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Stylistic Variations in James Joyce's Works

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A major assumption of wordprinting or stylometry is that an author is stable in his subconscious writing habits and that such stability will differ consistently with regard to other authors' subconscious habits. Using computers and statistics, many scholars have demonstrated stylistic differences between authors and have used this information to include or exclude disputed or unattributed pieces of the canons of certain authors. Studies of several anonymous "Federalist" papers are early examples of assigning authorship based on stylistic information.

At the 1990 Deseret Language and Linguistics Society Symposium, John Hilton and I presented the results of a study that tested the assumption that an author is stable in his subconscious habits, as measured by Hilton's wordprinting technique. To do so, we examined As I Lay Dying by William Faulkner, in which the author wrote several first-person narratives from different points of view to simulate different individuals' narrations. Included in the study were other works by Faulkner and a group of control texts from which to gauge the comparisons.

This method used frequencies of noncontextual words ("the," "and," and "of" and so forth) compared to other words and combinations of words, as well as frequencies of certain words in particular places within sentences. These derived measurements are called word pattern ratios. These results were compared to similar computations made from different texts, with similarities or differences indicating similar or different authorship among the texts tested.

We found that Faulkner was able to vary his subconscious style (as measured by this technique) in ways that seemed to contradict the primary postulate of wordprinting. Faulkner did so by using noncontextual words in a way related to the context. He thus made contextual some of the word pattern ratios that have traditionally been considered noncontextual. For example, in one of Faulkner's first-person narrated characters, he restricted the use of "an." The character was a child, and apparently Faulkner restricted this character's use of "an" to give a more realistic impression of a child's use of language. Thus, the word pattern ratio for the total number of "an's" divided by the total number of "an's" plus the total number of "a's" was very different for this character compared to the other characters Faulkner authored in the book.

Other word pattern ratios also were different, leading to the conclusion that when an author tries to simulate different narrators, those who would determine disputed authorship should be very careful. We noted also that the overall distribution of differences among the Faulkner works in question was larger than in authors previously mentioned, indicating that a certain variability is introduced when an author is manipulating his characteristic style. Hilton's technique has been used with the Book of Mormon, Hobbes's essays, and texts by the early brethren of the LDS Church (yet to be published).

The purpose of the present study was to reexamine the assumption that an author is stable in his subconscious writing habits, improving on the previous study. The Faulkner study was limited in its value by the small size of the texts involved: only 5 text blocks were of sufficient size in As I Lay Dying to make the necessary calculations and comparisons. Also, because of resource limitations, other texts written by Faulkner using the same technique were unavailable.

For this study, I examined several works by James Joyce. The most significant text of these was Ulysses because it was written in multiple styles. Joyce planned and wrote using a different "technic," or style, for each chapter. Respecting the integrity of chapter boundaries (and thus stylistic boundaries), I was able to prepare 41 text blocks for comparison with each other and with other...
texts. I also had *Dubliners* (14 blocks), *Portrait of the Artist as a Young Man* (16 blocks), and *Finnegans Wake* (28 blocks) for comparison, totaling 58 additional text blocks. To increase sensitivity to authorial style, dialog was eliminated from *Ulysses*. Versions of *Dubliners* and *Portrait* were therefore prepared without dialog (10 and 11 blocks, respectively), for a total of 29 text blocks of Joyce material. Hilton's 12 control text blocks were also included in the study, as were 2 text blocks of Washington Irving's "Legend of Sleepy Hollow," 6 blocks of Faulkner's general essays, and 6 blocks of H. G. Wells's *The Time Machine*.

Wordprint measurements of this type are made by counting the number of null hypothesis rejections occurring between two compared text blocks. Each of the 65 word pattern ratios put forth by A. Q. Morton in 1985 are tallied for both text blocks and then compared by the nonparametric Mann-Whitney statistic, the null hypothesis in this case being that the word pattern ratio is the same as the within author control group. In both cases, more rejections occurred in the cases of the texts without dialog in them. This result is opposite the conclusion reached by A. Q. Morton that there is a great difference between dialog and narrative and that dialog introduces unwanted variation into an otherwise stable measurement. For these two books just the opposite is the case: the texts show more internal consistency when the different literary genres, dialog, is included, as measured by this technique.

