BS"D   Draft, 30 Tishri 5761 (29 Oct. '00).

New Statistical Evidence for a Genuine Code in Genesis

Doron Witztum

Introduction:

In their *Statistical Science* paper [1], WRR presented statistical evidence for the existence of a hidden code in Genesis. Clearly, if their work was unbiased, such a proof indeed exists. Therefore, in their response in the same journal [2], MBBK tried to prove their thesis that WRR's experiment was successful due to "tuning" of the data, especially of the names and appellations which they had used. In Sec. 10 (pgs. 163-164), MBBK report on "the most important class of experiments" they conducted to do this. We quote:

> **"Our own rabbis experiments.**
>
> Perhaps the most important class of experiments we have conducted are repetitions of the famous rabbis experiment. For this purpose, we engaged Simcha Emanuel, a specialist in rabbinical history at Tel-Aviv University, as an independent consultant.
>
> For the first experiment, Emanuel was informed which 32 rabbis appeared on WRR's second list and asked to prepare names and appellations for each of them. He had not seen WRR's lists and was asked not to consult them, nor was he given any explicit guidance concerning which types of appellations to include and how to spell them. Rather, he was asked to use his own professional judgement to settle all issues. During his work he consulted a second historian, David Assaf of Tel-Aviv University. As well as writing names and appellations, Emanuel and Assaf commented on the accuracy of the dates given by Margaliot (1962) and corrected some of them (as had WRR).
>
> The result of this experiment was a list of names and appellations which appears quite different from that of WRR. The least permutation rank of P1 _ 4 was 0.233.
>
> The same exercise was then carried out with a list of rabbis that had not been used before, namely those whose entries in Margaliot's encyclopedia occupy from 1 to 1.5 columns and for whom there is a date of birth or death mentioned (except for those incorrectly included by WRR in their second list). For these 26 rabbis, the least permutation rank of P1 _ 4 was 0.404.
>
> After the above two experiments were completed, we carried out the

following re-enactment of WRR's second experiment.

1.   A list of rabbis was drawn from Margaliot's encyclopedia by applying WRR's criteria for their second list, while correcting the errors they made. Our list differed from WRR's in dropping two rabbis and including three others. One rabbi who fits the selection criteria could not be included because he appears incorrectly in WRR's first list.

2.   Emanuel was shown the spelling rules and table of appellations for WRR's first list as they first appeared in WRR (1986). He then compiled a parallel table of appellations for our list of 33 rabbis, attempting to follow the rules and practices of WRR's first list.

3.   To mimic WRR's processing of dates for their first list, we used the dates given by Margaliot except in the cases where Emanuel either found an error or found an additional date. In some cases Emanuel regarded a date as uncertain, in which case we followed WRR's practice of leaving the date out. Overall, Emanuel changed more of Margaliot's dates than WRR did.

4.   The resulting list of word pairs was processed using WRR's permutation test.

The result of applying WRR's permutation test was that the least permutation rank of P1 _ 4 was an uninteresting 0.254.

There are some syntactic differences between Emanuel's list and WRR's first list, namely that Emanuel was sparing in use of articles and sometimes used a one-letter abbreviation for "Rabbi". We pointed out these differences to Emanuel, who then made some changes to his list. Because of our intervention, the new list cannot be said to be as a priori as the original, but it is arguably closer to the practices of WRR's first list. The new list gives permutation ranks of 0.154, 0.054, 0.089, and 0.017 for P1 _ 4, respectively. Applying the Bonferroni inequality as in WRR94, we have an overall significance level of 0.066.

This negative result is all the more conclusive if we realize that our experiment had some clear biases towards WRR's experiment. The definition of the set of rabbis, the introduction of P3 and P4 (only P1 and P2 appeared with the first list) and, most importantly, the definition of the permutation test, were under WRR's control when they ran their second experiment and were merely copied by us. Thus, we were vulnerable to any systematic bias that existed in those decisions, as well as to the possibility that WRR knew some examples from their second list earlier than acknowledged. We can only partly compensate for these biases. Using only P1 and P2 changes the overall result to 0.108. Using the permutation test of Diaconis (discussed in Sections 3 and 4) rather than the test invented by WRR, the results are even worse: 0.647 using the average and 0.743 using the minimum.

