;<sup>23</sup> and Cicero's *Aratea*, one every 79.8 lines, an amazing difference from Lucretius and Catullus.<sup>24</sup>

I have examined the eight least frequent patterns to discover which pattern is preceded or followed most often by its opposite. The percentage of *sddd* with *dsss* is highest both in Vergil's *Georgics* (35.71) and in his *Aeneid* (29.38); in Horace it is 25.0, but in *Satires* II it reaches a high of 31.25. The percentages of the eight patterns with their opposites range in Vergil's *Aeneid* from 29.38 (*sddd*–*dsss*) to 10.18 (*dssd*–*sdds*). The corresponding range in Horace is from 25.0 (*sddd*–*dsss*) to 6.84 (*sssd*–*ddds*). The percentage of *dddd* preceded or followed by *ssss* is 13.10 (cf. Vergil's *Georgics*, 12.24; *Aeneid*, 13.94), but in *Epistles* II it is 37.71 (*Ars Poetica*, 40.0). In *Satires* II Horace favors the use of *sddd* with *dsss* in adjacent lines, but in the final collection (even though *dsss* is still the most frequent pattern) he prefers to combine *dddd* with *ssss*.

Thus far I have been discussing the frequency of individual patterns preceded or followed by their opposites; another approach is to discover which combination appears most often in relation to the total number of opposites. We find 191 opposites in Horace,

<sup>23</sup> Even this frequency of opposites in Catullus LXIV is surprising, because it is almost impossible to have many opposites when the first eight patterns comprise almost 91 per cent of the total verses. Perhaps Catullus deliberately introduced opposites to counteract the monotony resulting from his excessive concentration on eight patterns.

<sup>24</sup> If we include the fragments, the opposites in Cicero occur once every 67.6 lines. But again statistics based on short fragments give a wrong impression; see above, note 18.

and the most frequent combination is not *sddd-dsss* but *dsdd-sdss* (35 times, or 18.32 per cent; *sddd-dsss*, 13.09 per cent). The combination with the highest percentage of the total opposites in Vergil again is not *sddd-dsss* but consistently *sdsd-dsds* (*Eclogues*, 19.02; *Georgics*, 23.58; *Aeneid*, 16.04). Horace, however, unlike Vergil, changes his most frequent combination from *dsdd-sdss* in the *Satires* (20.24 per cent; *sdsd-dsds* second with 16.67) to *sdsd-dsds* in the *Epistles* (18.69 per cent; *dsdd-sdss* second with 16.82).

Reverse patterns in adjacent lines (e.g. *sssd* and *dsss*, *ssds* and *sdss*) occur in Horace much more frequently (total, one every 29.4 lines) than in Vergil, where we have a steady increase in their use: *Eclogues*, one every 55.0 lines; *Georgics*, 46.4; *Aeneid*, 38.9. Horace shows no such changing trend; the figures for the four hexameter books are as follows:

<i>Satires</i> I:	one in 34.3 lines
<i>Satires</i> II:	one in 25.8 lines
<i>Epistles</i> I:	one in 27.9 lines
<i>Epistles</i> II:	one in 31.0 lines

We thus have here another interesting difference in the metrical procedure of the two poets: Vergil uses opposites without much change from his earlier to his later poetry, but increases the frequency of his reverses; whereas Horace, from *Satires* I through *Epistles* II, increases the frequency of his opposites, but not that of his reverses. Horace, however, in his use of reverse patterns goes beyond his contemporary and friend. His average of one every 29.4 lines is exceeded only by that in Cicero's *Aratea* (one every 24.0 lines) among the earlier poets.<sup>25</sup>

Horace's percentage of *ssds* patterns preceded or followed by *sdss* is 24.90, but in *Satires* II it rises to 33.33 (cf. Vergil's *Georgics*, 10.92; *Aeneid*, 17.21). In *Epistles* II the *ssds* patterns in relation to *sdss* have a percentage of 23.33, also higher than that of the other three reverses in the book. In other words, Horace's favorite reverse is *ssds-sdss* (24.90 per cent), with *sssd-dsss* a close second

<sup>25</sup> Cf. Lucretius, once every 51.3 lines; Catullus LXIV, once every 53.9 lines. It is surprising to find that Cicero, who has so few opposites, uses the reverse patterns so frequently; however, in the *Aratea* they are all *sssd-dsss* and *ssds-sdss*, and the reverses of a more dactylic nature (*sddd-ddds* and *dsdd-ddsd*) do not appear. If we include the fragments, we have in Cicero reverse patterns once every 27.6 lines, and we find one instance each of *sddd-ddds* and *dsdd-ddsd*.