Some component of dialog may be present in the narrative portions of these books. Deleting the overt dialog could cause an imbalance of the occurrences of the elements of dialog, causing rejections, on the assumption that these elements of dialog would then be abnormally distributed across the 5000 word text block.

Another explanation may be that some of the word patterns measured in the wordprint process are sensitive to elements of speech and narrative but are not equally sensitive to either. For example, a small dialog could contain a large number of occurrences of a particular word pattern, while the large narrative in the rest of the text block could contain enough occurrences to balance the total. Without the dialog, a rejection would occur.

*Portrait* has a rather high number of rejections (3.69 for the text including dialog) compared with 2.87 for Hilton's within author control group. In the first section of *Portrait*, Joyce writes third person narrative about the protagonist, Stephen, as a young child. The style in this passage is reflective of the state of life of the protagonist:

Once upon a time and a very good time it was there was a moo cow coming down along the road and this moo cow that was coming down along the road met a nicens little boy named baby tuckoo . . .

His father told him that story: his father looked at him through a glass: he had a hairy face.

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<th>Text compared against itself</th>
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He was baby tuckoo. The mooocow came down the road where Betty Byrne lived: she sold lemon platt. This style does not continue very long in this elementary fashion, but aspects of it do for a number of pages. Sentences tend to be shorter than in others of Joyce's mature works and are not as complex. Overall, the initial portion of Portrait is a simpler narrative than the later portions of the book. This is seen especially by the wordprint comparison of the first section of the book against the others: 4, 2, 5, 3, 4, 5, 6, 10, 3, 7, 8, 10, 9, and 10 are the rejections, in order. The initial style exhibits more variation when compared against the later sections than against the earlier ones. This maturing of style corresponds to the later style of Stephen as a mature narrator. The contrast does not appear as much in the comparisons of the first section with the first third of the book (average 3.6 rejections) as it does with the last two thirds (average 7.6 rejections).

By eliminating the comparisons of the first section of Portrait with the rest of the book, the average number of rejections drops to 3.32 (n=105, s=1.59; 3.49 [n=45, s=1.85] for Portrait without dialog). This measurement of the stability of Joyce's style within Portrait, adjusted for the different initial style, is not far from the 2.87 of the control texts. Similarly, Dubliners at 1.96 rejections (n=91) shows good coherence of style—even more so than the 12 control texts.

Finnegans Wake had an average of 3.05 rejections from a total of 378 comparisons. This number of rejections should not be surprising, as it is not far from the expected 2.87 of the control texts. However, given the nature of the text of Finnegans Wake, such stability of wordprint style is surprising. The language of this book is strange—different from anything else by Joyce. The following paragraph is a sample:

... wanamade singsigns to soundsense and yit he wanna git all his flesch nuemaid motts truly prural and plausible; has excisively large rings and is uncustomarily perfumed; lusteth ath he listeth the cleah whitheh of a themise; is a prince of the fingallian in a hiberniad of hoollies; has a hodge to wherry him and a frenchy to curry him and a brabanson for his beeter and a fritz at his switch ... 8

The particular sample chosen does not matter much: the style of the entire book is much the same.

The strange appearance of Finnegans Wake exists only because Joyce modified the way he used verbs, adjectives, and nouns. Those words have been combined and recombined, respelled, and otherwise changed to convey the impressions and allusions Joyce had in mind while relating these dream images found in Finnegans Wake. But his use of function words, which this wordprint method measures, was not changed, and in fact was quite consistent throughout.

Luckily, Joyce did not choose to change the spelling or use of function words; had he done so, the book may have been nearly incomprehensible. It is possible in this case that Joyce tipped the axis the other way: instead of creating different narrative styles as he did in Ulysses, he stretched language to its most expressive limit. In doing so, he may have found the communicative and narrative aspects of the language he was using were not surviving. To compensate, he may have unified his style to provide a coherent background to his foreground manipulations of verbs, adjectives, and nouns. Function words and their customary uses are the backbone of comprehensible English.

