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The potentialities of corpus-based techniques for analyzing literature

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Abstract:

This paper presents an attempt to explore the analytical potential of five corpus-based techniques: *concordances*, *frequency lists*, *keyword lists*, *collocate lists*, and *dispersion plots*. The basic question addressed is related to the contribution that these techniques make to gain more objective and insightful knowledge of the way literary meanings are encoded and of the way the literary language is organized. Three sizable English novels (Joyc's *Ulysses,* Woolf's *The Waves*, and Faulkner's *As I Lay Dying*) are laid to corpus linguistic analysis. It is only by virtue of corpus-based techniques that huge amounts of literary data are analyzable. Otherwise, the data will keep on to be not more than several lines of poetry or short excerpts of narrative. The corpus-based techniques presented throughout this paper contribute more or less to a sort of rigorous interpretation of literary texts far from the intuitive approaches usually utilized in traditional stylistics.

Keywords

Corpus Stylistics, Collocate Lists analysis, Dispersion Plots Analysis, Keyword Lists Analysis, Collocate Lists Analysis, Frequency Lists analysis.

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Introduction

The analytic potential of certain corpus techniques might sound great in gaining some insightful knowledge that can be used in generating a sort of rigorous understanding of literary meanings and the way language is organized in a literary text. Ever since linguists started using corpora they have been thinking hard about conducting linguistic analysis of various types of electronically stored data (everyday conversations, newspaper editorials, emails, etc.).

Electronically stored *literary* data (texts) are no exception. Such corpus constitutes a rich repertoire of a highly complex use of language. It is the first time that huge quantities of literary language is completely reachable and open to systematic analysis and detailed description. No more intuitive analyses. Intuition is most definitely unworkable under the unprecedented sizable amounts of corpora. What is analyzed is not an excerpt of a novel, or a few lines of a poem but a corpus that holds for 469,720 tokens, which is the amount of data comprised throughout this paper (see Fischer-Starcke, 2010).

Theoretical underpinining : Empirical Corpus-based methods

HEORETICAL UNDERPINNING : EMPIRICAL CORPUS-BASED METHODS

Under the pressure of the ever-growing types of corpora, corpus linguists were completely motivated to impose some methodological mould on what looked like a forest of wild and out-of-control bushes of corpora. However, some sort of agreement should be achieved on the basic methodologies used in collecting and analyzing data so that it would be possible to compare and draw conclusions out of such large bodies of data crunched within different types of corpora.

The methodological issue represents one of the salient and pervasive concerns that stimulated the real motive behind the birth of corpus linguistics. The introspective judgments of *native speakers* used to be the appropriate source of data for the linguistic analysis. This view has been held for a long time under the overwhelming effect of Chomskyan linguistics. Thus, the rationalist methodology flourished and became the most reliable framework used to validate the use of the linguist's *introspection* as the only acceptable source of data (Sampson,1980:150-51). Nevertheless, *empirically* oriented linguists insisted that the linguist's introspection should not be treated as *authoritative* (ibid:151). Such an introspection might be useful, as Chomsky amazingly proved its rich potentialities, but it is extremely necessary for this introspection to be verified by hard evidence drawn from some representative corpora.

This growing methodological debate and awareness, coincided with the emergence of unprecedented large bodies of electronic data, led linguists dramatically to conduct large-scale corpus-based investigations. An investigation of this kind made it impossible to deny the crucial role corpus-linguistic methods and tools play in any empirical study of language-use (Pezik, 2011:447). Approaches to language whether theoretical or practical should use computerized corpora so that they can be placed on a firm empirical foundation. In the remaining part of this paper the researcher will figure out the exploratory potential of five tools and methods used to process various literary corpora.

METHODOLOGY

The methodology used in this paper involves building a corpus for each English novel to be studied by using the readily available electronic data (machine-readable corpus). Three huge novels are considered: James Joyce's *Ulysses,* Virginia Woolf's *The Waves*, William Faulkner's *As I Lay Dying*. The texts have been selected for the heated literary debates they stir among literature scholars. Here comes the role of WordSmith tools to see how far they can contribute to a more rigorous exploration of the complex patterns revealed in the language utilized in these three novels. After establishing each corpus, the researcher will use (WordSmith Tools version 0.5) to go through the various analytic processes such package of programs supports.

WordSmith Tools Version (5.0) represents one good and up-to-date example showing how friendly the programs could be in processing linguistic data. As Scott (2010: 2), the programmer, puts it : "WordSmith Tools is an integrated suite of programs for looking at how words behave in texts." This suite of programs comprises three tools: the *WordList* tool (lets you see a list of all the words or word-clusters in a text, set out in alphabetical or frequency order); the concordancer, *Concord*, (gives you a chance to see any word or phrase in context); and *Keywords* with which you can find the keywords in a text) (ibid.).

