

Confessions of a Codes Buster

If you go looking for codes you are bound to find them

My first public contribution to the study of mathematical miracles occurred around 1974, when I was “assisted” into the street by two burly gentlemen from a certain Christian church in Melbourne. My crime had been to distribute copies of my pamphlet *The Divine Nature of the Wizard Scientifically Demonstrated*, which proved by mathematical means that a friend of mine was just as divine as he claimed to be. The motivation behind the pamphlet was the promotion by the aforementioned church of the work of the great Harvard mathematician Ivan Panin, who had irrefutably proved the divine inspiration of the scriptures and whose work was certified by the Nobel Foundation.

Looking for patterns

Ivan Panin was a Russian, born in 1855, who emigrated to the United States. In 1890 he discovered “amazing numerical patterns” in the Hebrew and Greek texts of the Bible, mostly involving counts of letters and words together with extensive use of *gematria* (numerical values of the letters). He wrote many books and left 43,000 pages of notes to lucky future generations.

Alas, this great Harvard mathematician turned out to have received an arts degree in literature, with mediocre grades in a few low-

level mathematics subjects, while the Nobel Foundation was merely a Californian businessman named Nobell. Still, quibbles aside, those numerical patterns are really there in the Bible (most of them, anyway) and deserved a response. Hence the pamphlet. Now we know that patterns like Panin’s can be found in any text, and even in the details of my friend’s life.

Panin was only the most prolific of many numerical pattern finders; in fact, the genre is not even restricted to the Bible. A few decades ago, an Islamic cleric named Rashad Khalifa found miraculous patterns involving the number 19 in the text of the Qur’an. They aren’t as plentiful as Panin’s but frankly I like them better and don’t even mind that he had to make more and more brazen adjustments to the text of the Qur’an that culminated in the deletion of two whole verses. Unfortunately the euphoria of success was too much for him and he used his system to prove that he himself was the next great prophet after Abraham and Muhammad. I don’t know if that’s why he was murdered.

Kabbalistic literature

Of course, things like this are known in the Judaic tradition too but there is a difference. Whereas the examples I described above were con-



Brendan McKay is Professor of Computer Science at ANU and is the winner of the 2003 Australian Skeptics Eureka Prize for Critical Thinking.

cerned with patterns that are miraculous merely as patterns, Jewish writers have been more interested in the extraction of actual information from the Bible text. There are many examples in the Kabbalistic literature where devices such as reading the text backwards, extracting the first letters of each word, and so forth, were used to find words and coincidences whose appearance taught us something about the place in the text where they were found. An example of particular interest to us appeared in the *Genesis* commentary of Rabbi Bachya ben Asher, who lived in Spain in the 13th century. Bachya found that taking every 42nd letter starting with the first letter of the Bible gave the expression *baharad* which traditionally specifies the day and time of the creation — quite a nice thing to find embedded in the creation story.

For some reason not much was done with Bachya's discovery until the middle of the twentieth century. Its modern revival was left to a Slovakian, Rabbi Michael Dov Weissmandl, who would be more famous (and very deservedly so) as a hero of the anti-Nazi resistance in war-time Europe if it wasn't for his vitriolic attacks on the Zionists. Weissmandl used his long stay in a secret underground bunker in Bratislava to make many Bachya-like discoveries. The rules are very simple: start with any letter of the text and skip forward (or backwards) with equal length steps. You can choose the length of the steps (Bachya chose 42) but you have to use the same length for each step. This will give you a sequence of letters which, if you are lucky or your text is the word of God, will form a meaningful word or phrase. Such an embedded word is popularly known as a *code*.

After the war, Weissmandl moved to America and his students continued his work. About 1980, one of them showed the technique to an Israeli schoolteacher named Avraham Oren and this is where the story starts to get more interesting. Oren was intelligent enough to know

that subjective impressions are not sufficient to decide if something like this is real or not (that is, whether those structures are in the text by accident or design), and enough of a scientist to admit that he didn't have the skills to decide. So he took some examples along to the Mathematics Department at the Hebrew University of Jerusalem.