In contrast to the fairly consistent internal style of the other Joyce works examined, Ulysses averaged 7.17 rejections from 820 comparisons made within the book itself. That average is much closer to the control text average of 7.44 for between author tests than to the 2.87 average of within author tests. Joyce's style is clearly not uniform in this book.

As noted above, Joyce proposed a schema or overarching structure for the book that dictated a different "technic" or narrative style for each section. Is his style consistent within each of his self-defined styles? The data indicates that he is. The last 7 chapters or episodes in Ulysses were large enough to compare among themselves for internal coherence of style as measured by this wordprint method. These results are shown in the table below.

In Cyclops, the only narrator is a "simple and bibulous Dubliner, a nondescript, in the highly coloured idiom of the profane vulgar."9 The number of rejections against the rest of Ulysses is high (8.35), suggesting that this style is particularly well

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developed, or that oral elements of the first person narration differentiate it from the more “written” style of the rest of the book. Both may be the case.

The narrator of Nausikaa is Gerty MacDowell, a young Irish woman. Her narration lasts for the first part of the chapter; the latter part contains Leopold Bloom’s stream of consciousness. The change within chapters of narrator is detected. The chapter was wordprinted from 3 pieces. The first compared against the second resulted in 0 rejections, the second against the third gave 4 rejections, and the first against the third yielded 5. The point at which Gerty’s narrative stopped and Bloom’s started was probably late in the second block of words analyzed, which explains the higher rejections found in comparing the third with the other two blocks.

In Oxen of the Sun, Joyce presented a progression of style to parallel the development of the child in the womb. The result is, in Joyce’s words, “a nineparted episode without divisions.”10 Joyce used, in order, the styles of Anglo-Saxon, Malory’s Morte d’Arthur; Elizabethan chronicle; Milton-Taylor-Hooker; Burton-Browne; Bunyanesque; Pepys-Evelyn; Defoe-Swift-Steele-Addison-Sterne-Landor-Pater-Newman; ending with “a frightful jumble of Pidgin English, nigger English, Cockney, Irish, Bowery slang and broken doggerel.”11

It was not surprising, then, to find an average of 4.5 rejections. Such a jumble of styles prevented the wordprint measurement from indicating that Joyce’s style was consistent in this passage. It is unfortunate that Joyce did not maintain the styles for larger amounts of text: a measurement of his style in imitation of other specific authors’ styles (and a comparison with them) would have been an excellent subject for further research.

Circe is formatted as a play, including stage directions. It is by far the largest episode in Ulysses. Joyce’s “technic” for this chapter was hallucination, which converts in the text to a theater of the unreal. In spite of the mixture of stage direction (which is used as narration of action) and dialog, the section averaged 2.19 rejections.

Again the curious problem of dialog arises. Even though the conversations are between various characters, the rejections are low. One constant throughout, however, is the narrator/stage direction. It does not change and in some places dwarfs the amount of dialog text by comparison. This constant mixture could be why the average rejections are so low. Also, the aspects of language that the word patterns measure in the stage directions could be quite similar to those in the dialog, even though mixing literary styles in wordprinting has been warned against by Morton. Similarly, the qualities of dialog common to all speakers in the episode could contribute to low average rejections.

Joyce’s “technic” in Ulysses is “narrative (old),” and in it the characters are tired, middle-aged, or old. The style is somewhat wordy, given to longer words and sentences, as these examples show:

Then they began to have a few irascible words, when it waxed hotter, both, needless to say, appealing to the listeners who followed the passage of arms with interest so long as they didn’t indulge in recriminations and come to blows.12

It was a thousand pities a young fellow blessed with an allowance of brains, as his neighbour obviously was, should waste his valuable time with profligate women, who might present him with a nice dose to last him his lifetime.13

This wordprint method resulted in 2 rejections between each of 3 comparisons.

