On the Structure of the Greek Hexameter

'O'Neill' Interpreted

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In 1942 E. G. O'Neill published (*YClS* 8 (1942) 103–78) his well known article on the place of word types in the Greek hexameter. This study, together with H. Fraenkel's theory[1]) that the hexameter consisted of four cola, i.e. had three caesura's, aroused new interest in the structure of the hexameter.

Fraenkel's theory was modified by Porter (*YClS* 12 (1951) 1–63), and refuted by Kirk (*YClS* 20 (1966) 76–104). O'Neill's results were, as he himself says, astonishing; it appeared that 90% of almost all words is concentrated in but one third of their possible positions. O'Neill himself made no attempt to deduce the causes of the facts reported. Porter and Kirk use his statistics, and from some remarks one gets the impression that they have the same idea about the underlying causes as will be presented here, but they do not explain themselves or demonstrate it. It might therefore be useful to do so here. This is the only aim of these pages.

It appears, then, that the localization rules found by O'Neill derive from a very few rules. These rules together determine the structure of the Greek hexameter. As we must start from a set of these rules for our purpose, we must say something about them, but it is not the aim to discuss all the problems concerned at length. On the other hand, if we have found a set of rules from which all localization rules can be deduced, this set of rules will probably be an adequate description of the structure of the Greek hexameter. Of course, we should start from as few of such rules as possible, for if we set up a separate rule for each difficulty, we explain nothing. Moreover, we have the task to look for a possible explanation for each of the rules.[2])

I shall therefore start from as few rules as possible. They will be presented here together, and I will add some remarks on each of

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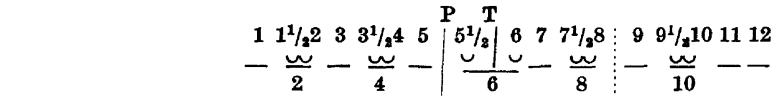
[1]) *Gött. Nachr.* 1926, 197–227; revised in *Wege und Formen frühgriech. Denkens*, p. 100–56.

[2]) I am indebted to Prof. C. M. J. Sicking, who discussed with me these structural rules on the basis of a first draft of this article.

them. (I shall cite them as R 1 etc.) For reference I shall use O'Neill's numbering of the elements of the hexameter, which is as follows:



The rules from which I start are the following:

R 1. Word end is obligatory at 5/5½.

R 2. ,, ,, ,, desired at 8.

R 3. ,, ,, ,, forbidden at 7½.

R 4. ,, ,, ,, avoided at 3½ and long final syllable at 4.

R 5. Long final syllable is forbidden at 10 and strongly avoided at 8.

R 6. Word end is avoided at 11.

It should also be kept in mind that a verse begins with a word and ends with a word.

Ad R 1. As to the caesura(e), we must ask: 1) what is a caesura; 2) what is the ratio of a caesura; 3) how many are there? We shall see that these three questions are so much interrelated that we must consider them together.

Kirk, whom in general I follow in his criticism of Fraenkel and Porter, here accepts (p. 84) Porter's view that the elements devided by the caesurae are rhythmical cola, that caesurae are not 'Sinneseinschnitte' (as thought Fraenkel). A colon would then be "an expected sequence of syllables produced by a brief rhythmical impulse" (Porter p. 17). I am afraid of the words 'produced' and 'impulse' in this definition. They suggest that a physical phenomenon (of the speaker) is basic. As far as I know, nothing of the kind has been established. Porter did not arrive at a consistent theory, for elsewhere (p. 22) he says: "although the colon is not in every case, . . ., a unit of meaning, it is, nevertheless, *normatively and essentially*, a unit of meaning . . ." (italics mine).

It is evident that the caesura (for the sake of simplicity we shall for the moment assume one caesura only) devides a verse in two parts, which are rhythmical sequences, that may be called cola. However, it should also be retained that the caesura, this division, is realized only by a syntactical boundary. These two elements, a rhythmical sequence and a syntactical boundary, are both essential. They cannot be separated from each other, for the colon can

only be realized by a syntactical boundary, and a syntactical boundary on itself is nothing without the rhythmical sequence expected by the hearer. Of course, between P and T we may discern almost always by simple word end, as there will seldom be word end at both P and T. But word end only is not enough to make the rhythmical sequence into a unit. (In the few cases where there is word end at P and T, it is evident that the syntactical boundary is decisive: A 4 *ἠρώων, αὐτοὺς δὲ*; cf. A 61, 81 etc.) Syntactical boundaries, of course, differ in importance, ranging from word end between two closely connected words to sentence end. In general there is an important syntactical boundary at the caesura, but the caesura may well be realized by a less important one. Essential is the expectancy of a rhythmical sequence with the hearer, which is fulfilled by a signal—the syntactical boundary—be it a stronger or a weaker one. It is also unimportant whether there is a heavier syntactical boundary elsewhere, when it does not realize an expected (or possible) colon.