One of the mathematicians who met with Oren was a brilliant but enigmatic Russian, Eliyahu Rips, who had made headlines in 1969 by setting himself alight in the town square of Riga in protest at Soviet actions in Czechoslovakia. A campaign lead by American Jewish mathematicians (mistakenly believing he had been protesting Soviet treatment of Jews) secured his release from the sanatorium in which he had been incarcerated and he migrated to Israel soon afterwards. When Rips saw the examples provided by Oren, he immediately fell in love with them and devoted himself passionately to their study. He soon brought in his religious studies partner Doron Witztum, a physics dropout, and a student, Yoav Rosenberg. Together, Witztum, Rips and Rosenberg (WRR) made the next important discovery: sometimes the codes for several related words could be displayed in a small rectangle if the text was written out in a particular fashion.

Australian example

It's about time we gave an example, so let's take a look at the Australian Constitution. Starting at letter 9390 and skipping forward 3083 letters at a time, we find the word Howard. Similarly, starting at letter 12475 and skipping forward 6164 letters at a time, we find the word Tampa. It appears that the Australian constitution predicted our prime minister John Howard and his role in the infamous Tampa affair, but at first sight it looks like these two codes are far apart in the text. However, if we write out the Australian Constitution with 3082 letters on each line, we can cut out a very small rectangle that contains both codes. Now

Howard and Tampa have the appearance of very close proximity (Fig. 1).

T	I	O	N	S	O	F	S
T	H	E	P	A	R	L	I
T	I	O	N	W	E	H	R
N	P	O	W	T	A	R	R
I	L	I	T	A	R	Y	D
L	T	H	F	O	R	P	U
F	F	I	R	M	E	D	B
V	A	L	A	N	D	M	I
E	X	C	E	P	T	I	O
M	O	N	W	E	A	L	T
H	E	S	T	A	T	E	F
L	L	B	E	T	A	K	E

Figure 1

It isn't always possible to fit two codes into such a tiny rectangle, but WRR noticed that it could be done quite often when they looked for pairs of related words in the Hebrew text of the Bible. When they tried pairs of unrelated words, on the other hand, they felt that a small rectangle was possible rather less often. Somehow the Bible seemed to "know" whether two words were related or not. If the two words referred to modern events or knowledge (say, disease and bacteria), then a miracle was the only plausible explanation. WRR were soon convinced that they had discovered nothing less than scientific proof that the Bible was written by God and set themselves the task of convincing the scientific community of it. For that they needed more than anecdotal examples; they needed a formal experiment.

The first requirement for a formal experiment was a list of pairs of related words. Witztum had once before noticed that the name of the famous Zionist Theodor Herzl appeared as a code in close proximity to his date of death, but secular Zionists are not held in high regard in the strict religious community to which Witztum and Rips belonged, so they decided to use the names and

dates of birth or death of famous rabbis instead. (In Hebrew, dates can be written using only letters.) So they compiled a list of 34 medieval rabbis and ran a computer program designed by Rips that measured the closeness in the Bible of these word pairs (each pair consisting of the name of a rabbi and his date of birth or death). The answer was astounding: a 1 in a billion chance that such a degree of closeness could be the result of chance alone. Then they sent their results to the mathematical economist Robert Aumann for publication in the *Proceedings of the National Academy of Sciences* of the USA (PNAS).

Publication

Editors of scientific journals are no strangers to crackpot submissions. Many people with a new (or old) harebrained “discovery” send it to a journal and mutter about conspiracies when they get an immediate rejection slip. WRR’s paper didn’t receive this treatment for several reasons. One is that it had the superficial appearance of scientific work, but more importantly it had the active support of a number of highly respected mathematicians including Aumann himself. However, Aumann needed the approval of a referee and for this he chose a celebrated statistician, Persi Diaconis.