(23.68). The percentage of *sddd* with *ddd*s is lowest (8.0).<sup>26</sup> Vergil in the *Aeneid* favors *sssd* with *dsss* (29.56), and *dsdd* with *ddsd* is lowest (9.92). Horace's preference for *ssds*–*sdss* is seen also by the fact that this combination appears 64 times, or 46.04 per cent of the total number of reverses (139), and *sssd*–*dsss* is second (45 times, or 32.37 per cent); cf. Vergil's *Aeneid*: *ssds*–*sdss*, 40.08 per cent; *sssd*–*dsss*, 34.52 per cent.

### III. THE DATE OF THE *Ars Poetica*

One of the most discussed problems in connection with the *Ars Poetica* is that of the time of its composition. Suggested dates range over a period of twenty years. The various possibilities, with selected sponsors, include the following:

1. 28–27 B.C., between *Satires* II and *Odes* I–III.<sup>27</sup>
2. 23–20 B.C., between *Odes* I–III and *Epistles* I.<sup>28</sup>
3. 20–19 B.C., between *Epistles* I and the Letter to Florus (*Epistles* II 2).<sup>29</sup>
4. About 18 B.C., between the Letter to Florus (*Epistles* II 2) and the *Carmen Saeculare*.<sup>30</sup>
5. 17–16 B.C., after the *Carmen Saeculare*, but before the writing of *Odes* IV.<sup>31</sup>
6. About 15 B.C., before the Letter to Augustus (*Epistles* II 1) of 14 or 13 B.C.<sup>32</sup>

<sup>26</sup> For additional details on opposite and reverse patterns in Horace, see below, Table 4.

<sup>27</sup> See J. Elmore, "A New Dating of Horace's *De Arte Poetica*," *CP* 30 (1935) 1–9; this early dating is unanimously rejected by other scholars.

<sup>28</sup> See A. Michaelis, "Die Horazischen Pisonen," *Commentationes Philologicae in honorem Theodori Mommseni* (Berlin 1877) 420–32; H. Nettleship, "The *de Arte Poetica* of Horace," *JP* 12 (1883) 43–61; A. Y. Campbell, *Horace, A New Interpretation* (London 1924) 114–15.

<sup>29</sup> See A. S. Wilkins, *The Epistles of Horace* (London 1902) 330–32; E. Stemplinger, "Horatius," *RE* Halbband 16 (1913) 2367 (but cf. col. 2375, where in his chronological table he suggests 16 B.C.); O. Immisch, *Horazens Epistel über die Dichtkunst* (Leipzig 1932) [= *Philologus*, Suppl. Band 24, Heft 3] 1–8; J. C. Rolfe, *Horace, Satires and Epistles* (rev. ed., Boston 1935) Appendix, p. 13. In the first edition of 1901 (p. xii), Rolfe had viewed the *Ars* as probably Horace's latest work, to be dated about 9 B.C.

<sup>30</sup> See E. P. Morris, *Horace, The Epistles* (New York 1911) 188; C. Becker, *Das Spätwerk des Horaz* (Göttingen 1963) 111.

<sup>31</sup> See A. Kiessling–R. Heinze, *Q. Horatius Flaccus, Briefe* (5th ed., Berlin 1957) 288; cf. J. H. Kirkland, *Horace, Satires and Epistles* (Chicago 1893) 338–39.

<sup>32</sup> See A. Rostagni, *Arte Poetica di Orazio* (Torino 1930) xix, xxxiv; W. Wili, *Horaz und die Augusteische Kultur* (Basel 1948) 309 (published in 15, but written earlier, true to the principle stated in *Ars Poet.* 388: *nonumque prematur in annum*).