The tools are widely used by *Oxford University Press* in working out some modern dictionaries, by language teachers and students, and particularly by researchers interested in exploring linguistic patterns of different languages. These three tools will be used throughout this paper in addition to some minor but descriptively effective techniques which might be looked at as a byproduct analytic tools.

Needless to say, all the digital data will be transcribed into *plain text format* before being processed by WordSmith Tools.

RESULTS AND DISCUSSIONS

CONCORDANCES

No one works on any area in corpus linguistics would proceed without coming across the term *concordance*. Concordance analysis is probably one of the most popular corpus analytic tools that should be undertaken by any researcher interested in corpus-based studies. There is an incredible heap of definitions offered by corpus linguists for what a concordance refers to, however, the one suggested by Sinclair (1991:32) might touch the core of concordance form and function:

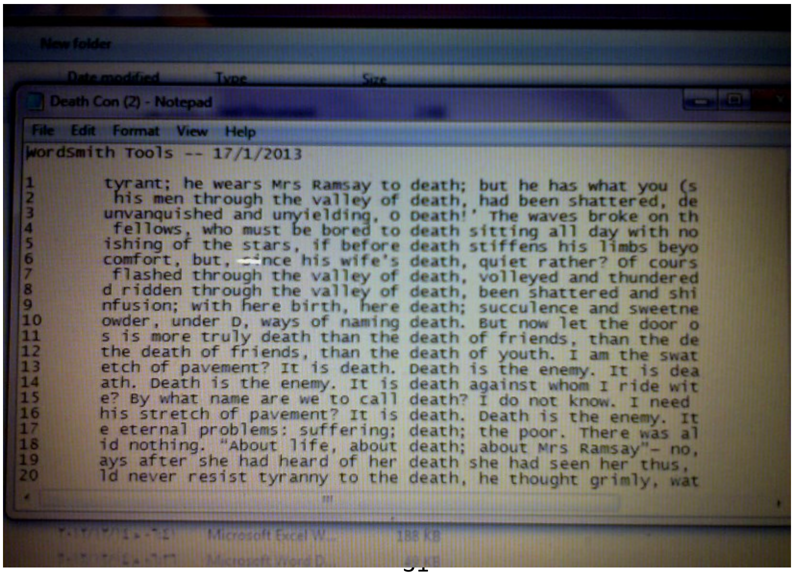
A concordance is a collection of the occurrences of a word-form, each in its own textual environment. In its simplest form it is an index. Each word-form is indexed and a reference is given to the place of occurrence in a text.

Word-form might be simply replaced by *lemma*- "a set of lexical forms having the same stem and belonging to the same major word class, differing only in inflection and/or spelling" (Francis & Kucera, 1982:1)- a matter which complicates the searching process since every word-form (singular, plural, gerund, etc.) should be searched independently.

The expected output of a concordance is a list of all the occurrences of a word-form in a particular corpus, together with its context in which it occurs – usually a few words to the left and right of the *search word*. This is why concordance programs are also referred to as KWIC (Key Words In Context) (Scott, 2010: 147).

Table (1) below shows a printout for a concordance in KWIC format. In this example the search word *death*, as it occurs in Woolf's novel *The Waves,* is presented at the center of a fixed context of words or characters. KWIC format here is very helpful in finding out the kind of grammatical structures and set phrases which co-occur with the search word. The printout in Table (1) represents a simple concordance list obtained by using a modern concordancer (*WordSmith Tools version 5*- Scott, 2010).

Table (1) KWIC Concordance List of *death* in Woolf's *The Waves*



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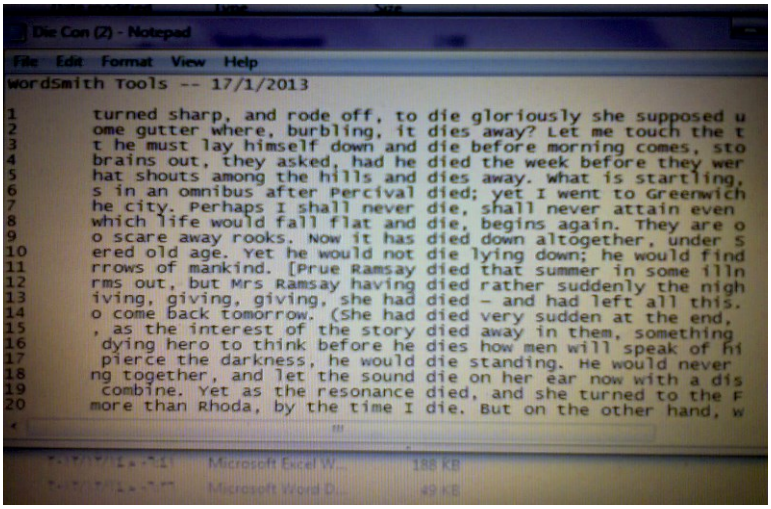
WordSmith Tools -- 17/1/2013

