

Bible Codes

I have always been fascinated by how much you can extract from the Torah, if you put your mind to it. Our Sages tell us that there are four levels of understanding of the Torah, each one deeper than the previous one. As you move from one level to the next, new meanings come to light. Even if you don't believe a story literally, you can always understand it as a parable that provides valuable teachings.

For a concrete example, let's pick a passage from this week's Torah portion, *Toldot*. A strange phrase is used to describe Rebecca's pregnancy with Esau and Jacob:

Vayit-rotsatsu habanim b'kirba

And the children struggled together within her. [Genesis 25:22].

The verb "*vayit-rotsatsu*" means "to crush" or "to oppress". This is the only place it is found in the Torah. So the phrase means that Jacob and Esau "crushed each other". This plainly describes their relationship, as later events demonstrated.

Now, the three-letter root of the word "*vayit-rotsatsu*", "*resh-tsadi-tsadi*", is quite close to the word "*rats*", to run, and the word "*ratsah*", to desire. Struggling, running and desiring are all related. All three are characteristic of Jews, and imply great intensity. Some call it our "cultural DNA".

The Midrash [Genesis Rabbah 63:6] interprets the words "struggled within her" as follows: When Rebecca stood near synagogues or schools, Jacob struggled to come out. But when she passed idolatrous temples, Esau struggled to come out. Indeed, the tension between idolatry and monotheism is played out in every generation of their descendants.

Finally, the Zohar tells us that Rebecca was experiencing the struggle that exists in every human being between good and evil. Yet the Midrash [Ecclesiastes Rabbah 3:15] adds that both are necessary. It says that without the evil inclination, no man would build a house, take a wife, raise a family or hold a job. We'll explore this aspect in another d'var Torah.

A popular, though not binding, interpretation of Torah is "gematria", or numerology. That's when the numerical values of each Hebrew letter in a Torah phrase are added up to give a single number, and one draws conclusions, and sometimes predictions, from that number.

Today, in the age of the computer, people are expanding that concept to look for hidden codes in the Bible. Some say that if the letters in the Torah are rearranged in certain ways, you can read a secret message, or an account of events that happened after the Torah was revealed, or will happen in the future. They can also prove that the probability of this occurring by chance is very low. Is this significant? Are there hidden codes in the Bible?

Coming from the world of theoretical physics, rather than the world of statistics, I don't understand the fuss about Bible codes. Here's why.

Consider the Torah to be a long string of characters. Number them 1, 2, 3, 4, etc. Suppose you got a clear message by taking every other character (say, characters 2, 4, 6, 8, etc.). Then people would say, "There you go, clear as day. You have to be in denial not to recognize that this is a hidden message from God." The formula for that message would be simply $2*n$. It requires only three keystrokes to describe. Its simplicity would argue in favor of its truth.

Fair enough. But suppose you got a message by using characters 1, 4, 9, 16, 25, etc. It's a little more complicated, but you would quickly notice that the pattern is to take the squares of the numbers. The formula is n^2 . It still requires only three keystrokes, and so people can still argue that it's simple enough to not be mere coincidence.

Fair enough. But now suppose you got a message with a more complicated formula, say $2*n + n^2$ (that is, take characters 3, 8, 15, 24, 35, 48, etc.). It takes seven keystrokes to describe it. Should that be considered a fluke or an intended message? Harder to say. The more complicated the formula is (that is, the more keystrokes are needed to describe it), the more doubtful it becomes that a message was intended.

Now here comes the shocker. Suppose you wrote any message you wanted in advance, then went to the Torah to find out which character sequence gave you that message. One can prove mathematically that you

are *guaranteed* to find a formula that will give you that sequence. It's a polynomial in n , to use the jargon. Not only that, but you are guaranteed to find an infinite number of such formulas. One of these will be the simplest one: It will require the fewest keystrokes to describe. Once you found that formula, how would you know if it is simple *enough* that you can conclude the "message" was intended? That is a subjective question, not an objective one, and there can be no definitive answer.

Here is one conclusion. Yes, there is a message in the Torah. The formula is: n . Take characters 1, 2, 3, 4, etc. In other words, just read the Torah. That is the simplest formula of all. Only one keystroke is required to describe it. There is your message. And it is not hidden.

So the simple truth is that, given ANY sequence of numbers, there is ALWAYS a formula that ties them together and enables you to predict the next one, and the next one, and the next one. In fact, there is an infinite number of such formulas, and they predict different "next numbers".

If you are given one more number than originally given, you can eliminate many such formulas, but will still be left with an infinity of them. In that sense, NOTHING is truly "random". You can "make sense" out of anything.

I often wondered if this simple mathematical result does not apply to the world at large, with startling conclusions. All the facts that the human adventure has revealed to us are, after all, only a finite collection. A very large finite collection, but a finite collection nevertheless. We try to tie all these facts together into a theory of the world. We do this because we don't like randomness. We like to see patterns, and behind the patterns, we like to see purpose and design. We are guaranteed to succeed (a comforting thought!), but only too well: There is an infinite number of such patterns. When new facts come to light, many of these theories fall by the wayside, but that still leaves an infinite number of them.

This means good news and bad news. The good news is that there is always more than one way of making sense of the world. In fact, there is an infinite number of ways. This should teach us tolerance. The other guy's understanding is not necessarily wrong, it may be just different, and just as valid. The bad news is that we will NEVER be able to reach THE "real" theory of the universe (except by a lucky guess, and even then we'll never know we are right). This is because we can only be in possession of

a finite number of facts. In fact, we can't even say that we are getting closer, since a finite number of facts always implies an infinite number of "theories" that tie the facts together. So the quest for knowledge continues, in an endless process.

But there is more. Can one theory be "better" than another, even if both fit the facts? Of all the theories, one of them will be the simplest, meaning that it will require the fewest keystrokes to describe. For no reason other than elegance, scientists prefer to use, as a working hypothesis, that "simplest" theory. This is known as the principle of Occam's razor: Always go for the simplest explanation that fits the facts, but remember that there are other explanations, and that one of these others may be the right one.

Could it be that Judaism has the "simplest" philosophy of life, and that even though the others in existence are not "wrong", they are not as "simple", as minimalistic? Jews say that God is One. That's the simplest "theory". Certainly not the first one that comes to mind, given the baffling diversity of the human experience, but the simplest nevertheless. It forces us to assume that everything is connected to everything else, and that always leads to progress in understanding.

An even more sobering thought is that there **is** no right explanation! The human experience is an ever-increasing, but still finite, collection of facts. These facts, as we saw, can fit into any one of an infinite number of theories. But we are free agents and have much leeway in creating facts. Could it be that every time we witness or create a new fact, we are not merely making history, but also modifying the very fabric of the universe, creating the very laws that rule our universe, in partnership with the Almighty?

Think about it.

Shabbat shalom.