Diaconis didn’t like what he saw. The measurement method was excessively complicated, and he suspected that it had been illicitly adjusted to give the desired result. To catch WRR at this crime, Diaconis demanded that they use the same measurement method on new data. WRR compiled a new list of 32 different rabbis and ran their program again. To Diaconis’ consternation, the result was just as miraculous as before.

Now Diaconis tried a different tack. It was clear that the measurement

method suffered from various technical difficulties. Perhaps that was the explanation. Diaconis devised a different measurement method himself, and set WRR a tough target. A result of 1/1000 or better would be taken as success, worse and the paper would be rejected. This time he was sure the codes were history, but then the results come back: 60 times better than the target. What to do? Despite the prior agreement, Diaconis could not bring himself to publish the paper in PNAS, but instead suggested a statistical review journal, *Statistical Science*. WRR sent their paper to that journal, which insisted on refereeing it again. After a few years of to and fro, the paper appeared in 1994 with the editor’s preface: “Our referees were baffled... the paper is presented as a challenging puzzle.”

The Bible Code

Needless to say, the editor’s reservations were not enough to prevent the phrase “peer-reviewed scientific journal” from becoming the mantra of the growing multitude of codes believers. The reprinting of the paper in full in a best-selling book *The Bible Code* by Michael Drosnin (1997) made it possibly the most widely distributed scientific paper of

all time. Drosnin had another trump card as well: he had successfully used the codes to predict the assassination of Israeli prime minister Yitzhak Rabin in 1995. His book built on this by showing how the codes had predicted an impressive array of historical events, from assassinations to earthquakes, and predicted more to come in the future. Oprah seemed impressed.

Of course the skeptics didn’t keep silent and better media outlets reported their concerns. Drosnin retorted, “When my critics find the assassination of a prime minister predicted in *Moby Dick*, I’ll believe them.” However, when I used a live Italian TV show to confront him with the assassinations of Indira Gandhi, Leon Trotsky and Martin Luther King, all encoded in *Moby Dick*, he seemed strangely reluctant to keep his promise. American skeptic Dave Thomas joined in with findings of UFO and Roswell, and many others. Recently Drosnin has published a second book, more absurd than the first. Our reply is that even Drosnin’s book itself contains codes, for example the Bali bombing predicted in a page dealing with terrorism (Fig. 2).

So much for Drosnin. His nonsense is an easy target, but we must not forget WRR’s paper, which is far more sophisticated. WRR’s experiment cannot be refuted by finding codes in *Moby Dick*. They don’t even claim that codes can’t be found in *Moby Dick*. Rather, what they claim is that the Bible does it more often, or more accurately, or with more compact letter arrays, than other books do. Witztum and Rips’ paper appeared to show precisely that, and we were determined to find out why. For this purpose I teamed up with a small group of Israeli scientists who had started working on it independently. The principals were Dror Bar-Natan, Maya Bar-Hillel and Gil Kalai, all of the Hebrew University.