1        tyrant; he wears Mrs Ramsay to death; but he has what you (s
2         his men through the valley of death, had been shattered, de
3        unvanquished and unyielding, O Death!' The waves broke on th
4         fellows, who must be bored to death sitting all day with no
5        ishing of the stars, if before death stiffens his limbs beyo
6        comfort, but, since his wife's death, quiet rather? Of cours
7         flashed through the valley of death, volleyed and thundered
8        d ridden through the valley of death, been shattered and shi
9        nfusion; with here birth, here death; succulence and sweetne
10       owder, under D, ways of naming death. But now let the door o
11       s is more truly death than the death of friends, than the de
12       the death of friends, than the death of youth. I am the swat
13       etch of pavement? It is death. Death is the enemy. It is dea
14       ath. Death is the enemy. It is death against whom I ride wit
15       e? By what name are we to call death? I do not know. I need
16       his stretch of pavement? It is death. Death is the enemy. It
17       e eternal problems: suffering; death; the poor. There was al
18       id nothing. "About life, about death; about Mrs Ramsay"- no,
19       ays after she had heard of her death she had seen her thus,
20       ld never resist tyranny to the death, he thought grimly, wat
```

It is quite evident that *death* tends to appear in strange comparative structures: (. . .is more truly *death* than the *death* of friends.), (. . ., than the *death* of youth.). Besides, there is an emphasis on the religious context that can explain the way Woolf discusses *death* throughout her novel: (. . .the valley of death . . .). Further more, the phrases that co-occur with *death* suggest Woolf's tendency to use this word in prepositional phrases that indicate extreme quantifiers: (. . .he wears Mrs Ramsay to *death* . . .), (. . .must be bored to *death* . . .), (. . .resist tyranny to *death* . . .).

However, it is possible to display the search word in a number of ways. Each way has its own value under certain research considerations. The concordance extract in Table (2) displays an alternative way of viewing the data in which the search word *die* is shown with all its lexical forms or *lemma*. In this Table the concordancing software is not limited by displaying a single word-form as it is the case in Table (1) but it rather extends its possibilities to encompass concordances of the full word-forms or search string (die*) that will give (die, dies, dying, died).

Die lemma shown in Table (2) presents *death* as a node word in concordance lines such as: (. . . it dies away . . .), (. . . and dies away), (. . . as the interest of the story died away in them . . .), (. . .the sound die on her ear. . .), (. . .as the resonance died. . .). Beside the literal meaning of *die*, the contextual structures of these lines collocate with one specific metaphorical meaning of *die* (to end gradually). This might highlight the significance of Woolf's stylistic choice to use *die lemma* in such a way rather than making some other choices to explain the same meaning.



