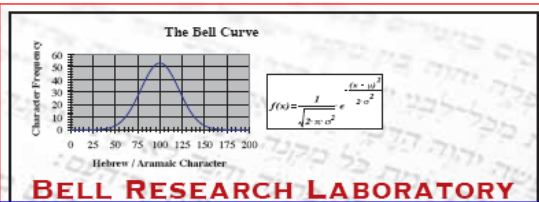


Bible Codes Intermediate Series Presents:
“Class 3 Appendix-
Probability & Statistics of the Bible Codes”



Probability & Statistics

Let's look at an example (in English) to understand the basic concept of the probability of a word sequence. The question is posed; "How do we find the probability of a particular word appearing when we arrange all 26 letters in a random order. For example, if we arrange all 26 letters randomly, what is the probability of the word 'MATH' appearing anywhere?"

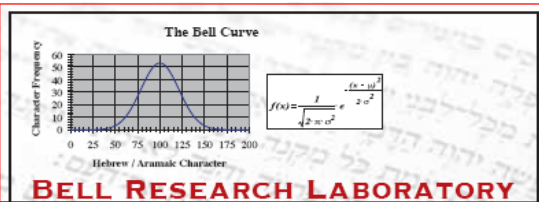
First Example: The answer is that it depends upon the length of the word.

- The first letter (as the others) has a chance of occurring once, and there are 26 letters; so the chance is 1/26.
- The answer is the same for each letter.
- All these events have to happen. So it is 1/26 raised to the power of n.
- This is assuming that the letters are allowed to repeat.

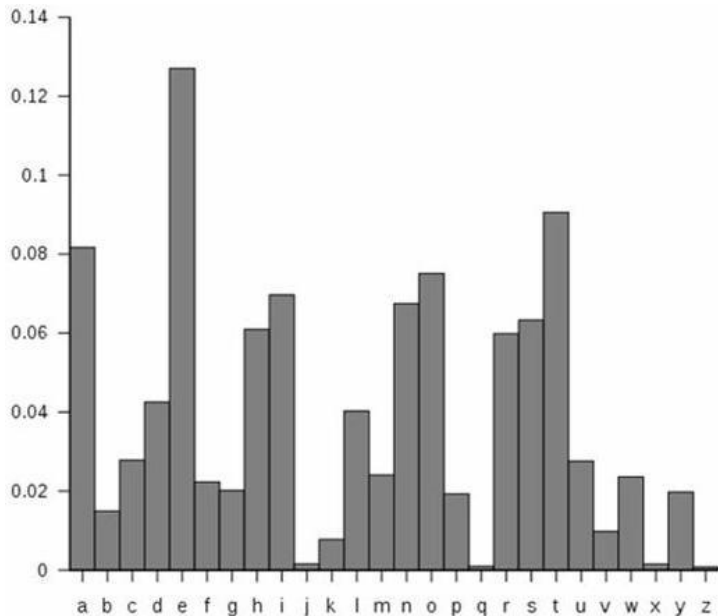
Second Example: If the letters do not repeat, the probabilities keep changing letter by letter.

- The first is 1/26.
- The second is 1/25.
- The third is 1/24.
- etc...
- Multiply all of them.

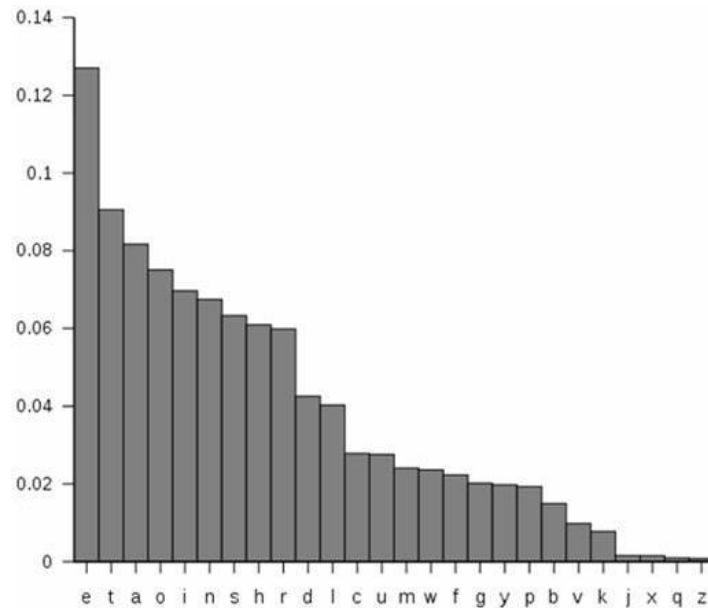
Probability & Statistics (Cont.)