There may be a few verses where the caesura is not realized. However, they are quite exceptional, and perhaps admitted only because all other verses do have the caesura.

For the question how many caesurae are to be assumed I rely on De Groot, *Algemene Versleer* (The Hague 1946); see index s.v. caesura, and p.145f. He convincingly argues that a verse of the length of the Greek hexameter cannot be perceived as a whole, but that a half of it is the normal length to be embraced by a hearer (by the human mind in general) as a unity. Here we have both the ratio of the caesura and an answer to the question how many of them are to be assumed. As half a hexameter is about the normal length to be accepted, and as the ratio of the caesura is to present units of this length, there are no more caesurae in the hexameter than one.

The caesurae (and diairesis) of old assumed for the Greek hexameter may be shortly mentioned. For the bucolic diairesis, at 8, see on R 2. The others are to my mind merely accidental. Important syntactical boundaries—on the basis of which one assumed caesurae—may fall elsewhere in the verse, as we have seen. They will not fall after 8, giving a very short new start at the end of the verse. As to the area 5/5½–8, they will seldom fall at 5½ (one short element after 5) or 6 (one short after 5½, two shorts or one longum after 5), and as 7½ is forbidden (R 3), they will mostly fall at 7. Of course the fact remains that there are often important syntactical boundaries at 7, but it is not a deciding structural feature, a structuring feature,

but a phenomenon decided by the structure. From the beginning to 5/5½, 3½ is forbidden, 4 is for half of the possible cases forbidden (R 4) and only one longum from 5, _ ⏑ from 5½. At the other points (important) syntactical boundaries are allowed at all places, 2 and 3 being more frequent probably simply because a unit of some miportance counts more than one or two syllables. The fact that they do occur at all these places led Fraenkel to assume his A 1/A 2/A 3/A 4. In this way all supposed caesurae except P/T explain themselves as accidental. It will be seen that O'Neill's localization rules can be accounted for without assuming other 'caesurae' than P/T.

Ad R 2. Word end is desired at 8. As appears from the argumentation above this is not a caesura. There must, then, be some other reason for the fact. It is probable that a new start at this point was desired so as to assure at the end of the verse, which is often the most 'sensitive' part, the rhythm of the verse. Therefore this final cadence started with the beginning of a dactyl. It is understandable that, after the caesura which, so as to avoid monotonousness, did not coincide with the beginning of a metron, at the end of the verse the basic rhythm was stressed. Of course, often an important syntactical boundary was used to mark off this rhythmical cadence, as with the caesura.

For the same reason word end at 7½ was strongly avoided, because this would exactly give a 'false start' at the end of the verse.

The interpretation, then, we arrive at is rather different from that of Kirk. It may be illustrated on an example presented by Kirk (p. 88) which he analyzes as follows (underlining indicates meaning units):

Ἦ ῥα, καὶ ἐξ | ὀχέων | σὺν τεύχεσιν | ἅλτο χαμᾶζε

There can be little disagreement on the establishment of the meaning units. According to Kirk there would be three caesurae, the first with a minimal realization, while the syntactical boundary at 1½ would be structurally unimportant. Our analysis would rather be:

Ἦ ῥα, καὶ ἐξ ὀχέων | σὺν τεύχεσιν | ἅλτο χαμᾶζε

Here, there is one caesura (at P), realized by a syntactical boundary; the syntactical boundary at 1½ is—as in Kirk's view—structurally irrelevant; at 8 begins another syntactic unit to mark off the final cadence.

Ad R 3. See at R 2.

Ad R 4. At $3\frac{1}{2}$ word end is avoided, because it would suggest a rhythmical unity ⏑ – ⏑ – ⏑, which is equal, or at least reminiscent of the final cadence (see ad R 2). To have the final cadence repeated at the beginning of the (next) verse would of course be awkward.

(Kirk supposed that word end at $3\frac{1}{2}$ was only avoided when there was also word end at $1\frac{1}{2}$ and $5\frac{1}{2}$. This may well have been a factor. Testing of it lies outside the scope of this paper.)

Probably for the same reason long final syllable at 4 was avoided. It is evident that a word ending in 4 with double short did not give verse end effect. It is striking that long final syllable avoided at 4 must be assumed as a positive factor to account for O'Neill's rules, while for double short this is not necessary.