7. Between 12 and 8 B.C. According to this view, the *Ars Poetica* is after both Book IV of the *Odes* and the Letter to Augustus and is thus Horace's latest work, probably composed near the end of his life.<sup>33</sup>

I shall not discuss again the various arguments based on external evidence; these have been set forth recently in admirable fashion by both Dilke and Brink.<sup>34</sup> The latter believes that only two periods are possible for the composition of the *Ars Poetica*: the *intervallum lyricum* from 23 to about 18 B.C., and the period between the publication of *Odes* IV and the end of Horace's life; he says: "I see no unexceptionable proof on external criteria that one of the two periods must be preferred to the other. . . . The argument must then turn to the internal evidence,"<sup>35</sup> and it is the internal evidence, especially the mature and comprehensive nature of the criticism in the *Ars Poetica*, which leads Brink to favor a date after 14–13 B.C.

Metrical considerations have been introduced by several scholars, e.g. Michaelis and Waltz, but have proved somewhat inconclusive. Michaelis, for instance, gives percentages for final monosyllables in the hexameter poems and for the final foot being separated by punctuation from the remainder of the verse. His figures actually favor placing the *Ars Poetica* after the other two Epistles of Book II, but, since he dates the composition of the *Ars* in 20 B.C. (before *Epistles*, Book I), he disregards his own results on the argument that the numbers involved are too small to be meaningful.<sup>36</sup>

It is of course true that arguments based on meter must be used with caution;<sup>37</sup> they can perhaps give additional support to a

<sup>33</sup> See A. Waltz, *Des variations de la langue et de la métrique d'Horace dans ses différents ouvrages* (Paris 1881) 28; E. C. Wickham, *The Works of Horace, Vol. II, The Satires, Epistles, and De Arte Poetica* (Oxford 1891) 331–35; C. L. Smith, *The Odes and Epodes of Horace* (Boston 1894) xxxiv f.; Rolfe (above, note 29); T. Frank, *Catullus and Horace* (New York 1928) 260; J. W. H. Atkins, *Literary Criticism in Antiquity*, II (Cambridge 1934) 66–69; O. A. W. Dilke, "When was the *Ars Poetica* Written?" *BICS* 5 (1958) 49–57; J. Perret, *Horace* (Paris 1959) 190 (English translation by B. Humez, New York 1964, 151–52); C. O. Brink, *Horace on Poetry: Prolegomena to the Literary Epistles* (Cambridge 1963) 217; cf. 239–43.

<sup>34</sup> See above, note 33.

<sup>35</sup> Brink (above, note 33) 242–43.

<sup>36</sup> Michaelis (above, note 28) 428–29.

<sup>37</sup> See Wickham (above, note 33) 333–34.

theory, rather than establish absolute proof. I believe, however, that the metrical analyses given above, based on the frequency percentages of the favorite patterns, on the number of patterns per sixteen-line unit, and on Horace's use of repeated, opposite, and reverse patterns in adjacent lines, will provide new criteria of value and present considerable evidence of a metrical nature to support the late dating of the *Ars Poetica*, as favored in recent years by Dilke, Perret, and Brink. I shall itemize the various points where the poem not only differs from the other two Epistles of Book II but seems to mark the end of a trend or progression from Horace's earliest hexameter poetry to his latest (i.e. the *Ars*).<sup>38</sup>

1. In Horace's use of the first four patterns, the hexameter collections show a more or less steady decrease in frequency, with the *Ars Poetica* marking the end of the progression in each instance, an apparent indication of lateness of date. Since the Letter to Florus (II 2) is usually dated in 19 B.C. and the Letter to Augustus (II 1) about 13, I list them in this order in the tables which follow, and place the *Ars Poetica* in the final column:

	<i>Satires</i>		<i>Epistles</i>			
	I	II	I	II 2	II 1	<i>A. P.</i>
First: <sup>39</sup>	12.82	14.03	12.82	13.89	11.85	10.32
Second:	11.36	10.72	10.74	11.11	11.11	9.68
Third:	10.10	9.60	9.24	11.11	9.26	8.62
Fourth:	9.32	9.60	8.05	8.80	9.26	8.21

The *Ars Poetica*, therefore, not only is unlike the Letter to Florus, but goes beyond the Letter to Augustus in its decreasing use of the first four patterns. In each case we have the end of a progression toward greater variety and less concentration.

2. The percentages for the first four patterns, the second four, and the first eight are as follows:

<sup>38</sup> My procedure here is somewhat similar to my listing of the metrical irregularities which I discovered in *Aeneid* x-xii; see above, note 2. When I began my metrical studies of Vergil and Horace, I had no idea either that *Aeneid* x-xii differed in so many respects from the other books of the epic or that the *Ars Poetica* would prove to be unlike the earlier hexameter poems.