Ithaca’s style is “catechism (impersonal).” In it, Joyce strove to portray reality by objective facts; it is “an accumulation of details which has no inherent ‘aesthetic’ limits but relies on the epic impact of overmastering fact.”14 The chapter takes the format of question and answer—questions with answers from a seemingly omniscient respondent.

The style is constant throughout, except for the very end of the chapter. There, the factual recounting breaks down as Bloom drifts to sleep:

He rests. He has travelled.

With?

Sinbad the Sailor and Tinbad the Tailor and Jinkab the Jailer and Whinbad the Whaler and Ninbad the Nailer and Finbad the Failerr and Binnbad the Baier and Pinbad the Paier and Minbad the Maier and Hinbad the Haiier and Rinbad the Raier and Dinbad the Kailer and Vinbad the Quailer and Linbad the Yaier and Xinbad the Phthailer.

When?

Going to a dark bed there was a square round Sinbad the Sailor roc’s auk’s egg in the night of the bed of all the auk’s of the rocks of Darkinbad the Brightdayler.15

The inconsistency of style at the end of the chapter could be the reason for an outlying rejection. The 4 pieces of this chapter intercompared for an average of 2 rejections, based on 6 comparisons. The rejections are 1, 1, 5, 1, 2, and 1. The 5 occurred on the comparison of the first text block of the chapter with the last—the one containing the unusual (for this chapter) ending.

Penelope is the last episode of Ulysses. The “narrative (feminine)” is in its own way a stylistic triumph. The episode is written to be the stream of consciousness of Molly Bloom and nothing else. Any description or dialog is described by Molly, and any external influences on Molly as she thinks is interpreted for the reader through Molly’s perceptions.

This chapter averaged 2 rejections for comparisons within this chapter and 11.9 rejections for comparisons between this chapter and the rest of Ulysses. That Joyce can maintain a style consistently within a chapter is, by now, no surprise. However, the high number of rejections against the rest of the book is explainable.
In Penelope, Joyce chose not to punctuate. There are 8 paragraph breaks within the episode, and each has been interpreted for the purposes of wordprinting as an end of sentence. Therefore, the 12 word patterns (out of 65) that include as part of their measurement the placement of function words in relation to the beginnings and ends of sentences were adversely influenced. Additionally, the run-on sentences generated by the lack of punctuation caused an increase of function words, especially conjunctions. The word patterns that involve the occurrence rates of these words are also different than elsewhere in the book.

In summary, Joyce is, within his own defined styles, consistent, according to the measurements made with this wordprint technique. The numbers of rejections of chapters large enough to compare within themselves is analogous to previous within author comparisons. Also, the numbers of rejections of these chapters when compared against the rest of the book are, in most cases, again analogous to previous between author comparisons, even though there is no doubt that Joyce authored the entire book. At this point, one can conclude that Joyce is able to alter his wordprint as measured by this technique.

Also of interest to this study is the comparison of Joyce's works to each other and to the control texts. The table below shows the average number of rejections for between text comparisons, including the number of comparisons made.

The 4 control texts for this study were Hilton's 12 control text blocks by 4 authors, Faulkner's essays (6 text blocks), "Legend of Sleepy Hollow" (2 text blocks), and The Time Machine (6 text blocks). In comparisons between each other, the 12 control text blocks averaged more rejections against Faulkner's essays, "Legend of Sleepy Hollow," and The Time Machine (7.31, 8.42, and 6.99) than these other texts did against each other (5.58, 5.42, and 4.08).

The 12 control text blocks averaged 7.44 rejections within themselves. This high number resulted from the nature of the texts and authors involved in the 12 texts. Of the 12, 4 were written by Clemens, 2 by Heinlein, 4 by Samuel Johnson, and 2 by Steinhauser. One wrote in the 18th century, another in the 19th, and the others in the 20th. Diachronic language change is likely responsible for the elevated rejections against these control texts, as compared to the other controls.