The CodeFinder software has been programmed to accommodate the fact that the probability of each letter occurring is different for each letter. For example the letter “e” is the most popular letter to use in the English language and “z” is the least popular. This is where letter frequency tables become important. The purpose of these tables is to define weighted (realistic) probabilities for each letter so that the probability of a word can be calculated with a high degree of accuracy. Let’s take a look at what these tables look like:

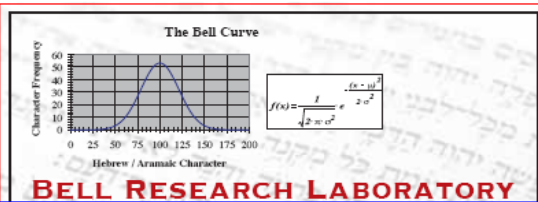


English Letter Frequency (alphabetic)



English Letter Frequency (frequency)

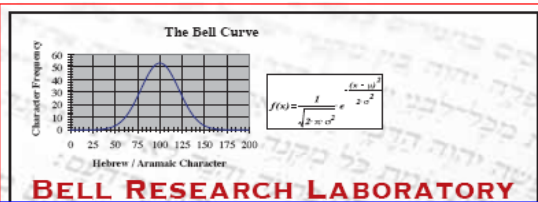
Probability & Statistics (Cont.)



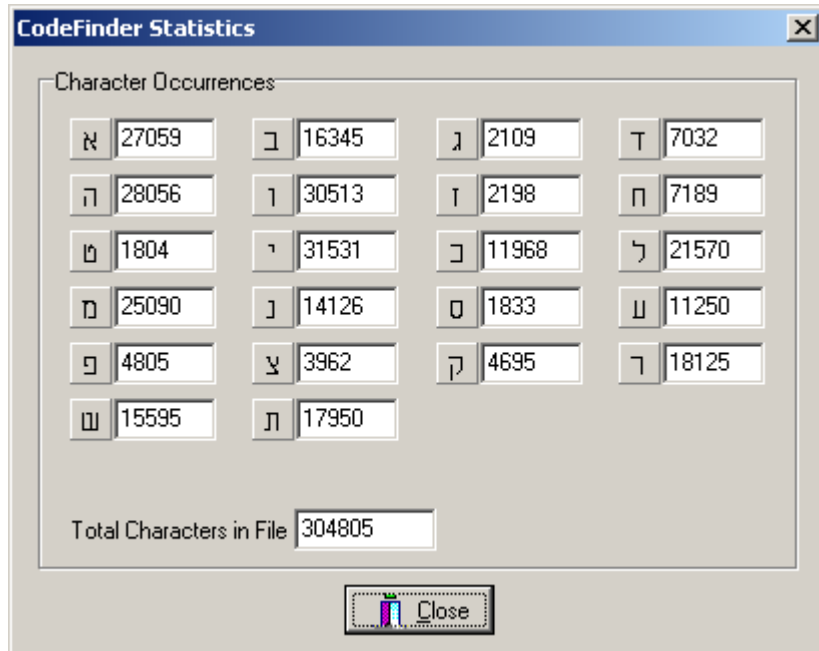
In order to construct a letter frequency table (in any language), you need to know how many times a letter appears in your text and how many total characters are in that text. Then each individual character probability can be realistically (weighted) calculated and the probability of the word, sentence or paragraph can be determined.

To calculate the probability of each character occurring, divide the character occurrences by the total characters in the text file. In our first example a letter frequency table was not needed since there were only 26 letters that are equally used and therefore all had equal probabilities of being used each time. The second example began to use the idea of weighted probabilities by not allowing the letters to repeat. In other words, removing the letters from the text / sample space each time one of the letters was selected / used.