```
WordSmith Tools -- 17/1/2013

1        turned sharp, and rode off, to die gloriously she supposed u
2        ome gutter where, burbling, it dies away? Let me touch the t
3        t he must lay himself down and die before morning comes, sto
4        brains out, they asked, had he died the week before they wer
5        hat shouts among the hills and dies away. What is startling,
6        s in an omnibus after Percival died; yet I went to Greenwich
7        he city. Perhaps I shall never die, shall never attain even
8        which life would fall flat and die, begins again. They are o
9        o scare away rooks. Now it has died down altogether, under S
10       ered old age. Yet he would not die lying down; he would find
11       rrows of mankind. [Prue Ramsay died that summer in some illn
12       rms out, but Mrs Ramsay having died rather suddenly the nigh
13       iving, giving, giving, she had died - and had left all this.
14       o come back tomorrow. (She had died very sudden at the end,
15       , as the interest of the story died away in them, something
16        dying hero to think before he dies how men will speak of hi
17        pierce the darkness, he would die standing. He would never
18       ng together, and let the sound die on her ear now with a dis
19        combine. Yet as the resonance died, and she turned to the F
20       more than Rhoda, by the time I die. But on the other hand, w
```

Table (2) Concordance Sample for *die* Lemma in Woolf's *The Waves*

Concordance programs are still highly productive analytic methods that make it possible to bring altogether the examples of a particular linguistic item available within the original context.

FREQUENCY LISTS

The production of *frequency lists*, together with the generation of concordances, constitute two core corpus-processing techniques (Evison, 2010: 122). To produce a frequency list for a particular corpus is to make a specialized software process all the items in the corpus establishing a basic statistics concerned with the total number of *tokens* and the number of *types* distributed across the totality of these tokens (ibid:124). The frequency-count of this type is of a great help in calculating the *type/token* ratio of a corpus. After processing the whole body of data the software displays the frequency list in one of two ways. First, the frequency list can be given according to the *rank order* of frequency- ranging from the commonest ones to those less common which might even occur only once in the whole body of the corpus. This type of display is commonly called *raw data* as Table (3) below shows.

N	Word	Freq.	%
1	**THE**	**298**	**5.924453259**
2	**AND**	**197**	**3.916501045**
3	**IT**	**153**	**3.041749477**
4	A	136	2.703777313
5	HE	107	2.127236605
6	I	98	1.948310137
7	TO	97	1.928429365
8	SAYS	75	1.4910537
9	IN	67	1.332008004
10	IS	61	1.212723613
11	OF	61	1.212723613
12	ON	58	1.153081536
13	YOU	52	1.033797264
14	WAS	42	0.834990084
15	HIS	41	0.815109372
16	THAT	39	0.775347888
17	UP	38	0.755467176
18	WITH	38	0.755467176
19	CASH	32	0.636182904
20	HIM	32	0.636182904

Table (3) Frequency List Extracted for the Top (20) Commonest Words (based on Faulkner's *As I Lay Dying*)

Table (3) above shows the beginning of a rank order in the frequency list (N) for a relatively small corpus with a size of (5,000) words sampled from Faulkner's novel (*As I Lay Dying*). A word and a token are considered to be the same thing in this Table. What is displayed in Table (3) is not only the rank order (N) and the raw frequency (number of occurrences) of each token, but even the percentage of every token in relation to the corpus totality. Frequencies are sometimes given percentages or proportions so that comparisons between corpora of different sizes can be made (Baker et al, 2006: 75).

An alternative way of displaying the final counts consists in listing the tokens frequency according to the alphabetical order. Table (4) outputs the final counts in this way giving a different picture of the same distribution of frequencies beginning from rank (39) to (58).

N	Word	Freq.	%
39	AS	21	0.416501403
40	BACK	15	0.297500998
41	BY	16	0.317334384
42	BUT	20	0.396667987
43	COULD	22	0.436334789
44	DOWN	15	0.297500998
45	FROM	19	0.376834601
46	GET	19	0.376834601
47	HAD	20	0.396667987
48	HORSE	16	0.317334384
49	IF	20	0.396667987
50	INTO	20	0.396667987
51	ONE	20	0.396667987
52	PA	18	0.357001185
53	SAID	19	0.376834601
54	SAY	21	0.416501403
