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

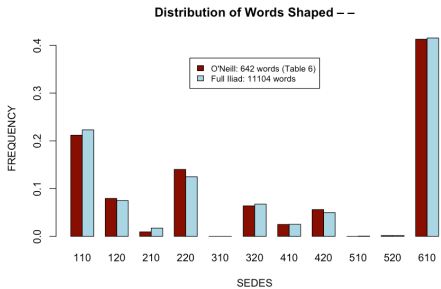## Christopher W. Forstall[1] and Walter J. Scheirer[2]
1. The University at Buffalo, State University of New York
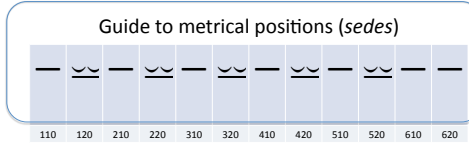2. Harvard University, and the University of Colorado at Colorado Springs

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*)

110 120 210 220 310 320 410 420 510 520 610 620

"There are clearly 'right' and 'wrong' positions in the verse."

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 position.

Distribution of Words Shaped – –

O'Neill: 642 words (Table 6)
Full Iliad: 11104 words

1. O'Neill, Jr., Eugene G. (1942) "The localization of metrical wordtypes in the Greek hexameter." *Yale Classical Studies* 8:105–78.
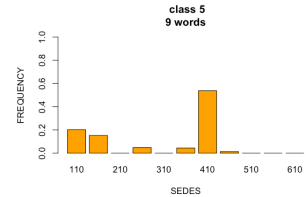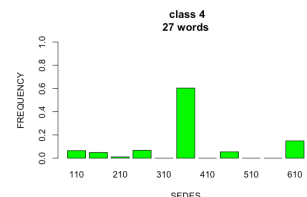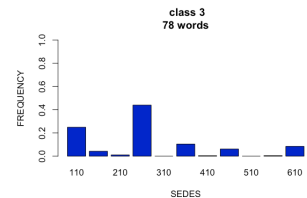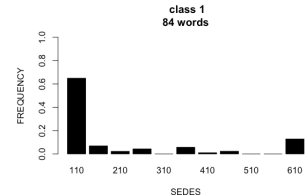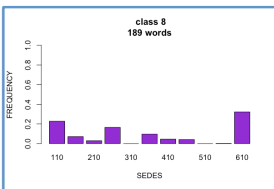
class 1
84 words

class 2
10 words

class 3
78 words

class 4
27 words

class 5
9 words

class 6
12 words

class 7
236 words
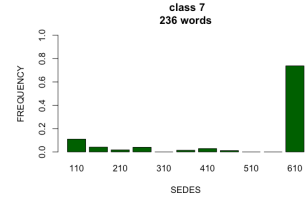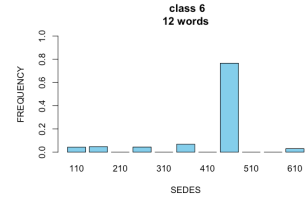
Sub-type Nuclei and a "None of the Above" Sub-type

Each of the sub-types identified above contained at least one fully-localized form, i.e. a word which only ever occurred at one *sedes.* 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:

class 8
189 words

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.

7-Class: PC 1 & 2

7-Class: PC 2 & 4

8-Class: PC 1 & 2

8-Class: PC 2 & 4
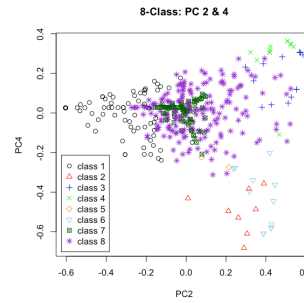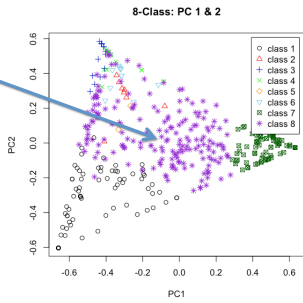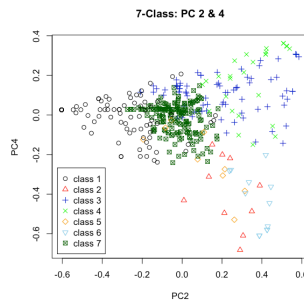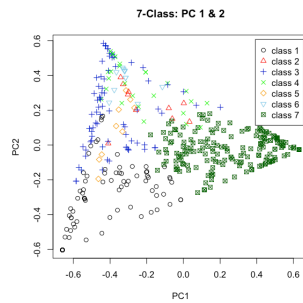
Further Work

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.

6.529	ἐκ **Τροίης** ἐλάσαντας ἐϋκνήμιδας Ἀχαιούς	[We] having driven the well-greaved Achaians out of Troy
13.232f	...μὴ κεῖνος ἀνὴρ ἔτι νοστήσειεν ἐκ **Τροίης** ἀλλ' αὖθι κυνῶν μέλπηθρα γένοιτο	May that man never make his way home from Troy, but here become sport for dogs
13.367	ἐκ **Τροίης** ἀέκοντας ἀπωσέμεν υἷας Ἀχαιῶν	To drive off the sons of the Achaians out of Troy against their will
14.505	ἐκ **Τροίης** σύν νηυσί νεώμεθα κοῦροι Ἀχαιῶν	[Whenever] we sons of the Achaians should go with our ships out of Troy
16.100	ὄφρ' οἶοι **Τροίης** ἱερά κρήδεμνα λύωμεν	That we alone destroy the hallowed battlements of Troy

In the examples at left, note the similarities in sound and sense among localized examples of the word Τροίης ("of/from Troy") not shared by its single occurrence at the non-preferred *sedes*.