<sup>39</sup> The most frequent pattern in Horace is *dsss*, except in *Epistles* II 1, where *sdss* is first. Also, *sdss* is consistently in second place in the earlier collections, but *ddss* holds this position in *Epistles* II 1, and *dsds* is second in the *Ars Poetica*.

	<i>Satires</i>		<i>Epistles</i>			
	I	II	I	II 2	II 1	<i>A. P.</i>
First four:	43.59	43.95	40.85	44.91	41.48	36.84
Second four:	27.57	25.85	25.45	25.93	27.79	29.05
First eight:	71.16	69.81	66.30	70.83	69.26	65.89

Just as the first four patterns in the *Ars Poetica* have a much lower percentage than elsewhere in Horace, so that for the second four is higher. The percentage for the first eight is likewise lower than in the other works. In each instance we find a steady progression from II 2 to II 1 to the *Ars Poetica*. Since approximately a six-year interval exists between the Letter to Florus and that to Augustus, and since the *Ars Poetica* in percentage totals differs even more from II 1 than II 1 differs from the earlier II 2, we have here, I believe, a decisive argument for assigning the *Ars* to a date several years later than the Letter to Augustus, i.e. to a period very shortly before Horace's death.

3. In the first eight patterns the totals of the spondees and the dactyls in the first four feet likewise change over the years:

	<i>Satires</i>		<i>Epistles</i>			
	I	II	I	II 2	II 1	<i>A. P.</i>
Spondees:	21	20	21	21	17	18
Dactyls:	11	12	11	11	15	14

The higher proportion of dactyls in the first four feet argues against a dating of the *Ars Poetica* in the *intervallum lyricum* from 23 to about 18 B.C., in which case, as Brink points out, it must be later than 14 B.C.<sup>40</sup> The similarity here of the *Ars Poetica* to the Letter to Augustus is striking.

4. When we examine the variety of metrical patterns in units of sixteen lines, again we find that the *Ars Poetica* and the Letter to Augustus mark the end of a trend, both in the numerical average per unit and in the percentage of units with eight or more different patterns:

<sup>40</sup> *Op. cit.* (above, note 33) 242.

	<i>Satires</i>		<i>Epistles</i>			
	I	II	I	II 2	II 1	<i>A. P.</i>
Average patterns per unit:	9.0	9.6	9.7	9.5	10.3	10.1
% of units with eight or more	83.64	86.67	97.67	84.62	100.0	100.0

5. Horace's use of repeat clusters in the *Ars Poetica* is unique. Since, as we have seen, this poem shows the lowest percentage for the eight patterns appearing most frequently, we should expect that repeat clusters would be rarer here than in his earlier poetry; the opposite is the case, for we find five, an average of one every 95 lines.<sup>41</sup> The other two Letters of Book II have one each, and the range in the earlier collections is from one every 147.1 lines (*Satires* I) to one every 201.2 lines (*Epistles* I). Perhaps Horace had reduced the concentration on the first four and the first eight patterns to such an extent (36.84 and 65.89 per cent respectively) that he no longer objected to the more frequent appearance of repeat clusters.

6. Horace is far less consistent in his use of fourth-foot homodyne than is Vergil; the percentages for the *Satires* are considerably lower than those for the *Epistles*.<sup>42</sup> The Letter to Florus has the highest amount of fourth-foot homodyne, with a steady decrease through the Letter to Augustus to the *Ars Poetica*, as follows:

<i>Satires</i>		<i>Epistles</i>			
I	II	I	II 2	II 1	<i>A. P.</i>
46.80	43.77	51.69	56.48	52.22	50.84

<sup>41</sup> The clusters in the *Ars Poetica* are the following: 179–190 (*dsss*, seven times in twelve lines), 335–50 (*sdsd*, six times in sixteen lines), 369–81 (*ssss*, six times in thirteen lines), 387–401 (*dsss*, six times in fifteen lines), 419–34 (*ssss*, six times in sixteen lines). Only two of the five clusters are composed of repeated *dsss* patterns; in Horace's earlier clusters, twenty-one in number, eleven consist of *dsss* patterns.