55	**SEE**	**18**	**0.357001185**
56	THEN	15	0.297500998
57	**TIME**	**18**	**0.357001185**
58	WILL	20	0.396667987

Table (4) Frequency List Extracted from the First (60) Commonest Words in Alphabetic Order (based on Faulkner's *As I Lay Dying*)

The usefulness of frequency lists lies in characterizing certain universal properties of texts, or even of languages in general (Scott, 2010:148). By comparing frequency lists of two or more corpora, corpus linguists can figure out what kind of words *make up* the most frequent vocabulary items and how this can be related to the text-type or genre (ibid.). Of course, one of the most important benefits frequency lists can bring about is providing *lexicographers* with exceptionally useful documents about the commonest words used by speakers of a particular language (Halliday, 2004: 17).

Nevertheless, what holds my interest is the very particular relationship between the frequency counts of a particular lexical item and the latter's significance in a literary corpus. This paper assumes a sort of correlation between frequency and the stylistic significance of a particular lexical item or any other linguistic feature. To discuss the writing style of a particular text is to pin down the most frequent linguistic features that might be a distinctive indicator of that style. After all, style is defined, amongst other definitions, as *recurrence* (see Mukherjee, 2005). The significant content or structure of a specific linguistic item or feature might be justified by a recurrent tendency of using it. Therefore, the frequent uses of *the*, *and*, *it* in Faulkner's *As I Lay Dying* might suggest a distinctive indicator of Faulkner's style that could distinguishe him from others. However, what matters in the thematic context is not the frequency counts of *function words* but the recurrent times of *content words*.

Table (4) highlights two content words as being the most frequent in Faulkner's *As I Lay Dying*: **SEE** and **TIME**. These two words might not haphazardly recurred throughout the novel. The narrator is dying and engaged in a vivid process of recalling. There is an intensive provoke of the passing *time* and the squeezed senses represented by *seeing*. These two words suggest the eagerness of the narrator to have a maximum sensual experience that could distil every possible minute to prolong the remaining time span.

However, one must be careful in overusing frequency lists in verifying significant literary themes. They should not be overburdened with too much explanatory power. As Biber et al (2004: 176) puts it:

> We do not regard frequency data as explanatory. In fact we would argue for the opposite: frequency data identifies patterns that must be explained. The usefulness of frequency data (and corpus analysis generally) is that it identifies patterns of use that otherwise often go unnoticed by researchers.

Simply speaking, frequency lists do not explain themselves but they need to be coordinated with concordance-analyses so that they both might explain why certain particular words are used quite frequently. The context which concordancers provide is so crucial in highlighting the associations that might be held, for example, between the most frequent lexical items and the most frequent grammatical structures. Moreover, this type of data is still very appealing in deciding *the focal point* of a text or *comparing* the most foregrounded lexical items in more than one text (Baker et al, 2006:76).

KEYWORD LISTS

It is not easy to find out what a keyword is. It might be a word which appears to occur in a particular corpus much more frequently than what is expected. Therefore, it could be extremely frequent in a very small number of texts in a particular corpus (ibid: 97). According to Scott (2010: 157), one can not have an idea about what is expected without using a particular reference. In *WordSmith Tools version 5*, the keyword program starts with word lists or frequency lists as described above. Two word lists must be made: one for the text or set of texts the researcher is interested in, and a second is made for some *reference corpus* which would be better if has a part-to-whole relation with the first corpus (Scott, 2010:159).