Similar to the control text comparisons, the last 4 columns of the table below show the results of the 4 control text blocks against the Dubliners books, the Portrait books, and Finnegans Wake. Again, the 12 control text blocks generated the most rejections. The other 3 books are mixed as far

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<tr>
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<td>3.89</td>
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<tr>
<td>176</td>
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<td>2.34</td>
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Abbreviations:
- uly: Ulysses
- duw: Dubliners (without dialog)
- dua: Dubliners (whole text)
- paw: Portrait (without dialog)
- paa: Portrait (whole text)
- wak: Finnegans Wake
- c: control texts
- fe: Faulkner's essays
- lsb: "Legend of Sleepy Hollow"
- tim: The Time Machine
as which results in the next highest number of rejections.

In comparing *Ulysses* against the control group, the 12 control text blocks again led in rejections, but not by much. The other 3 texts had high levels of rejections also, due to the varying styles present in *Ulysses*.

The average rejections found when comparing *Ulysses* to the other Joyce works in this study are slightly lower than those of *Ulysses* against the control groups, but comparable to those of the 4 authors of the 12 control texts compared to each other (in the previous figure the average rejections are 7.7, 6.48, 9.36, 7.84, and 6.32). In other words, the number of rejections found between *Ulysses* and other works by Joyce seemingly suggest that either Joyce did not write *Ulysses* or the other works. Of course, that would be a false assumption: as detailed above, the stylistic variations introduced by Joyce in *Ulysses* resulted in the wordprint measurements found in this study.

Interestingly, there were individual sections in *Ulysses* that did not vary significantly in rejections against the Joyce works in this study. The first half of the Wandering Rocks episode averaged 4.4, 3.35, 4.64, 3.18, and 4.39 against *Dubliners* without dialog, *Dubliners*, *Portrait* without dialog, *Portrait*, and *Finnegans Wake*, respectively. Against the same order of Joyce works, the second quarter of the Oxen of the Sun chapter averaged 6, 5.07, 7.09, 6.18, and 5.39 rejections. The first third of the Eumaeus episode averaged 5.7, 5.92, 6.5, 6.25, and 5.96. In the question and answer catechism of Ithaca, 3 of the 4 text blocks did not vary significantly—the first, third, and fourth. Their averages were 8, 8.07, 7.63, 6.87, and 7.1; 9.1, 8.5, 8.9, 7.06, and 7.67; 10.9, 11.42, 10.45, 9.5, and 10.03.

Why these sections of text should compare so evenly to the rest of the Joyce works in this study is unknown. It could be the operation of chance—different word patterns are rejected in the comparison of each part of *Ulysses* here mentioned, but the rejections totalled similarly.

More likely, however, is the possibility that some aspects of these sections that are peculiar to Joyce's style are in constant opposition to a normal unknown.

As mentioned above, the baseline usage around which Joyce built the linguistic extravaganza of *Wake* apparently was not the same one on which he built *Dubliners* and *Portrait*.

Even comparing the average rejections of the complete texts, *Portrait* and *Dubliners* resulted in 3.96 rejections. This suggests the style of the two books is slightly different. *Dubliners* is a collection of short stories and *Portrait* is a novel: the first involves general characters who are not well developed in the way that main characters in a novel are. The second contains the beginnings of the stream of consciousness technique Joyce was to later use in *Ulysses*, mixed with the same voice occasionally as narrator. The level of rejections found in this comparison is not surprising.

Overall, however, the results of the wordprint study are surprising. Joyce was able, in large parts of *Ulysses*, to create styles that this wordprint method both differentiated between and found consistency among. This technique has proved very sensitive: it was able to detect the shifting of streams of consciousness midway in the Nausikaa episode. Joyce's ability to craft steady styles challenges wordprinting and stylistic scholars to live up to their claim that an author's fundamental style is constant and detectable in his texts. Of course, Joyce is exceptional. Others, such as Clemens and Heinlein, were not able to alter their wordprints across characters. As was seen in the Faulkner study, Joyce's influence on the writing style of others cannot be underestimated. In fact, wordprinting 20th century texts could turn out to be a much harder job because of Joyce's stylistic inspiration.

End Notes


5 Hilton, 98.


11 Hart and Hayman, 315.
13 Joyce, *Ulysses*, 656.
14 Hart and Hayman, 388.
15 Joyce, *Ulysses*, 737.