

ON WRITING READABLE GRAFFITI

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You just wrote it. It's your most brilliant achievement yet. But is it readable? All graffitists worthy of the name must have asked themselves this question at some time. Indeed, it is a question that every conscientious author asks repeatedly. Unlike other writers, however, graffitists do not get any of the standard forms of feedback.

As a general rule, authors who neglect readability are not read. When commercial authors write unreadably, their sales plummet and reviews are unfavorable. A journalist who writes an unreadable column receives few comments of support or challenge, praise or rebuke. Even a person writing a letter to an old friend or relative gets no response if the letter lacks this all-important property. And in each case, the absence of reader feedback tells the writer that something is wrong - communication has broken down.

For graffitists, writing anonymously, sporadically and without remuneration, these conventional contacts with the reading public do not exist. Obliteration of graffiti cannot be construed as rejection, since this is the ultimate fate of all graffiti: the clever and the obtuse, the readable and the unreadable alike.

Through persistent experimentation, however, writers of graffiti have developed a technique to evoke response, at least among their peers. They simply construct graffitic sequences, or chains, in the following manner. A first hand, denoted in the discussion and examples to follow as "A", writes a line of graffiti which poses a question or through more subtle means invites a graffitic answer. (Note that this excludes from consideration graffiti which provide phone numbers, addresses, and sometimes other personal data which presumably elicit responses of a different sort.) A second hand, "B", eventually writes a sequel, thus transforming A's invitational graffito, or gambit, into a nascent sequence. Subsequent hands, "C", "D", etc., may then extend the sequence further, adding remarks ostensibly related to the gambit or any appended line. Of course, a contributor may later append additional lines, although a sequence produced entirely by A is conceptually and operationally of a different genre, which may be called a pseudosequence (more about that later).

Once a graffitic sequence has begun to form, its length, as measured by the number of distinct graffiti which currently comprise it, is a measure of the readability of its lines as a whole, with the exception of the one in final position. Until this line, which

we may call the incumbent, acquires a successor, its readability is neither confirmed nor denied. For it, at least, a more sensitive and generally applicable measure of readability is desired, one which provides advance information.

Accomplished graffitists wishing to extend a sequence with a line of their own will be particularly concerned about whether total readability of the sequence will be enhanced by their proposed contribution, regardless of any possible successor. To decide this, they need a measure of readability which can utilize simple objective information about their individual graffito to infer its incremental effect on the readability of the entire sequence.

In the next section, we will consider assorted examples of graffitic sequences. Then, in the one following, we will discuss readability indexes, which are measures developed to assist writers and editors in evaluating the readability of prose text quantitatively. Several popular readability indexes will be applied to the example and their effectiveness compared. Ways in which graffitists can use those indexes found to be most effective will then be illustrated. In conclusion, several exercises will be provided for the graffitically inclined reader.

Examples of Graffitic Sequences

Many examples of graffitic sequences have been anthologized. Typically, they are two or three lines long. The following are two well-known examples from earlier days.

1. A) My mother made me a homosexual.
B) Terrific! If I buy the wool, will she make me one, too?
2. A) I like grils.
B) The word is girls, stupid. G-I-R-L-S.
C) What about us grils?

These two share a number of characteristics of some recent sequences. First, the gambit in each is a simple assertion (rather than a question), not clever in itself but inviting a sarcastic, possibly snide, retort. Second, the retort is concise and direct. Third, perhaps because the response is manifestly readable, it carries a note of finality about it. After that, there is nothing left to say, particularly nothing from A. Occasionally a third hand can introduce a comment, as in the second example, which is even final. The response in the first example is in the form of a question, but one which all but precludes an answer. How disastrous would be something bland, such as:

C) She said no, but to have a nice day.

But an aggressive response of a suitably witty kind seems all but out of the question.

Such sequences may be termed noncooperative, since the primary consideration of the respondents is to exclude, rather than invite, a continuation. To such graffitists, the concept of the sequence as a test of readability is clearly alien.