We believe that these experiments clearly establish that the success of WRR's experiment was primarily due to the choices made in compiling their lists and not to any genuine ELS phenomenon in Genesis. The data for the above three experiments can be found at McKay's web site (1999b)."

To evaluate their claims, it is necessary to first examine their lists. But, wonder of wonders, despite their reference to McKay's web site, MBBK only published the lists *more than six months* after their paper was first published on the same web site, and even that only after we demanded it. A perusal of the published lists reveals that:

a) These are not **all** the lists.

b) The lists contain some unclear and even puzzling matters.

So we turned [3] to their expert, Dr Simcha Emanuel, for clarification. Dr Emanuel politely objected that he could give no information without the permission of those who ordered his services. We sent a fax [4] to Emanuel listing all our questions at that stage. We also questioned him on why he shouldn't answer us freely if MBBK referred to him as "an independent consultant" (see above quote).

Seven days later, Emanuel informed us [5] that he could now answer. (We will deal with the answers themselves and their implications later). Upon telling him we had more questions, he replied that needed further permission. We again expressed our surprise at this. He explained that he had been hired privately, and not through the academy (we didn't understand this answer).

We describe all this not to criticize Dr Emanuel, who was most polite and candid, but to show the difficulty in getting uncensored information.

We thoroughly examined the material which included the lists publicized by MBBK, the information received from Dr Emanuel during our conversations with him [3] [5]-[8], and various excerpts where MBBK quoted their expert. All this made clear that their experiment was indeed important and instructive. We drew the following significant conclusions:

- There is statistical evidence of (to quote MBBK), a "genuine ELS phenomenon in Genesis".
- What MBBK did concerning the list ascribed to Dr Emanuel and used for their main experiment appears to be a simple deception. (This is yet

another example, among many others [9]-[13], of practices which cast grave doubt on MBBK's integrity.)

In this paper, we will examine the following:
Chapter I will discuss MBBK's procedures. Chapter II will deal with statistical evidence for the codes which can be deduced from Dr Emanuel's work. In Chapter III we will investigate the source of the differences between Emanuel's and Havlin's lists.

Chapter I.   The Masquerade of Scientific Research

In this chapter we will discover that MBBK's seemingly "independent experiment" was actually conducted by methods that seem like utter deception. MBBK's purpose was twofold: To create conditions which would lead to their experiment failing, and at the same time to conceal an important fact—that in reality Emanuel's **real** data indicates that WRR's success was due not to "cooking" of names and appellations (as MBBK claim), but to the presence of a genuine code (as we will show in chapter II).

Note: In this chapter we will not criticize Dr Emanuel's data. The following discussion will treat his data as if it is correct. Also, we will use MBBK's terminology "corrected dates", although we do not agree that this is necessarily true.

1.   Games people play:

(A)   MBBK ordered a number of lists from Dr Emanuel. Here we will discuss the three lists prepared as alternatives to Havlin's second list (L2).

List a:

This list was prepared for the 32 rabbis of L2 with no guidelines or protocol from MBBK. Emanuel "collected names as he found them mentioned in the literature" [6]. (This list was publicized by MBBK on the Internet, and is brought in our appendix).

After conducting experiments on "list a", MBBK ordered appellations for a different list, "list b", consisting of 35 rabbis.

List b:

This list was prepared for 35 rabbis: the 32 original rabbis and three more. This time Emanuel was asked to examine Prof. Havlin's *first* list of names and appellations (L1), and the rules laid out in our first preprint ('86). Here too, no work protocol was established.

List c:

After Emanuel finished "list b", MBBK pointed out that he had ignored two obvious rules:

1. He wrote "R." instead of "Rabbi".

2. In many cases he didn't include appellations with ה״א as a prefix, unlike Havlin who included them in L1. (For example, Rambam - **Ha'** Rambam).