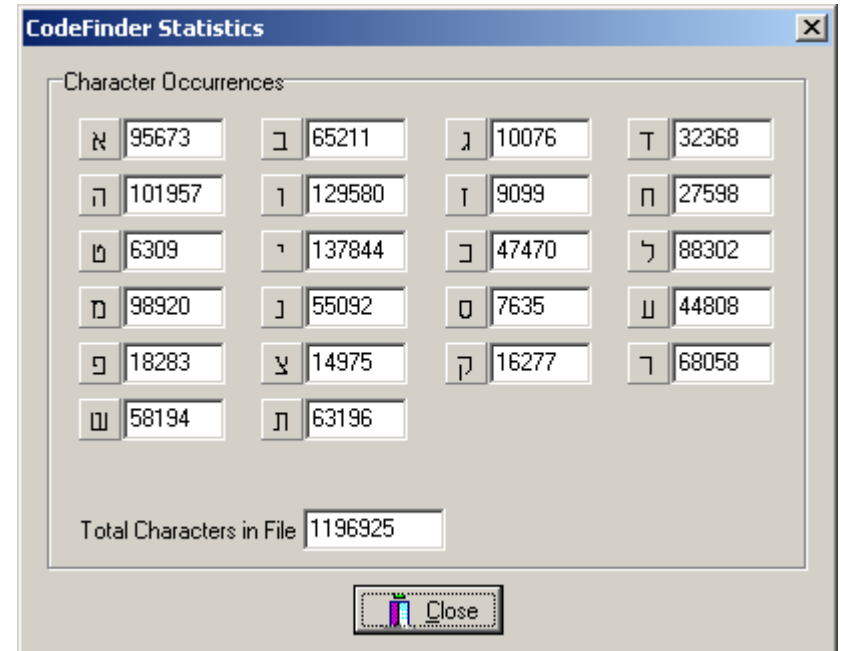
Probability & Statistics (Cont.)



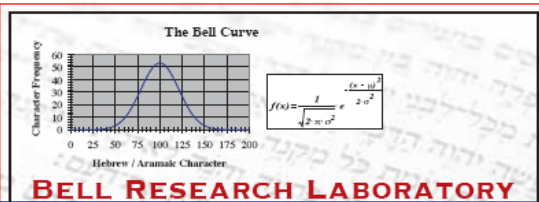
The following is a screen shots were taken from the CodeFinder (Bible code search) software program. The screen shots show the letter frequency tables for the Torah (the first five books of the Bible) and Tanakh (Old Testament text in the original book order).



Torah Letter Frequency Table



Tanakh Letter Frequency Table



Example Bible Code Matrix

Term	Translation	Skip	R Factor (in Matrix)	Start	End
מתאו יפמי למתו אשבתכ	it is written that letter-words speak your opinion is unwanted	14	12.485	17.333	Exodus 20:4.29 Exodus 20:9.22

The ELS reference is 14 characters between rows.
 There are 1 displayed terms in the matrix.
The matrix starts at Exodus 20:4.29 and ends at Exodus 20:9.22.
 The matrix spans 225 characters of the surface text.
 The matrix has 17 rows, is 1 columns wide and contains a total of 17 characters.
 There is 1 significant term in the matrix.
The matrix odds are 1 chance in 3054394388893.065 in favour of significance.
The cumulative 'R' Factor for the displayed matrix is 12.485.

Statistical
Parameter
Details

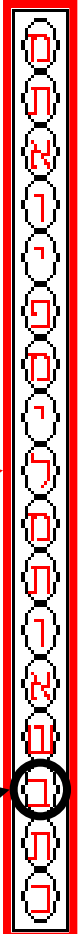
NOTE: This matrix was found in the Torah which has 304,805 characters (start & ends within Genesis and Deuteronomy). The Tanakh has 1,196,925 characters.

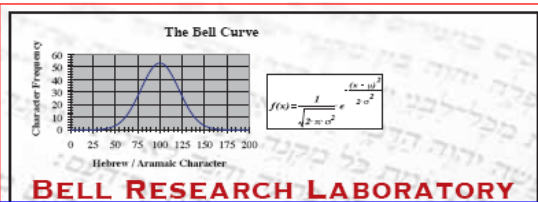
R_[matrix]

P_[matrix]

"it_is_written_that_letter-words_speak_your_opinion_is_unwanted"

"Remember the sabbath day, to keep it holy." Exodus 20:8 (KJV)





Probability & Statistics (Cont.)

Using Bayes' Rule, the calculation shown in the equation below, is repeated for each character in the search term.