<sup>42</sup> This could possibly result from the influence of Lucilius on the *Satires*; the fragments of Lucilius (607 lines, including two spondaic verses) yield a fourth-foot homodyne percentage of 46.79, but results obtained from disconnected fragments are far from satisfactory. It is surprising that Vergil's low homodyne percentages (*Eclogues*, 39.73; *Georgics*, 36.08; *Aeneid*, 37.78) seem to have had no effect on Horace's *Epistles*. For fourth-foot homodyne in Cicero, Lucretius, and Catullus, see above, note 21.



7. Repeats occur in the *Ars Poetica* at about the same rate (one every 12.2 lines) as in *Satires* I (one every 11.2 lines) and *Epistles* I (one every 12.1 lines). The figures for the other works are: *Satires* II, one every 15.5 lines; *Epistles* II 2, one every 15.4 lines; and *Epistles* II 1, one every 16.9 lines. The evidence from repeats is thus inconclusive. But the *Ars Poetica* is unlike the other works and almost unique in the extent to which Horace fails to vary the repeats and (to a lesser degree) the near repeats by a shift in fourth-foot texture from homodyne to heterodyne, or from heterodyne to homodyne. The statistics for *Epistles* II 2, II 1, and the *Ars* are as follows:<sup>43</sup>

	II 2	II 1	A. P.
% change in repeats:	50.0	50.0	38.46
Differs from homodyne %:	-6.48	-2.22	-12.38
% change in repeats and near repeats:	57.14	52.08	47.92
Differs from homodyne %:	+0.66	-0.14	-2.92

Is it possible that the strange discrepancy here between the *Ars Poetica* and the other hexameter works indicates that the poem was written so near Horace's death that it was not completely revised?<sup>44</sup>

8. In Horace's use of repeats and near repeats in the four most frequently occurring patterns, there are several instances where the *Ars Poetica* differs from the earlier works; e.g. the *dsss* repeats show a high percentage of the total *dsss* patterns, but in the case of *dsds*, the repeats and the near repeats have a low percentage both of the total repeats and the near repeats, and also of the total *dsds* patterns; the *Ars* in this respect resembles *Epistles* II 1 more closely than II 2. The relevant statistics are as follows (and it must be realized that the numbers included in this category are small, and

<sup>43</sup> For the change of fourth-foot texture (repeats and near repeats) in *Satires* I, *Satires* II, and *Epistles* I, see above, pages 80-81.

<sup>44</sup> The same striking lack of shift in fourth-foot texture in *Aeneid* x-xii is one of the many irregularities which indicate a lack of revision; see above, note 20.

the results therefore less conclusive than in the categories given above):

	<i>Satires</i>		<i>Epistles</i>			
	I	II	I	II 2	II 1	<i>A. P.</i>
<i>dsss</i> R, % of <i>dsss</i> :	10.61	11.84	12.40	10.0	16.0	16.33
<i>dsds</i> , R and NR, % of <i>dsds</i>	35.58	25.96	23.66	33.33	16.0	21.74
% of total R and NR:	15.59	12.0	11.58	18.60	8.51	10.42
<i>sdss</i> R and NR						
% of <i>sdss</i> :	28.11	22.41	24.07	20.83	21.88	23.08
% of total R and NR:	15.58	11.56	13.68	11.63	14.90	9.38

9. Horace shows a steadily increasing use of opposite patterns in his hexameter poetry, ranging from one every 32.1 lines in *Satires* I to one every 15.0 lines in *Epistles* II 1. The *Ars Poetica* resembles the Letter to Augustus in this respect, not the Letter to Florus. The average for II 2 and II 1 is one in every 17.4 lines, almost midway between *Epistles* I and the *Ars*, with II 2 about the same as *Epistles* I:

<i>Satires</i>		<i>Epistles</i>			
I	II	I	II 2	II 1	<i>A. P.</i>
32.1	20.8	21.0	21.6	15.0	15.3

10. In the case of individual opposites, e.g. *dddd-ssss* and *dsdd-sdss*, the numbers are almost too small to give significant results. But the percentages of *sddd* occurring with *dsss* and of *ddsd* with *ssds* are of interest:

	<i>Satires</i>		<i>Epistles</i>			
	I	II	I	II 2	II 1	<i>A. P.</i>
<i>sddd-dsss</i> :	23.08	31.25	22.73	12.50	50.0	11.76
<i>ddsd-ssds</i> :	10.81	9.09	9.26	11.76	25.0	28.57