Another type of graffitic sequence of a limited scope is one in

which the theme running through the sequence and serving to unify it is too banal to sustain extensive elaboration. One example is entirely ample for this case.

3. A) My shrink says I have "writer's block" but he
- B) Not to worry! It will clear up if you just
- C) Enough already - I've had it to

A third type of sequence which terminates in a relatively short number of lines is one which follows a pattern of correspondence with a finite set of elements. When such a sequence has exhausted the correspondence, it may be referred to as closed. A few examples will clarify this. The first is a sequence not yet closed but well on its way.

4. A) Jesus saves.
- B) Moses invests.
- C) Mohammed profits.
- D) Buddha speculates.

It is not the slavish adherence to a single paradigm which promises to bring this sequence to imminent conclusion. Rather, it is the realization that there can be only a few more founders of major religions and a limited number of relevant financial puns. In the next section, in fact, we will test a proposed extension of completely different syntactic structure, but which continues the thematic pattern one step closer to the ultimate.

The next sequence is even closer to closure, if it isn't already there.

5. A) Johnny Appleseed was a sow and sow.
- B) Betsy Ross was a sew and sew.
- C) And so on, and so on.

An example of a sequence which is demonstrably closed is the following one, which exhaustively exploits the symbols of contract bridge. Although it systematically uses parody of the gambit, monotony is avoided through varied use of the rebus device, as supplemented by puns and shifts of syntax.

6. A) I ♡ my dog.
- B) I ♠ my cat.
- C) I ♣ my wife.
- D) I ♦ mine.
- E) U NT my lawn.

The previous example is the exception, rather than the rule. However, it is easy to sense when closure is near, in most cases. Consider the following didactic sequence, suited to the instruction of the academically young.

7. A) "Maladroitness" is a malapropism.
- B) Clichés don't bore people; people bore people.
- C) What a hideous beast is the platitude.
Its expression is worse than its attitude.
- D) Sprung rhythm is hard to beat; the rest is silence.

Is this sequence winding down? Undoubtedly, but in principle there are latent lines in abundance still to be discovered. It is only after some time has been spent in search of compatible extensions that one senses that the constraining factor here may be one's own ingenuity.

It is much more credible that the next two examples are of minuscule scope.

8. A) Mathematics - it's the thought that counts.
B) That figures.
9. A) Who needs rhetorical questions?
B) Don't we all?

Readability is not an issue with either of these. It is likely that A had no intention of offering a gambit in either case. To B's credit, a continuation was found against the odds. In fairness, the incumbent should not be rated an incumbrance, although a successor may never appear. It is for such cases as these that readability indexes appear especially attractive.

The tenth and concluding example is of a sequence considered to be open; indeed, wide open. That is to say, it is just the opposite of a closed sequence. There is a little story that goes with it. An art exhibit had been arranged to which only nonprofessional artists were eligible to participate. Viewers were encouraged to write their comments in a large loose-leaf volume placed in a conspicuous position. Since the works on display were prepared with far more enthusiasm than expertise, the comments were largely polite but restrained. The inevitable finally happened. At the top of a fresh page one day the gambit of the next example appeared, soon to be followed by the four remaining lines. The next day, a fresh page lay exposed to receive comments, while the page with the example sequence could not be found anywhere in the book. Not every graffito is scrawled on the wall, but mortality rates are the same for all.

10. A) Now that we've perfected the kitsch machine, let's patent it!
B) Real men don't like kitsch.
C) ¡Macno gusto!
D) Cnaque homme à son goût.
E) And Tyler, too!

In the next section, readability indexes will be applied to select the most readable extension from a group of three proposed for appendage to this sequence.

Readability Indexes: Writing by the Numbers

Since at least 1939, readability indexes have been used to predict the effort required of an individual to read and understand a given piece of prose text. Ideally, a readability index should be a number independent of the subject matter, semantics and syntax of a prose passage, and derivable from a few simple objective properties of the text. Many readability indexes have been defined

by educators, reading specialists and psychologists during the last forty years. In each case, a formula or rule is given to calculate the value of the index from such text-related parameters as number of sentences, words, letters, vowels, and syllables in the text.