R 5. It is more difficult to see why long final syllable was avoided at 8 and 10. It is possible that it suggested verse end, which explanation is for 10 more evident than for 8.

R 6. Word end at 11 would leave a monosyllable at the end of the verse, which is avoided. (At the beginning of the verse a monosyllable was not avoided; 32% of—(O'Neill's table 2) occurs in position 1.)

I shall now discuss the first 25 tables of O'Neill, and try to explain them on the basis of these rules. '(Position) $2\frac{1}{2}$' etc. indicates that the *last* syllable of the sequence discussed falls at $2\frac{1}{2}$. The percentages given are, of course, those of the total occurrences of the sequence discussed. Their total should be 100, but it is not, because I have mostly rounded off to natural ciphers. I discuss only the figures for the Iliad. The last syllable of the verse was always counted long (by O'Neill).

Tab. 1 and 2 ⏑ and –

Here the differences are not significant enough (ranging from 3 to 19% with almost all intervening values: 4, 5, 6, 7, 8, 11, 12, 14, 15).

Tab. 3 ⏑⏑ (490 cases)

2 : 18%, 4 : 19%, 6 : 15%, 8 : 36%, 10 : 10%

This is more significant. Pos. 10 is a little less frequent; perhaps a verse final sequence (of two words) ⏑⏑ – – was less appreciated. Pos. 8 is clearly preferred, preceding 8. Other positions may be said to be indifferent.

Tab. 4 ⏑ – (465 cases)

3 : 31%, 5 : 12%, 7 : 52%, 9 : 1,5%, 11 : 2%.

Not in 9, because Hermann's law would be violated. Not in 11, for

this would leave a monosyllable at the end of the verse. 5 (before P) is not very frequent, because it follows $3\frac{1}{2}$. 7 follows T. 3 is remarkably frequent, if we do not assume 3 as a positive factor (a caesura).

Tab. 5 – ⏑ (735 cases)

$1\frac{1}{2}$: 28%, $3\frac{1}{2}$: 7%, $5\frac{1}{2}$: 27%, $7\frac{1}{2}$: 0, $9\frac{1}{2}$: 35%.
$7\frac{1}{2}$ would violate Hermann's law. $3\frac{1}{2}$ is avoided (R 4); it is also nowhere supported by a caesura. The beginning of the verse ($1\frac{1}{2}$), before T ($5\frac{1}{2}$) and after 8 are preferred. That position after 8 is more frequent than before T may be due to R 4.

Tab. 6 – – (642 cases)

2 : 21%, 3 : 7%, 4 : 0,9%, 5 : 14%, 6 : 0, 7 : 6%, 8 : 2,5%, 9 : 5%, 10 : 0, 11 : 0, 12 : 41%.
I will discuss them in order of rising frequency. 6 crosses P and T. 10 : R 5; 11 leaves a monsyllable at the end (R 6); 8: R 5 (it also leaves ⏑ after T or ⏑⏑ after P). 9 crosses 8; 7, after P, is remarkably unfrequent. 3 is not frequent compared with 2; this does not point to a positive factor (caesura). 5 before P. 2 is the beginning of the verse. The high percentage of 12, the end of the verse, is due to the fact that the last syllable of the verse is considered long by O'Neill, and then this is the only place to have necessarily *always* two consecutive long syllables.

Tab. 7 ⏑ ⏑ – (266 cases)

3 : 13%, 5 : 41%, 7 : 33%, 9 : 9%, 11 : 2%.
11 would leave a monosyllable at the end. 9 has no caesura as support, as is the case with 3. 7 is after P, 5 before it.

Tab. 8 – ⏑ ⏑ (272 cases)

2 : 25%, 4 : 9%, 6 : 0, 8 : 29%, 10 : 35%.
6 crosses P and T and is virtually impossible. 4 has no support of a caesura. 2 is at the beginning of the verse. 8: R 2. 10, after 8, is frequent.

Tab. 9 ⏑ – ⏑ (95 cases)

$3\frac{1}{2}$: 11%, $5\frac{1}{2}$: 75%, $7\frac{1}{2}$: 9%, $9\frac{1}{2}$: 3%.
Both $7\frac{1}{2}$ and $9\frac{1}{2}$ violate Hermann's law; they are therefore more frequent than expected. $3\frac{1}{2}$ is rather frequent too. $5\frac{1}{2}$ is before T, though after $3\frac{1}{2}$. (Of course 12 is excluded, for this is supposed to be always ⏑ – –.) This table, then, presents some anomalies, but this can be explained. For of the four possible positions two would

violate Hermann's law and two give word end at $3\frac{1}{2}$. That is, if words of this sequence are used, they must violate a structural rule of the hexameter.