Accordingly, if a corpus, for example, involves (1,00) files with equal sizes, and a particular word occurs (75) times in one single file within the same corpus, this word could be a keyword. Any keyword program would classify words according to their *keyness* ranging from those with the highest keyness to those with the lowest. This kind of keyword lists that includes items significantly and extremely frequent is called *Positive Keyword List* (Evison,2010:127).

However, *Negative Keyword Lists* can be identified on the opposite side of the corpus margin. Negative keywords tend to appear significantly less often in the single file than in the reference one (ibid:128). Table (5) below shows the three most significantly infrequent words in a single file sampled from Joyce's novel *Ulysses* with a size of (5,104) tokens and compared with the size of the novel as a superset (269,850) tokens constituting a reference corpus which should always be larger.

N	**Key word**	**Freq.**	**%**	**RC. Freq.**	**RC. %**	**Keyness**	**P**
1	HIS	27	0.5289965	3332	1.2347606	**-26.139691**	3.146637
2	I	22	0.4310346	3009	1.1150636	**-27.842032**	1.287107
3	HE	35	0.6857366	4233	1.5686492	**-32.127389**	1.151418

Table (5) Negative Keyword List of Joyce's *Ulysses*

The Table above indicates clearly that the three most significantly outnumbered words are pronouns (*his, I, he*) and their unusually low frequencies in comparison with the reference corpus (RC) are reflected with *negative* figures (**-26.13**; **-27.84**; and **-32.12** respectively). The negative keyness of these three pronouns uncovers one particular feature of Joyce's narrative tendencies. This simple statistics points explicitly at Joyce's orientation in avoiding the use of *first person narration*.

Nevertheless, different approaches may be taken towards specifying what a keyword is: Stubbs (1996: 166) discusses the possibility of assigning keyness to any word that could be looked at as *focal* in a corpus, but this focality has nothing to do with the statistical measures set by Scott (2010) above. Kennedy (1998: 251) goes even further, a keyword has nothing to do with neither the frequency counts nor focality, it is rather any word that is observed to be *the subject of a concordance*.

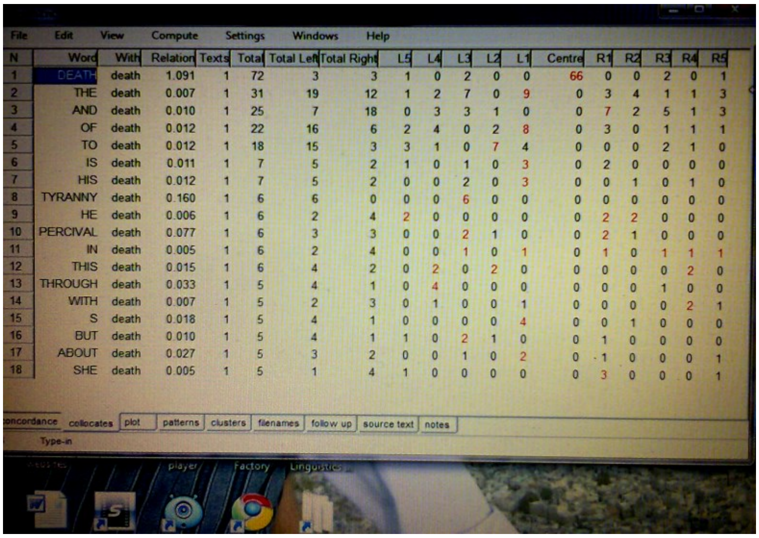
Whatever was the approach, keyword lists are especially useful for the analysis of various bodies of literary data comparing one corpus with another. Besides, they work as a yardstick to characterize different types of texts and genres.

COLLOCATE LISTS

Collocates constitute the words that surround a particular search word (Scott, 2010:121). The phenomenon of Collocation, as described by Firth (1957: 14), takes into account the very fact that certain words tend to occur in combination with each other within certain linguistic contexts. Therefore, a collocate is most definitely a word that exists in the surrounding environment of another word (Baker et al., 2006:37).

Collocate lists are dynamically interwoven with concordances. The latter produces the actual occurrence of a search word accompanied with its textual environment, so what is displayed is the search word *centralized* within its whatever context. The focus in the collocate lists, however, is not the search word but the company-words as distributed around (Scott, 2010:121-22). For example, *WordSmith Tools version 5* provide researchers with an independent window within which collocational occurrences and their frequencies can be set in columns and rows. Table (6) shows the top *seventeen* collocates for the word *death* in Woolf's novel *The Waves* as a corpus, within a (-5) to (+5) span.

The Table below displays each word surrounding the search word *death* which the concordance was based on, besides the *strength of the collocational relationship* between every two words which is measured carefully. For example, the strength of the relationship between *the* and *death* is (0.007) which is weak though *the* scores the highest frequency of occurrence (31). This might sound contradictory, but it is not. The reason behind this queer dichotomy of the weakness of collocational relationship versus the high frequency of occurrence is the very fact that the scored relationship between *the* and *death* is by no means an exclusive one: *the* occurs as a collocate word with many other words and not only with *death*.



N	Word	With	Relation	Texts	Total	Total Left	Total Right	L5	L4	L3	L2	L1	Centre	R1	R2	R3	R4	R5
1	DEATH	death	1.091	1	72	3	3	1	0	2	0	0	66	0	0	2	0	1
2	THE	death	0.007	1	31	19	12	1	2	7	0	9	0	3	4	1	1	3
3	AND	death	0.010	1	25	7	18	0	3	3	1	0	0	7	2	5	1	3