Typically, a readability index will measure reading ease on a scale of 0 (hard) to 100 (easy), or reading grade level ranging from 1 (easy) to 12 (hard). A formula used to compute a readability index is commonly a linear function of two generic variables:

$$I = C_0 + C_1X_1 + C_2X_2$$

Here, I stands for the index, the Cs are constants, and the Xs are the variables. Ordinarily, one of the variables is a measure of sentence difficulty, while the other is a measure of word difficulty. Each of these is defined in a way which removes the effects of text length. Thus, sentence difficulty might be defined as the average number of words per sentence, while word difficulty might be defined as the average number of syllables per word. To calculate I therefore requires the evaluation of a number of quantitative characteristics of the text.

One type of readability index in widespread use employs a list of the 3000 most commonly used words found in a large sample of prose text. Its measure of word difficulty is the ratio of text words not found on the list to total number of text words. This type of index has been found to give deceptively high estimates of word difficulty when applied to relatively simple material of a specialized kind. For example, an easy scientific passage using such words as mass, position and volume occasionally might be rated as difficult, since these words are not included on its list.

The use of such an index to rate the readability of graffiti is particularly contraindicated, because of the relatively frequent occurrence of several short, familiar words known to be missing from the reference vocabulary. In this connection, the following example of a pseudosequence may be cited:

The only difference between philosophy and graffiti is the
word F**K.
** You see?

Readability indexes are not only growing in number but also in popularity [1,2]. Because of the concurrent growth in demand for their products, a number of suppliers of word processors are starting to include the capability to calculate readability indexes applicable to text stored in a data base. Consequently, various index formulas have been collected and reviewed in the technical literature [3].

We evaluated the ten graffitiic sequences using eight different indexes (Flesch, Farr-Jenkins-Patterson, Coke-Rotkopf, Coleman, Fog, Automated Readability Index, Coleman-Liau, Kincaid). In order to make these evaluations, it was expedient to adopt somewhat arbitrarily the following rules. Proper names and words from foreign

languages were counted in the same manner as English words. Rebus characters were counted for words and syllables but not for letters or vowels. In the second sequence, isolated letters were counted as both words and letters.

We noted a general pattern of consistency among the indexes; that is, a sequence rated easy (hard) by one is rated easy (hard) by all. This pattern was confirmed by a standard statistical test on ranks (the Kendall coefficient of concordance). Dismayingly, the range of variation was considerable, with most indexes assuming values outside their nominal bounds (0 to 100, or 1 to 12). Therefore, we chose for further evaluation two indexes which minimized this aberrant behavior:

$$\text{Coleman Index} = -37.95 + 148 \text{ T/W} + 116 \text{ M/W}$$

$$\text{Fog Index} = 3.068 + 0.0877 \text{ W/T} + 9.84 \text{ P/W}$$

where T denotes the total number of sentences, W the total number of words, M the total number of monosyllabic words, and P the total number of words of three or more syllables.

Note that these indexes operate inversely; difficulty is characterized by a small Coleman value but a large Fog one.

The Coleman and Fog indexes rated the ten graffiti sequences as follows. Rank is indicated by the numbers in parentheses, with (0) easiest and (9) hardest.

Sequence	W	T	M	P	Coleman	Fog
1	18	2	15	2	75.2 (7)	4.95 (7)
2	17	3	15	0	90.5 (1)	3.56 (1)
3	25	3	21	1	77.3 (6)	4.19 (4)
4	8	4	1	2	50.6 (9)	5.70 (9)
5	20	3	17	1	82.9 (4)	4.14 (3)
6	20	5	19	0	109.3 (0)	3.42 (0)
7	35	5	23	6	59.4 (8)	5.37 (8) -
8	8	2	6	1	86.1 (3)	4.65 (5)
9	7	2	5	1	87.2 (2)	4.78 (6)
10	25	5	19	1	79.8 (5)	3.90 (2)

