STRAIN INDEX: A NEW READABILITY FORMULA

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In my M.Phil dissertation 'A Quantitative Analysis Of Media Language' (December 2006), submitted to the Madurai Kamaraj University, I have established the following hypothesis: Considering the fact that clarity and brevity are the main criteria of media language, it is possible to develop a readability tool that will be an alternative to the most popular Fog Index of Robert Gunning. This article is written to popularise the use of my alternative formula which I like to call the Strain Index.

Most readability formulae, such as Rudolph Flesch Reading Ease and Robert Gunning's Fog Index, are based on the length of the sentence measured in words and the length of words measured in syllables. Besides the average sentence length, Flesch's formula takes into account the number of syllables per word; and Gunning's, the number of polysyllabic words. Harry McLaughin's Smog grading system takes into account only the number of polysyllabic words. The FORCAST formula, formulated by Patrick FORd, John CAylor and Thomas STicht, counts only the monosyllabic words in a passage of 150 words. Some formulae consider the number of difficult words; and some, the number of letters per word.

The word is considered to be the unit of a sentence; and the syllable, the unit of the word. We don't read sentences character by character, not even word by word. We actually read syllable by syllable. The Strain Index, a syllable-count formula, knows the value of the syllable count. This is because the average sentence-length in syllables combines at one stroke sentence difficulty and word complexity. That is, there is no need to first find out the average sentence-length in words and then the word-length in syllables. Straightaway we can measure the sentence in syllables. So a one-factor formula can also be a reliable indicator of readability.

There are, however, certain problems in counting syllables. Are words such as prayer, glutton, stiffen, listen, fire monosyllabic or disyllabic? Referring to the phrase "Prayer is the peace of our spirit…", George Saintsbury, in a footnote, writes: "Some people prefer "Prayer" in this sense as a monosyllable. I do not; but they can take it or make it so (A History Of English Prose Rhythm 177)."

Whenever there is a problem, it is better to treat such words as monosyllabic. Numerals also pose a problem. Is 24, two-four (disyllabic) or twentyfour (trisyllabic)? Rudolph Flesch suggests that symbols should be syllabified according to the way they are normally read aloud: % and $, two syllables; 1918, four syllables ("Improve Your Reading", Paul D. Leedy 283).

Are all syllables of equal length? Certainly not. The following monosyllabic words 'ash', 'lash', 'slash' and 'splash' have literal lengths of 3, 4, 5 and 6 respectively. It may be argued that 'splash' is more difficult to read than 'ash', but it may be assumed that this difficulty is negligible and can be ignored because it is the syllable that determines the rhythmic flow of the sentence. Now that

we have established the importance of the syllable in readability, we can move on to describe the Strain Index, which is based on the following assumptions:
1. The longer the sentence, the greater the strain.
2. The standard sentence has 17 words.
3. All syllables are equal ('ash', 'lash', 'slash' and 'splash').

The Strain Index can be calculated in three easy steps:
One: Choose the first three sentences.
Two: Count the number of syllables in the three sentences (S3).
Three: Divide S3 by 10.

Since we have assumed that a standard sentence has 17 words, it follows that in three standard sentences there are 51 words. Now if all the words are monosyllabic, then there will be just 51 syllables. The Strain Index = 51/10 = 5.1. If all are disyllabic or trisyllabic, then there will be either 102 or 153 syllables. The Strain Index will respectively be 10.2 and 15.3. Hence we can say that a text that scores 5.1 and less is very easy to read; and a text that scores 15.3 and more, is very difficult to read.

The Strain Index is only indicative, as all readability formulae are. So a high or a low index does not necessarily mean that a text is either good or bad. In fact, the formula should be applied to a text that is written well. The index, then, will indicate the degree of readability.

Now we shall compare the Strain Index with the Fog Index, which grades texts on a scale of 1 to 17+. The Strain Index also uses the same scale. This scale matches the score with years of schooling. For example, if the score is 11, then those with 11 years of schooling can understand the text. The Fog Index relies on two factors; the Strain Index, on only one.

Fog Index = (ASL + P%) x 0.4, where ASL is the average sentence-length; and P%, the polysyllabic percentage. Now if W4 is the number of words in four sentences, then ASL = W4 / 4. Then, Fog Index = W4 /4 x 0.4 + P% x 0.4. On simplification, Fog Index = W4 /10 + P% x 0.4. Now for every 5% increase in polysyllabic words, the grade level increases by 2 grades. But if there are no polysyllabic words, then Fog Index = W4 / 10. This closely resembles the Strain Index = S3 / 10. If the Strain Index and the Fog Index are equivalent, then the number of syllables in three sentences is equal to the number of words in four sentences. The Strain Index is ruthless in counting all syllables, but the Fog Index does not count all polysyllabic words; it combines judgement with testing. This makes the Fog Index more difficult to apply than the Strain Index.

Now to find out how the Strain Index ranks with the Fog Index, we just have to test them on some graded texts. The Tamilnadu Textbook Corporation's English textbooks for Standards I to XII will serve our purpose well. In all, 268 passages were tested with both the Strain Index and the Fog Index. The Pearson's product moment correlation was 0.65 for the Strain Index and 0.66 for the Fog Index. This shows that the Fog Index is only 0.01 better than the Strain Index. This is very negligible and can be ignored, especially because the Strain Index is very easy to use. The Pearson's product moment correlation between the Strain Index and the Fog Index was found to be 0.97. This is a decisive confirmation of the equivalence of the Strain Index and the Fog Index.

Since the Strain Index is easier to apply than the Fog Index and as reliable, this syllable-count formula deserves attention. The formula may be applied to test the language of all media: broadcast, print, Internet and mobile. If writers take the Strain Index seriously, their prose is bound to become short and crisp; and media language will become more and more readable.

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