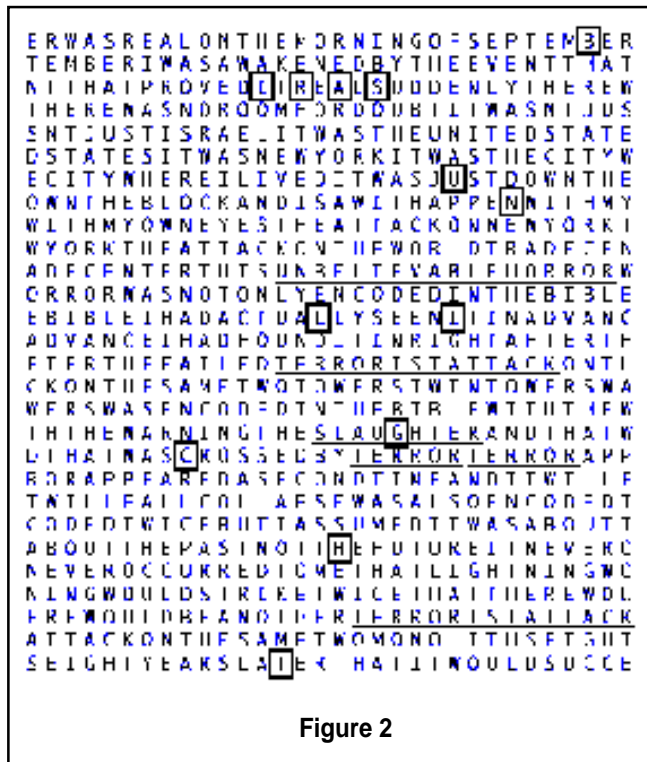


Figure 2

Analysing the method

Our approach was first of all to look hard at the analysis method. We found some significant problems with it, but could never be satisfied that those problems provided sufficient explanation for the result. The breakthrough we needed was provided by a friend in the Ultra-Orthodox community, who noticed that some of the names used for the famous rabbis were doubtful, and some other names were missing. To understand this, notice that it is normal for someone to have many names. As well as John Howard, there is Mr J. Howard, Mr Prime Minister, Honest John, and plenty of others. The same was true of medieval rabbis, and there was also the question of spelling, which used to be far less of an exact science than it is today. Of course the codes performance of different names or spellings are not all the same, so the possibility exists of selecting the names and spellings which perform best, thereby skewing the outcome of the experiment. To prove that biased choice of names and spellings could provide a plausible explanation for WRR's result, we constructed our own version of the data deliberately biased towards the Hebrew translation of *War and Peace*. Our claim, which has survived attack pretty well, is that our data is just as historically and grammatically correct as WRR's data, yet it displays the codes just as strongly in *War and Peace* as their data does in *Genesis*.

Of course, the mere opportunity for a crime does not establish that the crime was committed, so we also sought indications, both in the historical record and the data itself, that some type of biased data selection had occurred. For example, we discovered an early recorded lecture of Rips that appears to contradict

the official account of how WRR's experiment was conducted. We also conducted a number of experiments ourselves including a re-enactment of WRR's experiment using an independent expert (as they claim to have done) to choose the names and spellings. In all cases nothing beyond chance phenomena was found. We presented all this evidence in a



The author holding his Eureka Prize trophy

paper published in *Statistical Science* in 1999.

Another codes experiment

Another codes experiment is worth mentioning. About 1990, an employee of the US National Security Agency named Harold Gans ran an experiment that matched the names of the great rabbis against the places (as opposed to the dates) of their birth and death. He obtained a very strong positive result. This is often presented as proof that WRR's data was not improperly adjusted, since adjusting the names and spellings to work well with the dates would prob-

ably not make them work well with the places. However, this argument forgets the spelling of the places. Most of the place names were European cities that can be transliterated into Hebrew in multiple ways. Gans obtained his data from an Israeli associate of Witztum, who produced a very complicated algorithm by which he had extracted the place

names from two encyclopedias and selected spellings. American mathematician Barry Simon later commissioned a rerun using the spellings precisely as in the encyclopedias, but the result was completely negative.

A more thorough examination of the Gans experiment was carried out by a committee at the Hebrew University that included both the codes proponent Rips as well as the skeptic Bar-Natan. The committee designed two separate reruns of Gans' experiment, each using independent experts to compile the data. These experiments were completed in early 2003, and the results were absolutely negative. This made it completely clear that the strong positive result obtained by Gans is a reflection on his data, and not a sign of anything unusual going on in the Bible.

That would sound like the end of it, but we skeptics know that things like this never die just because they are disproven, they only blink a few times and carry on regardless. The International Torah Codes Society, which includes a few real scientists, runs conferences in Israel each year (sometimes with Israeli government sponsorship) where the latest experiments proving the codes to be real are earnestly discussed. Excuse me if I get back to my real work for a while.