4	OF	death	0.012	1	22	16	6	2	4	0	2	8	0	3	0	1	1	1
5	TO	death	0.012	1	18	15	3	3	1	0	7	4	0	0	0	2	1	0
6	IS	death	0.011	1	7	5	2	1	0	1	0	3	0	2	0	0	0	0
7	HIS	death	0.012	1	7	5	2	0	0	2	0	3	0	0	1	0	1	0
8	TYRANNY	death	0.160	1	6	6	0	0	0	6	0	0	0	0	0	0	0	0
9	HE	death	0.006	1	6	2	4	2	0	0	0	0	0	2	2	0	0	0
10	PERCIVAL	death	0.077	1	6	3	3	0	0	2	1	0	0	2	1	0	0	0
11	IN	death	0.005	1	6	2	4	0	0	1	0	1	0	1	0	1	1	1
12	THIS	death	0.015	1	6	4	2	0	2	0	2	0	0	0	0	0	2	0
13	THROUGH	death	0.033	1	5	4	1	0	4	0	0	0	0	0	0	1	0	0
14	WITH	death	0.007	1	5	2	3	0	1	0	0	1	0	0	0	0	2	1
15	S	death	0.018	1	5	4	1	0	0	0	0	4	0	0	1	0	0	0
16	BUT	death	0.010	1	5	4	1	1	0	2	1	0	0	1	0	0	0	0
17	ABOUT	death	0.027	1	5	3	2	0	0	1	0	2	0	1	0	0	0	1
18	SHE	death	0.005	1	5	1	4	1	0	0	0	0	0	3	0	0	0	1

Table (6) Collocate List for *death* in Woolf's *The Waves*

However, we might have many other lexical words with lower frequency but their strength of collocation is higher: for example, the word *Tyranny* in Table (6) has a stronger collocational relationship with *death* (0.160) but a lower frequency of occurrence (6). Nevertheless, it is still more illustrative collocate of *death* than *the*. It is quite crucial to be careful and accurate in observing both *frequency* and *exclusivity* of collocates. Once more this could be very indicative of Woolf's negative perspective of *death* in *The Waves*.

Then, the table shows the total number of times a collocate occurs with the search word, and a total for the Left and Right of the search word which occupies the Center. The number of words to the left and right depends on *the collocation horizon* set by the researcher according to the questioning points he pursues (Scott, 2010:124). In Table (6), the set of individual frequencies to the left and to the right of the search word is (5), i.e. 5 words to the left and 5 words to the right and there is a central spot reserved for the search word itself.

Collocational analysis of this type is helpful for various reasons. Pezik (2011: 456) captures three basic reasons:

First of all, no description of language can be complete unless it does some justice to its phraseology. Language is highly idiomatic and lexicality (of which collocations are a most important aspect) has become a level of linguistic analysis . . . Collocations have also been found to be a revealing source of information about discourse-specific metaphors . . . Studying collocations is also crucial in identifying selectional restrictions and semantic prosodies, the latter of which can be defined as the *attitudinal load* (italics mine) of certain lexical items.

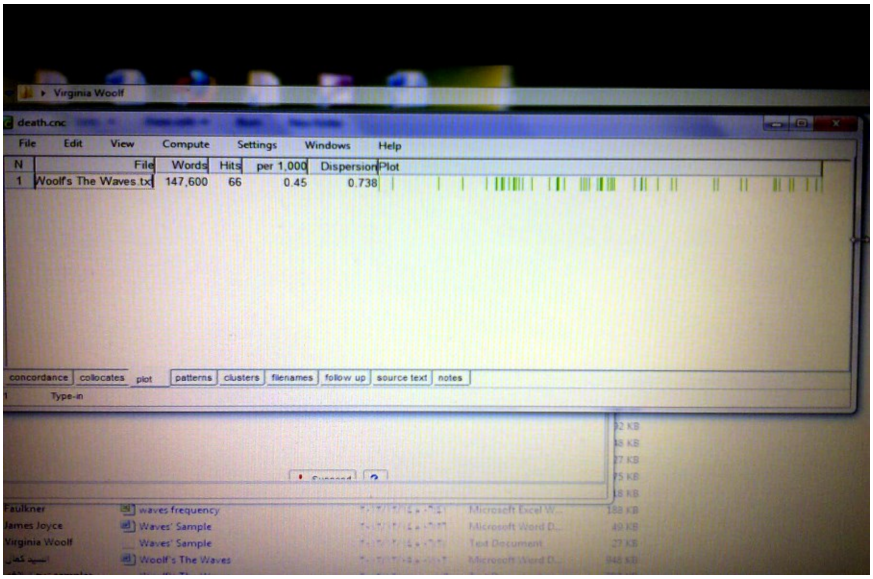
The second and third reasons are extremely relevant in characterizing any literary corpus. However, Scott (2010: 129) simply points out the very use of making out such a kind of lists: they are made just to figure out where the collocates *crop up* a lot. Table (6) evidently spots (L1) as the position where the collocates of the word *death* crop up a lot (35 collocates). This designation might ascribe a sort of *attitudinal load* to (L1) that should be taken into consideration as a possible distributional feature that might characterize the language used by Woolf.

DISPERSION PLOTS

This technique of analysis is a complementary part of concordance. It is dependent on the concordance and derived from its lists (ibid:130). An interesting and vivid visual representation can be obtained by dispersion plots showing how regular the distribution of a search word is over a particular corpus (Baker et al., 2006: 59-60). Normally, dispersion value is figured out mathematically using descriptive statistics to compute its distribution by the following formula (Pezik, 2011:454):

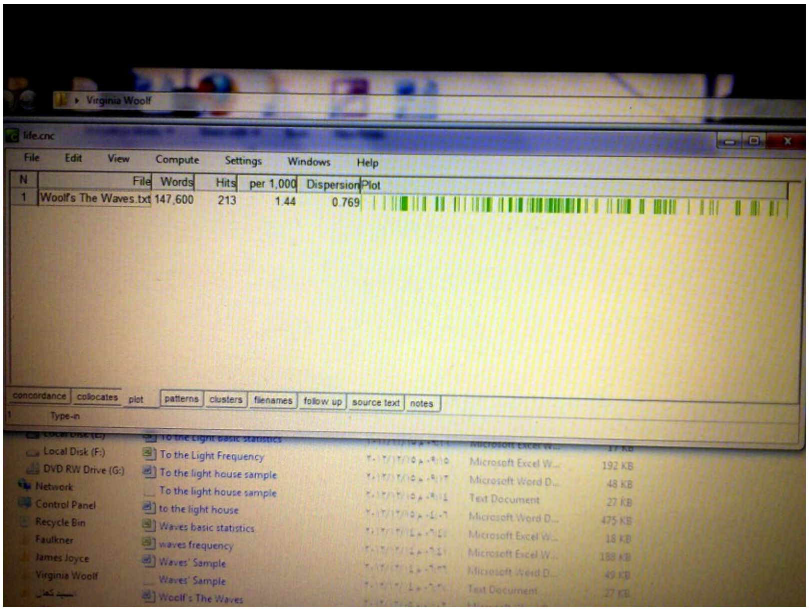
$D = 100 * (1- V/ \sqrt{n}- 1)$
n = number of text files.
V = the result of dividing the standard deviation by the mean of frequencies of the search word in question.

In WordSmith Tools version 5, dispersion plot helps the researcher determining where his search word occurs throughout his textual corpus. So that, he will have an exciting visual representation of the dispersion of the search word that enables him to spot where in the corpus his search word is mentioned most or he can even use this plot to have a better idea of "the words' evenness of distribution" (ibid.), i.e. how equally the word in question is distributed over the various parts of the corpus. The following two Tables (7) and (8) show the distributional behaviour (dispersion plots) of two words *death* and *life* in a relatively small corpus of Woolf's *The Waves*. The two words are selected purposively: Woolf is said to be a suicidal character and haunted throughout *The Waves* by *death* with no recourse to the spectacular aspects of *life*. Thus, the researcher raises a simple question about the dispersion plots of the words *death* and *life* to figure out which one of them has a more intensive presence in the language used in *The Waves*.