Tab. 10 ⏑ – – (470 cases)
4 : 0, 6 : 0, 8 : 7%, 10 : 0, 12 : 92%.
6 crosses P and T and is excluded. 10 would violate Hermann's law and rule 5. Position 8 is not allowed by R 5 (cf. position 8 in table 11 for the difference). The end of the verse is extremely frequent, perhaps because here only we always have two consecutive long syllables (cf. tab. 6 pos. 12).

Tab. 11 ⏑ – ⏑ ⏑ (128 cases)
4 : 1%, 6 : 0, 8 : 95%, 10 : 3%.
Almost equal to the preceding, but for position 8. Here R 5 does not obtain, and the word would fit in between T and 8.

Tab. 12 – – ⏑ (119 cases)
$3\frac{1}{2}$: 6%, $5\frac{1}{2}$: 59%, $7\frac{1}{2}$: 1%, $9\frac{1}{2}$: 31%.
$7\frac{1}{2}$ is forbidden; $3\frac{1}{2}$ is avoided. Position $5\frac{1}{2}$ stands before T. $9\frac{1}{2}$ is very frequent; one could introduce 'after 7' to explain it.

Tab. 13 ⏑ ⏑ – ⏑ (167 cases)
$3\frac{1}{2}$: 2%, $5\frac{1}{2}$: 56%, $7\frac{1}{2}$: 1%, $9\frac{1}{2}$: 39%.
Almost identical to the preceding. (It may be remarked that this adds to the weight of the arguments in table 12. It also indicates that only the total length of the word and its final element are important: there is a strong difference between – and ⏑ ⏑ at the *end* of the word, elsewhere it is indifferent, except – or ⏑ ⏑ at 8, cf. tab. 20 pos. 9 and tab. 22 pos. $9\frac{1}{2}$.)

Tab. 14 – – – (170 cases)
3 : 49%, 4 : 0, 5 : 34%, 6, 7 and 8 : 0, 9 : 5%, 10 : 0, 11 : 2%, 12 : 7%.
6 and 7 cross P and T. It is very striking that 8, between P and 8, is avoided; I think it is understandable, because it not only violates R 5, but it also implies a sequence of five long syllables. The same reason will have caused the absence of 10 and 4, which would violate R 5 and R 4 respectively. 11 is avoided. 5 is before P, 3 at the beginning of the verse. 9 may be called indifferent; 12 is, though the last two syllables of the verse are always long, rather unfrequent, because it implies a spondaic verse.

Tab. 15 – ⏑ ⏑ – (173 cases)
3 : 42%, 5 : 37%, 7 : 2%, 9 : 10%, 11 : 7%.
7 crosses P and T. 9 is rather frequent, crossing 8. 11, though

following 8̣ is low, because it leaves a monosyllable at the end of the verse. Most frequent are 5, before P, and 3, from the beginning. (Compare the general resemblance with the preceding.)

Tab. 16 ⏑ ⏑ – – (154 cases)

4 : 0,5%, 6 : 0, 8 : 3%, 10 : 0, 12 : 96%.

6 crosses P and T. Position 4 : R 4, positions 8 (between P and 8!) and 10 : R 5. Almost all occurrences are concentrated at the end of the verse. This might also be caused by another factor: the end of the verse almost always has the shape ⏑ ⏑ – –, i.e. the sequence discussed here. This implies that a unit of this shape suggests verse end, and this is avoided (except where the verse does end). This might confirm the explanations based on the avoidance of verse end effects.

Tab. 17 – – ⏑ ⏑ (58 cases)

4, 6 : 0, 8 : 63%, 10 : 36%.

6 crosses P and T; 4 has no positive support and leaves a monosyllable at the beginning and before P. 8 fits in between P and 8 with double short in 8. 10 (crossing 8) is more frequent than we would expect.

Tab. 18 ⏑ ⏑ – ⏑ ⏑ (67 cases)

4, 6 : 0, 8 : 70%, 10 : 30%.

Virtually identical to the preceding; see there.

Tab. 19 ⏑ – – – (60 cases)

5 : 41%, 7 : 6%, 9 : 51%, 11 : 0.

Position 11 is avoided in itself and here also violates Hermann's law. 7 is frequent (though only 4 cases!), as it crosses P and T. 5, before P, is understandably frequent, but 9, though following T, is unexpectedly frequent. (One might expect 5 to be higher than 9.)