In each instance the percentage for the *Ars Poetica* marks the end

of a progression—decreasing in the case of *sddd*–*ds* and increasing with *ddsd*–*ssds*.<sup>45</sup>

11. Reverse patterns appear in the *Ars Poetica* more frequently than elsewhere, with the exception of the Second Book of the *Satires*:

<i>Satires</i> I:	one in 34.3 lines
<i>Satires</i> II:	one in 25.8 lines
<i>Epistles</i> I:	one in 27.9 lines
<i>Epistles</i> II 2:	one in 30.9 lines
<i>Epistles</i> II 1:	one in 54.0 lines
<i>Ars Poetica</i> :	one in 25.0 lines

The totals of the individual reverse patterns are perhaps too small to be of significance. The percentage of *ssds* with *sdss* in the *Ars* is higher than elsewhere in Horace's hexameter poetry, again with the exception of *Satires* II. The figures are as follows:

<i>Satires</i>		<i>Epistles</i>			<i>A. P.</i>
I	II	I	II 2	II 1	
23.44	33.33	18.75	23.08	7.69	29.41

To summarize, of the eleven categories listed above, some have more significance than others. Those dealing with larger totals, e.g. the frequency percentages of the first four and the first eight patterns, are the most decisive; they show a steady trend toward less concentration and greater variety, with the *Ars Poetica* at the end of the progressions and thus the latest of Horace's works. The other categories indicate in general that the unusual features of the *Ars Poetica* link it far more closely with *Epistles* II 1 than with either *Epistles* I or the Letter to Florus, and likewise support the view that 12–8 B.C. is definitely to be preferred to the *intervallum lyricum* of 23–18 B.C. Dilke, Perret, and Brink, therefore, seem correct in their late dating of the *Ars Poetica*.

<sup>45</sup> The *Ars Poetica* also has the highest percentage of *dddd* occurring with *ssss*; *Satires* I, 6.67; II, 11.76; *Epistles* I, 8.70; II 2, 0; but II 1, 33.33; and *A.P.*, 40.0. It is perhaps worth noting that, since *dddd* is Horace's least frequent pattern, the *dddd*–*ssss* opposites appear only eleven times in all of his hexameter poetry; four of the eleven occurrences are in the *Ars Poetica*, once every 118.8 lines, as against once every 515 lines in his other poems. Next in frequency is the Letter to Augustus, one instance in 270 lines.

TABLE 1. METRICAL PATTERNS IN HORACE

Satires				Epistles			Epistles II			
	I	II	Total	I	II	Total	Order of frequency	2	1	A. P.
dsss	132	152	284	129	104	233	1	30	25	49
ddss	96	104	200	81	90	171	4	19	30	41
dsds	104	104	208	93	95	188	3	24	25	46
sdss	117	116	233	108	95	203	2	24	32	39
ssss	92	80	172	62	60	122	5	13	16	31
ddds	51	64	115	53	56	109	8	9	14	33
ssds	64	69	133	64	60	124	7	13	13	34
sdds	61	50	111	57	54	111	9	9	17	28
dsdd	67	67	134	69	75	144	6	14	24	37
ddsd	37	55	92	54	46	100	11	8	17	21
sdsd	42	48	90	61	67	128	10	16	17	34
dsdd	39	42	81	43	51	94	13	12	14	25
sssd	59	46	105	51	34	85	12	9	9	16
ssdd	26	37	63	36	27	63	14	7	6	14
dddd	30	17	47	23	14	37	16	1	3	10
sddd	13	32	45	22	33	55	15	8	8	17
Total	1,030	1,083	2,113	1,006	961	1,967		216	270	475
Most Frequent	dsss	dsss	dsss	dsss	dsss	dsss	dsss	dsss	sdss	dsss
% First pattern	12.82	14.03	13.44	12.82	10.82	11.85	12.67	13.89	11.85	10.32
% First Four	43.59	43.95	43.78	40.85	39.96	40.42	42.16	44.91	41.48	36.84
% Second Four	27.57	25.85	26.22	25.45	27.26	26.33	25.81	25.93	27.79	29.05
% First eight	71.16	69.81	69.99	66.30	67.22	66.76	67.97	70.83	69.26	65.89
First eight:										
Spondees	21	20	20	21	21	21		21	17	18
Dactyls	11	12	12	11	11	11		11	15	14
4th-Foot Spondees	7	7	7	6	6	6		6	5	6
Spondaic verses					1	1				1
Total verses	1,030	1,083	2,113	1,006	962	1,968		216	270	476