Emanuel sent a list of corrections to MBBK. He retained the corrected "list b" with its 35 rabbis. We will call it "list c".

Now MBBK prepared two lists of their own:

List b1: Emanuel's "list b", from which MBBK **removed** two rabbis (no. 5 and no. 16), **without Emanuel's knowledge** [6] [7].

List c1: Emanuel's "list c" which was "treated" as above: the same two rabbis were removed **without Emanuel's knowledge** [6] [7].

MBBK report (as we quoted at the beginning of this paper, from point #1 and onward) on the experiments of lists b1 and c1, as if those lists were purely Dr Emanuel's work. And they publicized "list c1" on the Internet in his name, without informing him of their changes ("list c1" is brought in the appendix).

MBBK's reported results are thus based not on Dr Emanuel's lists, but on their own.

Note: Bar-Hillel, Bar-Natan and McKay once did something like this before. Concerning the preparation of the list of names and appellations used in their experiment on *War and Peace,* they wrote in an article in *Galileo* [14]: **"Dror Bar-**

Natan and Brendan McKay, assisted by Prof. Menachem Cohen from the Faculty of Jewish Studies of the Bar Ilan University, accepted this challenge…"

Since Bar-Natan and McKay have little mastery of the Rabbinical Bibliography needed for such an enterprise, the reader must reasonably presume that Prof. Cohen prepared the list. But in reality, Cohen neither assembled this list, nor did he even assist in its compilation. When I publicized this in *Galileo* [15], they chose to respond [15] as follows:

> "Contrary to what may have been understood from our article, the list of names checked in *War and Peace* was not prepared with Prof. Cohen's help, it only underwent his evaluation in comparison to the Havlin list."

(Concerning this and additional related untruths, see our paper [13].)

(B)   Playing with dates:

MBBK, quoted earlier, say that Dr Emanuel also prepared an alternative list of dates. They say (at the end of the second paragraph):

> "Emanuel and Assaf commented on the accuracy of the dates given by Margaliot (1962) and corrected some of them (as had WRR)."

They did this in the framework of the first stage, which included an experiment on "list a" and an experiment on "list d" which they describe as follows:

> "The same exercise was then carried out with a list of rabbis that had not been used before, namely those whose entries in Margaliot's encyclopedia occupy from 1 to 1.5 columns and for whom there is a date of birth or death mentioned (except for those incorrectly included by WRR in their second list). For these 26 rabbis, the least permutation rank of $P1\_4$ was 0.404."

("List d" is included in our appendix).

In the second stage, MBBK performed experiments on lists b1 and c1. Later in their paper (paragraph 3), MBBK describe what they did:

> "3.   To mimic WRR's processing of dates for their first list, we used the dates given by Margaliot except in the cases where Emanuel either found an error or found an additional date. In some cases Emanuel regarded a date as

uncertain, in which case we followed WRR's practice of leaving the date out.” We see that only at this stage did they **add** dates or **omit** them (in cases of uncertainty). No such thing is mentioned for the first stage.

But MBBK publicized on the Internet "list a" which was used at the *first* stage, and it includes added dates and omits a "spurious" date, although such dates were supposedly only added and omitted at the *second* stage! Indeed, "list d" which was tested **together** with "list a" in the first stage, had **no** spurious dates removed.

It's also amazing that although MBBK write concerning the appellations:

> “Emanuel was informed which 32 rabbis appeared on WRR's second list and asked to prepare names and appellations for each of them,”

they nowhere mention asking him to check or emend any dates. So we feel justified in asking:

- What was written in their protocol? To check dates or not?
- If their protocol included working with new dates, why didn't they ask Emanuel to prepare them?
- How can the second stage protocol give an instruction "to mimic", if Emanuel was never told to check dates in order “to mimic”? Emanuel couldn't have "mimicked" on his own initiative because he didn't know that this was done by WRR for the first list, and MBBK couldn't have "mimicked" because it would have been forbidden to do so *a posteriori*!

