Revealing hidden patterns in the meter of Homer’s *Iliad*

Christopher W. Forstall¹ and Walter J. Scheirer²

1. The University at Buffalo, State University of New York
2. Harvard University and the University of Colorado, Colorado Springs

Introduction

In his 1942 paper, “The localization of metrical wordtypes,” ¹ O'Neill showed that words of most shapes fall in only a small number of the metrically allowable positions in the Greek hexameter. He called these restrictions the line’s “inner metric.”

O'Neill used only 1000 lines of each work and made his counts by hand. We use digital texts provided by Martin Mueller to corroborate O’Neill’s statistics and to extend the dataset to include the entire Iliad.

The figure below compares O'Neill’s distribution for words of two syllables, both long, calculated for the first 1000 lines of the *Iliad*, with ours for the entire poem.

**Guide to metrical positions (sedes)**

<table>
<thead>
<tr>
<th>Class</th>
<th>110</th>
<th>120</th>
<th>130</th>
<th>140</th>
<th>150</th>
<th>160</th>
<th>170</th>
<th>180</th>
<th>190</th>
<th>200</th>
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<tr>
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<td>156</td>
<td>160</td>
<td>166</td>
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<td>100</td>
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<td>110</td>
<td>116</td>
<td>120</td>
</tr>
</tbody>
</table>

*“There are clearly ‘right’ and ‘wrong’ positions in the verse.” (O’Neill 1942)*

O'Neill found remarkable consistency among different authors, and argued that the preference of word-shapes for certain sedes, which he called localization, was an intrinsic part of Greek Epic.

Metrical Sub-Types

We used R's `dist` ("manhattan" method) and `hclust` functions to decompose O'Neill's most diffuse distributions into smaller, more-localized sub-types. At right are seven metrical sub-types of the same shape, --, whose overall distribution is given on the left.

Although the shape overall is localized to the final foot, there exist words of this shape which are strongly localized to other sedes.

The degree of word localization in the *Iliad* is thus even more than O’Neill knew; yet he was not right to call the less-frequent sedes “wrong,” since for certain words they are the preferred positions.

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**Sub-Type Nuclei and a “None of the Above” Sub-Type**

Each of the sub-types identified above contained at least one fully-localized form, i.e. a word which only ever occurred at one sied. These can be thought of as nuclei for the sub-types.

Using the “maximum” method for dist instead of “manhattan” generated an eighth sub-type, which contained no fully-localized nucleus and whose distribution looked much like O’Neill’s overall distribution for the word-type.

Compare the PCA graphs at right: in the 8-class division (bottom row), the new, “none of the above” sub-type comes to fill in the ambiguous middle. This model allows some words, here about 40% of all forms, to show no preference as to sedes even while others are highly localized.

Further Work

Having identified these patterns of localization behavior, our next goal is to attempt to explain them. We are currently testing the influence of initial and final consonant clusters, word order, and formulaic phrases on localization class.

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6.529 ἐκ τρόφης ἑλάσσας ἑκάπλοβης Χρησίας

13.232 ἐκ τρόφης ἐλαφίου ἑκάπλοβης

13.367 ἐκ τρόφης ἑλάσσας ἑκάπλοβης

14.505 ἐκ τρόφης ἑλάσσας ἑκάπλοβης

16.100 ὑπὲρ τρόφης ἑλάσσας ἑκάπλοβης

(We have driven the well-grooved Achaeans out of Troy)

May that man never make his way home from Troy, but here become sport for dogs

To drive off the sons of the Achaeans out of Troy against their will

(Whenever) we sons of the Achaeans should go with our ships out of Troy

[In the examples at left, note the similarities in sound and sense among localized occurrences of the word τρόφης (“off/from Troy”), not shared by its single occurrence at the non-preferred siede.]

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