TABLE 3. REPEATED PATTERNS  
(dsss and dsds)

	<i>Satires</i>		<i>Epistles</i>			<i>Epistles II</i>		
	I	II	Total	I	II	Total	2	1 A. P.
dsss Repeats	14	18	32	16	15	31	63	8
% total repeats	15.22	25.71	19.75	19.28	21.74	20.39	20.06	20.51
% total dsss	10.61	11.84	11.26	12.40	14.43	13.30	12.19	16.33
dsss Repeats with change	6	10	16	8	5	13	29	2
% of change	42.86	55.56	50.0	50.0	33.33	41.94	33.33	25.0
dsss Repeats and near repeats	43	59	102	45	32	77	179	17
% total R and NR	17.70	26.22	21.79	23.68	17.20	20.48	21.21	17.71
% total dsss	32.58	38.82	35.91	34.88	31.73	33.05	34.62	34.69
dsss R and NR with change	23	33	56	23	16	39	95	9
% of change	53.49	55.93	54.90	51.11	50.0	50.65	53.07	52.94
dsds Repeats	15	8	23	5	7	12	35	3
% total repeats	16.30	11.43	14.20	6.02	10.14	7.89	11.15	7.69
% total dsds	14.42	7.69	11.06	5.38	7.37	6.38	8.84	6.52
dsds Repeats with change	6	3	9	2	5	7	16	2
% of change	40.0	37.50	39.13	40.0	71.43	58.33	45.71	66.67
dsds Repeats and near repeats	37	27	64	22	22	44	108	10
% total R and NR	15.59	12.0	13.68	11.58	11.83	11.70	12.80	10.42
% total dsds	35.58	25.96	30.77	23.66	23.16	23.40	27.27	21.74
dsds R and NR with change	18	12	30	8	12	20	50	5
% of change	48.65	44.44	46.88	36.36	54.55	45.45	46.30	50.0

TABLE 4. OPPOSITE AND REVERSE PATTERNS

	<i>Satires</i>			<i>Epistles</i>			<i>Epistles II</i>			<i>A. P.</i>
	I	II	Total	I	II	Total	Total	2	1	
Total Opposites	32	52	84	48	59	107	191	10	18	31
One every x lines	32.1	20.8	25.2	21.0	16.3	18.4	21.4	21.6	15.0	15.3
Total dddd-ssss	2	2	4	2	5	7	11	0	1	4
% dddd with ssss	6.67	11.76	8.51	8.70	35.71	18.92	13.10	—	33.33	40.0
Total sddd-dsss	3	10	13	5	7	12	25	1	4	2
% sddd with dsss	23.08	31.25	28.89	22.73	21.21	21.81	25.0	12.50	50.0	11.76
Total ssdd-ddss	4	10	14	7	6	13	27	2	0	4
% ssdd with ddss	15.38	27.03	22.22	19.44	22.22	20.63	21.43	28.57	—	28.57
Total dsdd-sdss	7	10	17	8	10	18	35	3	2	5
% dsdd with sdss	17.95	23.81	20.99	18.60	19.61	19.15	20.0	25.0	14.29	20.0
Total Reverses	30	42	72	36	31	67	139	7	5	19
One every x lines	34.3	25.8	29.3	27.9	31.0	29.4	29.4	30.9	54.0	25.0
Total sssd-dsss	12	14	26	13	6	19	45	2	1	3
% sssd with dsss	20.34	30.43	24.76	25.49	17.65	22.35	23.68	22.22	11.11	18.75
Total sddd-ddds	0	2	2	3	3	6	8	0	1	2
% sddd with ddds	—	6.25	4.44	13.64	9.09	10.91	8.0	—	12.50	11.76
Total ssds-sdss	15	23	38	12	14	26	64	3	1	10
% ssds with sdss	23.44	33.33	28.57	18.75	23.33	20.97	24.90	23.08	7.69	29.41
Total dsdd-ddsd	3	3	6	8	8	16	22	2	2	4
% dsdd with ddsd	7.69	7.14	7.41	18.60	15.69	17.02	12.57	16.67	14.29	16.0