We tried to clarify all this with Dr Emanuel. According to him [8] the following picture emerges:

(1) MBBK gave no written requests. There was only a verbal conversation.
(2) Even in this conversation, MBBK did not ask him to examine all the rabbis' dates. The sequence of events was as follows (we quote Dr Emanuel [8]): "…At a certain stage I understood that this matter interested them. Perhaps they asked it for one particular rabbi and then I went and did the same for them all…"
(3) Concerning *when* the dates were emended: Dr Emanuel said that he thinks (but is not sure) that at the time "list b" was being prepared, he already had the great

majority of the dates, perhaps all of them. "So I think". When we asked if it was done any earlier than "list b", he gave a vague reply that while working on the lists he understood that accuracy in the dates was important.

This disturbing procedure is even more puzzling if we remember that MBBK are manifestly in favor of a clear protocol: In *Chance* they even attacked WRR for lack of protocol [16].

In light of the manipulation uncovered in section (A), we surmise that MBBK specially created a situation where they would receive an emended list of dates, but never be obliged to use it because they had never officially ordered it. They also left themselves a third option: To use only correction(s) of the specific rabbi(s) for whom they had requested an examination of the date(s)…

In conclusion, MBBK's appellation lists ("list b1" and "list c1") and date emendation are "contaminated" and **useless** for any experiment. We are left with the default choice: To use Emanuel's appellations for the 32 original rabbis, and to use the original dates.

(C)   Forgotten considerations:

Later, in chapter III sec. 1, we will report various questions we asked Dr Emanuel. In many cases Emanuel responded that he did not know what to answer. At the time he created the lists he was familiar with the material: Perhaps he had decided differently than Havlin, perhaps he had erred. He couldn't remember the considerations behind his decisions. Nor did he wish to redo his work.

We believe Dr Emanuel. These questions were asked a year after he prepared the lists, and it is plausible that he forgot details of a project that did not interest him [8] and was done as a sideline.

But we do have a complaint against MBBK. They concealed their lists before publicizing their paper in *Stat. Sc.* Afterwards they still refused to publicize them for some months, even though their paper claimed that they were available on Internet. By the time they finally publicized them (at our request) so much time had elapsed

that their expert had already forgotten his considerations and could not submit them to public scrutiny. Those who maneuvered this sequence of events certainly had an interest in the subsequent result.

It is very possible that all these disturbing activities could have been avoided if MBBK had agreed to a suggestion we publicized several times [15] [17]—that an independent unbiased expert do everything in mutual agreement under controlled conditions. But MBBK has refused to do this for over two years, preferring their own creative methods.

2. Smokescreens:

(A) MBBK ascribe WRR's success to data "cooking". In MBBK's discussion of the various possibilities of "cooking" the data of the second list (L2), they mention three elements which could have enabled the hypothetical "cooking":

a. Freedom in the choice of rabbis (pg. 155 of their paper);

b. Freedom in choice of dates (pg. 155);

c. Freedom in choice of appellations (page 156).

MBBK consider *component c* as the main factor, and they emphasize this throughout their paper. For example, at the beginning of section 7 (page 157):

> "In the previous sections we discussed some of the choices that were available to WRR when they did their experiment, and showed that the freedom provided just in the selection of appellations is sufficient to explain the strong result in WRR94 [i.e. the strong success of L2]."

On the other hand, it can be easily shown that there was no exploitation of *components a and b* to improve WRR's result: Correcting the list of personalities according to MBBK's criterion [see later paragraph (B)2], and correction/addition/deletion of dates (according to their expert), would bring about an overall **improvement** of the original result for L2 [i.e. min(P1-P2), the only measure of success used for the original list] by a factor of 3.4.

[Note: Even if we subscribe to MBBK's dubious arguments and exclude Rabbi David Ganz

from the list, there is still an **improvement** by a factor of 1.8, and even if we use the criteria MBBK just invented for including rabbis (see later paragraph (B)3), we still see an improvement, albeit a smaller one.]