Tab. 20 ⏑ – ⏑ – (53 cases)

5 : 28%, 7 : 4%, 9 : 70%, 11 : 0.

The case is almost identical to the preceding. 9 is even more frequent here, perhaps double short in 8 was preferred above a longum.

Tab. 21 – – – ⏑ (45 cases)

3½ : 17%, 5½ : 66%, 7½ : 0, 9½ : 15%.

7½ violates Hermann's law and crosses P and T. 3½, though itself avoided, is at the beginning of the verse; 9½, crossing 8, is rather frequent. Of course 5½, before T, is the best place. (But compare tables 19 and 20 on positions 9 and 5.)

Tab. 22 – ⏑ ⏑ – ⏑ – (40 cases)

3½ : 10%, 5½ : 62%, 7½ : 0, 9½ : 27%.
Almost identical to table 21. 9½ is higher here (it has double short in 8, cf. table 20).

Tab. 23 – – – – (28 cases)

4 : 3%, 5, 6, 7, 8, 9, 10, 11 : 0, 12 : 96%.
6, 7 and 8 cross P and T. As the sequence always gives at least five consecutive longa, it is evidently dismissed to the only place where it creates only four (at the end of the verse), following 8. Moreover I think that, just as ⏑ ⏑ – – (table 16), it gives verse end effect, and it would often violate R 4 and 5. Cf. the following.

Tab. 24 – ⏑ ⏑ – – (73 cases)

4, 6, 8, 10 : 0, 12 : 100%.
Identical to the preceding, but that it gives no spondaic verse. Here the argument of the five consecutive longa does not obtain, so R 4 and 5 must be the main factor. See tables 23 and 16.

Tab. 25 ⏑ ⏑ – ⏑ ⏑ – (9 cases)

5 : 44%, 7 : 22%, 9 : 0, 11 : 33%.
5, before P, is understandably frequent; 7, crossing P and T, is unexpectedly frequent; 9, following P, is unexplainably unfrequent; 11, leaving a monosyllable at the end of the verse, unexpectedly frequent. But the numbers of occurrences are 4, 2 and 3, which explains the trouble: this is the point where percentages stop to be usable.

The result of this survey, then, is that all localization rules can be explained by a few factors, the six rules (R 1–6) given at the beginning, defining the structure of the Greek hexameter. It may be underlined that this structure is simple. It may be stated here again, together with part of its explanation, in words.

The Greek hexameter has a caesura, realized by a syntactical boundary, at 5 or 5½. Often the final cadence is marked off by a syntactical boundary at 8; as word end at 7½ would give a 'false start' to such a final cadence, it is forbidden. To avoid verse end effect at the beginning, word end at 3½ and long final syllable at 4 are avoided. Perhaps to avoid the suggestion of verse end long final syllable is avoided at 8 and 10. A monosyllable at the end of the verse is also avoided.

In its turn the fact that this set of rules explains all localization rules confirms that the set is basic. Together with its simplicity and the fact that the rules in themselves are to a great extent explainable, this gives us the impression that we have here the basic structure of the Greek hexameter. This is not to say there are not some other, more specific, rules that cannot be found on the basis of O'Neill's observations.

It should be pointed out that there is hardly any reason to admit word end at 3 as a structural feature. One could in this respect only point to position 3 in table 4 (see there).

Nor is there sufficient reason to introduce word end at 7 as a structural feature. I only pointed out position 9½ in table 12, but this fact must be accounted for in another way, I think, to be presented now.

As was pointed out after the rules were given, the verse ends with a word. As a monosyllable at the end is avoided, and as most Greek words have two, three or four syllables, there will be often word begin = word end at 10, 9½ and 9. This has nothing to do with a structural feature of the hexameter (except that it has an end), but is simply a matter of the length of Greek words. This explains why word end at 9, 9½ and 10 is sometimes more frequent than might be expected from the structural features of the verse (position 9 in tables 15 and 19–20; position 9½ in tables 12–13 and 21–22; position 10 in tables 17–18).

Elementa Graeca

über den Ursprung der griechischen Vokalbuchstaben

Von Helmut Saake, Bochum

Die Herkunft des griechischen Alphabets aus einer semitischen Vorform darf zu Recht als unbestritten gelten[1]). So erhärten nicht nur die Namen der Mehrzahl der griechischen Buchstaben ihren (vermutlich) aramäisch-phönizischen Ursprung — deren Verwandt-

[1]) Ed. Schwyzer, Gr. Gramm. I, 1959, S. 137ff., bes. 140 u. Anm. 3.