The consensus is that sequences 2 and 6 are the easiest, and 1, 4 and 7 hardest to read. Strangely, 10, which is by most standards hardest of all, is rated easy by the Fog index. The reason is clear. By counting the French and Spanish words as though they were English, we have concealed an essential feature of their complexity. This feature would have been readily detected by means of an index such as that of Dale and Chall, which uses a list of the most commonly printed English words to estimate word difficulty [3]. Although such indexes were excluded from this comparison for reasons discussed previously, it is possible to adapt word lists to special context vocabularies, and this has in fact been done [2, pp. 71-2]. Such an undertaking is beyond the scope of the present preliminary survey. It may largely be unnecessary as well, since comparatively few graffiti in the English-speaking world utilize words from other languages.

As for the rated simplicity of 2 and 6, the former is actual, the latter not. The index values are attributable to the conventions adopted to count isolated letters and rebus symbols. The conventions require reassessment. Meanwhile, it may be noted that graffiti which utilize such devices are comparatively rare.

Having discussed the exceptions observed in the comparison of indexes, we proceed to consider now a graffitist can apply the Coleman and Fog indexes to evaluate a proposed extension to a given sequence. Two examples will suffice. Consider first the fourth sequence of the preceding section. Suppose we decide to break the paradigm by appending:

D) When Zarathustra spake, Nietzsche listened.

We quickly determine the critical parameters of this sentence to be $W = 5$, $T = 1$, $M = 2$, $P = 1$. Adding these values to those tabulated previously for the sequence, we obtain $W = 13$, $T = 4$, $M = 3$, $P = 3$. Substituting these values into the Coleman and Fog formulas, we find that they are 34.4 and 5.62, respectively. Comparing these with the index values previously computed, we note that the Fog index registers a slight improvement (-0.08). On the other hand, the Coleman index signals a significant decrease in the readability (-16.2). This illustrates the importance of using at least two indexes which measure complementary effects. Since the change in the Coleman index detects a substantial decrease in readability, we reject the proposed extension, in spite of its structural novelty.

The next example applies the same principle to the selection of the best extension among several proposed. The sequence of interest in this case is the tenth one. Let the proposed extensions be:

Fa) Amnesty for the Kitsch 22!

Fb) ¡Viva la tabula rasa!

Fc) Even Van Gogh once did hack work.

'Ear, 'ear!

The third proposal is an example of a pseudoextension, in which the same graffitist appends several lines, generally in disguised handwriting. The new Coleman and Fog values, with their differences from the original values for the tenth sequence given in parentheses, are tabulated below.

Line	W	T	M	P	Coleman	Fog
Fa	30	6	22	3	7.67 (3.1)	4.49 (-0.49)
Fb	29	6	20	2	72.7 (7.1)	4.17 (-0.27)
Fc	34	7	27	1	84.6 (-4.8)	3.78 (0.12)

The advantage here is clearly with the pseudoextension Fc, the only candidate which registers an improvement in readability. Interestingly, the indexes concur on this point. It is also of interest to observe that even though the Spanish extension was evaluated as though it were English, it was still rated as detracting from sentence readability.

Exercises

At this point, to fix ideas and provide graffitists, latent or otherwise, an opportunity to come out of their closets, water or otherwise, and work with readability indexes personally, we append a starter set of three graffitic sequences, presumably arranged in ascending order of difficulty. Readers are challenged to evaluate the Coleman and Fog values of each, and then to supply an extension or pseudoextension to each which is compatible with its predecessors and does not degrade the previously-computed readability values upon being appended.

11. A) Mensa needs a few good men.
B) And a lot of shiksas.
12. A) What's wrong with the "Big Bang" hypothesis?
B) It isn't according to Hoyle.
C) Creationists disapprove of big bangs.
D) Big bangs are a cover-up.
13. A) VOTE NO ON MURPHY'S LAW.
B) Don't you mean, "VOTE NOON MURPHY'S LAW"?
C) On wall? Oof! "NOON"? Fool! Law? No!
D) Huh?

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