Therefore MBBK themselves, through their criteria of rabbis and their "corrected dates", enable us to prove that **our choices in the second list were disadvantageous.** We indicated elsewhere ([11], chap. III) that MBBK of necessity had to create the impression that all three components were essential, because they themselves needed all three to "cook" their *War and Peace* list.

The next section will reveal another important benefit achieved by that "impression": Concealment of the fact that an experiment based on Dr Emanuel's appellations for the 32 original rabbis actually **succeeded.**

(B)   The conventional scientific approach in researching a complex phenomenon is to isolate its components and examine them separately. Therefore, in a correct scientific work, *component c* ("the freedom in choice of appellations") should have been examined separately. This would apply even if we thought all three components were significant. How much more so considering that we know *component c* is the only important one (see paragraph (A)). [Note how Brendan McKay describes in his letter of July '97 to TCODE (an Internet discussion group on Torah Codes) members, the preparation of his list for "War and Peace":

> "Using the same rabbis and the same dates, it is possible to make up an alternative set of appellations… ". (Emphasis mine).

By the way, this protocol was never fulfilled (see [13]).]

But MBBK ignored this elementary scientific principle, preferring to deal with all factors at once. They have an excuse. They wanted to "mimic" WRR's work methods. But we will see that they did no "mimicry" of WRR, nor any scientific investigation. Instead they deliberately "cooked" data to make their experiment seem a failure.

Because they ordered appellations of 35 rabbis from Dr Emanuel, their only honest choice was to use all 35 for their experiment. On the other hand, there would

have been no logic in that, since the 35 rabbis were selected according to contradicting criteria. They could either have used WRR's original 32 rabbis, or their own list of rabbis (prepared according to their criterion). But neither list would have been the list of 35 rabbis ordered by them!

Therefore it seems that they never intended to include *all* 35 rabbis in their experiment. On the contrary, it appears that they intended to choose a subset of rabbis for their experiment tailored to achieve the desired result. They had two options in choosing such a subset:

(1).   The default choice would have been to use all the 32 original rabbis. Scientifically, this is the best choice, because it isolates *element c* as explained above.
(2).   To take those rabbis who satisfy their criterion for inclusion in the list. [At least this choice had some excuse (mimicry…)].

We know their criterion to include rabbis in L2 from a letter of 27 Nov. '96 [18]: According to the examples brought there, their criterion is text size (excluding headings) of a column and a half, i.e. a column and seventeen lines. This criterion is constantly reiterated over the years in various versions of McKay and Bar-Natan's article, "ELSs in Tolstoy's *War and Peace*" [19]. They write there:

"We remove Rabbi II-20, Rabbi Yosef Teomim. His entry in *Enc. Margalioth* has less than 1.5 columns, contrary to the selection criteria of WRR".

Actually, the entry for R. Yosef Teomim in Encyclopedia Margaliot, is a column and 16 lines (excluding headings), or a column and 17 lines including headings.

However, they surprisingly chose a *third* option.
(3).   To take a list "corrected" according to a *new* criterion of including rabbis. This time they included the heading in the number of lines [thus including, amongst others, R. Yosef Teomim, and R. Yehosef Hanagid of whom they explicitly wrote (in the above sources) that they failed to meet the 1.5 column criterion].

Until now we discussed the options for creating a subset out of the set of 35 rabbis.

But they still had room to maneuver with the dates. They could test the appellations of the chosen rabbis:

(4).   With the original dates.

(5).   With the dates of their expert.

(6).   With the original dates, correcting only those that they requested.

Therefore, even after they decided to ignore the natural choice (option 1), they still had 2x3 *a posteriori* choices. Since we have no data for option (6), we can calculate only the four following results:

(a). (2)+(4):   r4=0.0048, therefore the overall significance is r=0.019,

(b). (2)+(5):   r4=0.0117, therefore the overall significance is r=0.047,

(c). (3)+(4):   r4=0.0052, therefore the overall significance is r=0.021,

(d). (3)+(5):   r4=0.0163, therefore the overall significance is r=0.065.