N	File	Words	Hits	per 1,000	Dispersion	Plot
1	Woolf's The Waves.txt	147,600	66	0.45	0.738	

Table (7) Dispersion Plot of *death* in Woolf's *The Waves*



N	File	Words	Hits	per 1,000	Dispersion	Plot
1	Woolf's The Waves.txt	147,600	213	1.44	0.769	

Table (8) Dispersion Plot of *life* in Woolf's *The Waves*

The plots above show the following details:

File: source text file-name
Words: number of words in the source text
Hits: number of occurrences of the search word
Per 1,000: how many times of occurrence per 1,000 words
Dispersion: the plot dispersion value
Plot: a plot showing where they cropped up, . . .   (Scott, 2010: 129)

The dispersion plots of *death* and *life* show different frequencies or *hits* in the corpus (*death* = 66; and *life* = 213). What is more, *life* is more evenly dispersed across the novel, whereas *death* occurs in a fewer number of portions. Accordingly, the dispersion plot of *life* clearly suggests that *life* occurs more as a *central theme* in the debates involved in the novel than the word *death* since it seems to be a more focused subject of the corpus at its various parts as being sorted by number of words per 1,000.

CONCLUSION

The reason that makes the researcher focus on the five techniques tackled above lies not only in their relatively simple linguistic nature but even in the user-friendly software suites they are packed in. Thanks to Scott's WordSmith Tools (1996-   ) which have become very powerful tools and quite promising methods that can be readily used in carrying out diversified types of linguistic data mining.

The paper ends up with one specific conclusion that it is not any more appropriate to be satisfied by the intuitive critical interpretations of a literary text. The corpus-based techniques tackled throughout this paper seem to fulfill the goal of increasing the objectivity of a literary analysis. By virtue of such techniques, the linguist finds himself in a position to utilize software that provides his analysis with neutral and impartial insights into the literary texts under investigation. This would most definitely help the linguist to escape the overwhelming impressions surrounding the reception of the literary texts and to bring out some invisible meanings that could be missed or unrecognized by the intuitions of traditional literary stylistics. It would not be feasible to make an exploratory survey of three sizable and controversial English novels without the electronic analytic potential that corpus linguistics most definitely has.

FUTURE RESEARCH

Needless to say, the techniques and tools surveyed so far are by no means assumed to be the only empirical techniques available for literary language-analysis within the traditions of corpus linguistics. Many other quite sophisticated and more competent methods have not been surveyed: *n-gram* *methods*; *Markov Methods; Hidden Markov Methods; Supervised and Unsupervised Learning Methods; Sparse data Method;* etc. It is true that the vast majority of these methods rely heavily on employing quantitative statistical information drawn from corpora, however, they confine language to its *algebraic properties*. The use of such methods in future research assumes the researcher to be familiar with the probabilistic variants of the formal grammars in a way that sounds more mathematic than linguistic.

Moreover, there is as yet no agreement on the nature of corpora that such methods try to exploit. This last point might be understood in the light of the technological revolution that enabled researchers to work on unprecedented amount of large-scale corpora of various and highly technical resources. Therefore, it will be a serious challenge to verify the viability of more sophisticated techniques that might address more invisible and large-scale descriptions of the recurrent features that literary language conceals from the traditional stylistic approaches.

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