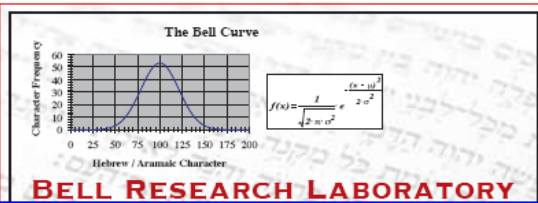
$$P_{[\text{letter}]} = \frac{((\text{Character occurrences})/(\text{Total characters}))}{\sum_{\text{All Letters}} ((\text{Character occurrences})/(\text{Total characters}))}$$

Once the probability of each character has been calculated, the total probability of the entire search term can be calculated.

$$P_{[\text{search term}]} = (P_{[\text{1st letter}]} + (P_{[\text{2nd letter}]} + \dots + (P_{[\text{nth letter}]})$$

There is also another weighting factor (Bonferroni) that is multiplied at this point ≈ 0.585 .

Probability & Statistics (Cont.)



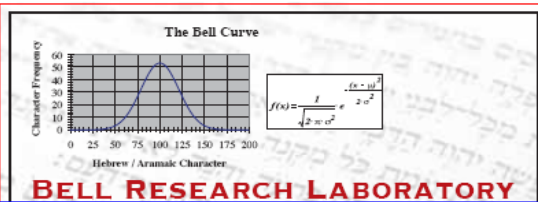
Once the probability of all of the search terms is known; the Rottenberg statistical value (R factor) can then be calculated. The calculation of each terms R factor is the first step in our ultimate goal of calculating a single mathematical number for probability which takes into account all terms in a Bible code matrix. The calculation of each search terms R factor is given by the equation:

$$R_{[\text{search term}]} = \log (1/P_{[\text{search term}]})$$

Repeat the above equation for each of the search terms. The matrix R factor is then calculated by the equation below:

$$R_{[\text{matrix}]} = \sum (R_{[\text{1st search term}]} + R_{[\text{2nd search term}]} + \dots + R_{[\text{nth search term}]})$$

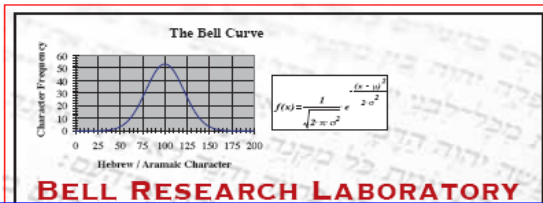
Probability & Statistics (Cont.)



It is important to note that only the positive R factors should be added together. This is because with negative matrix R factors, we have expected occurrences of greater than 1.00 within the matrix (these are not statistically significant).

With the R factor of the overall matrix now calculated, the probability of the entire matrix occurring by random chance is calculated by the following equation:

$$P_{[\text{matrix}]} = 1 / \text{antilog} (R_{[\text{matrix}]})$$



Equation Summary

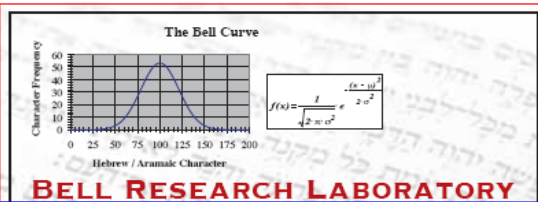
$$P_{[\text{letter}]} = \frac{((\text{Character occurrences})/(\text{Total characters}))}{\sum_{\text{All Letters}} ((\text{Character occurrences})/(\text{Total characters}))}$$

$$P_{[\text{search term}]} = (P_{[\text{1st letter}]} + (P_{[\text{2nd letter}]} + \dots + (P_{[\text{nth letter}]})$$

$$R_{[\text{search term}]} = \log (1/P_{[\text{search term}]})$$

$$R_{[\text{matrix}]} = \sum (R_{[\text{1st search term}]} + R_{[\text{2nd search term}]} + \dots + R_{[\text{nth search term}]})$$

$$P_{[\text{matrix}]} = 1 / \text{antilog} (R_{[\text{matrix}]})$$



Sources / References

Code research by: David Douglas Bell

NOTE: Please see slide notes for each Bible code matrix original discoverer.

For additional information see:

<http://www.bellresearchlab.com/>

(This is my personal website. Discover that Ellen G. White describes and prophesizes about the special end-times information hidden within the Bible codes.)

Other sources:

<http://www.biblecodedigest.com/>

(Bible code research site. Not all codes have been verified...)

<http://www.whiteestate.org/>

(Search all published Ellen G. White books & periodicals.)

<http://exodus-codes.com/>

(Large Bible code matrix library. Not all codes have been verified...)