But MBBK had yet another choice. According to option (2) or (3), they should have included R. David Ganz in the list. But they did not. They explain that R. David Ganz was already included in the first list. But there is no doubt that had they wanted to include him they could have argued the exact opposite: That he precisely meets the criterion to be included in the list. Let's examine the following four results:

(e). (a) + R. David Ganz: r4=0.0014, therefore the overall significance is r=0.0056,

(f). (b) + R. David Ganz: r4=0.0038, therefore the overall significance is r=0.015,

(g). (c) + R. David Ganz: r4=0.0015, therefore the overall significance is r=0.0062,

(h). (d) + R. David Ganz: r4=0.0058, therefore the overall significance is r=0.0058.

Not surprisingly MBBK chose option (d), which gives the worst significance. (Further discussion concerning the dates may be found in our paper [20]).

Having "cooked" the results of their experiment, they could confidently announce:

> "We believe that these experiments clearly establish that the success of WRR's experiment was primarily due to the choices made in compiling their lists and not to any genuine ELS phenomenon in Genesis."

Now that we have seen what MBBK did, let's examine what they should have done. Let's return to the default choice: To take the 32 original rabbis [option (1) in the

previous paragraph]. Scientifically, this is the *a priori* correct choice because it isolates *element c* ("The freedom in choice of appellations"). As we have seen in this chapter it is also the only possible choice, since MBBK's data were *contaminated*.

Chapter II.   New Statistical Evidence for a Genuine Code in Genesis.

We will now check whether the list of names and appellations chosen by Dr Emanuel and intended to mimic the original list (L2), is really a failure in the original experiment's conditions. In other words, we will investigate what would have happened had WRR used Dr Emanuel's names and appellations in their experiment instead of those chosen by Prof. Havlin. Therefore, we will take <u>the same 32 rabbis who appeared in the original list, and the original dates</u>, while using the names and appellations prepared by Emanuel in his emended list, *"list c"* (See chap. I sec. 1).

1.   <u>A reconstruction of Dr Emanuel's *"list c"*</u>:

Most of the names and appellations of *"list c"* are found in "list c1" which was publicized by MBBK. The first 30 rabbis (of 33) are from the original list (L2) which consisted of 32 rabbis. For the remaining two Dr Emanuel prepared appellations. But MBBK omitted them without his knowledge and did not publicize them on the Internet. A conversation [7] with Emanuel helped us to deduce the missing appellations:

For no. 5:   רבי אהרן, רבי אהרן הגדול.

For no. 16:   רבי יהודה, עאיאש, עיאש, יהודה עאיאש, יהודה עיאש.

Thus we managed to reconstruct the whole *"list c"* of Dr Emanuel.

2.   <u>Measurements and results</u>:

We created a sample, which has the same 32 Rabbis who appeared in the original experiment. Their names and appellations are taken from *"list c"* of Emanuel, and the dates are the same as in the original experiment. All the expressions are 5-8 letters long, exactly as in the original experiment.

This sample, which we will call EM3, has 102 "name-date" pairs which appear in Genesis as ELSs (L2 has 163). Omitting the standard appellations of the "Rabbi X" type, we get sample EM'3 which has only 63 such pairs (L'2 has 126).

The measurements were made the same as in the original permutation test. Two statistics, r1 and r2, measure the whole sample EM3, and two statistics, r3 and r4, measure EM'3.

The results:

For the same 999,999 permutations used in the original permutation test, we get:

r1=0.0032, r2=0.0026, r3=0.0045, r4=0.0009.

Therefore:

> The overall significance is: r=4×r4=0.0036.

3.   The Meaning of the result:

The result is undoubtedly significant, and proves that the phenomenon indicated by WRR indeed exists.

On the other hand, the significance is far smaller than that of WRR's original experiment. Therefore, a question arises: Is this result consistent with the original result or not?

(A)   The final result of each of the two experiments was obtained through r4. It appears that the difference in the values of r4 arises mainly because EM'3 has only 63 pairs, while L'2 has many more pairs, 126. This simple fact sufficiently explains the gap in the results:

(1).   WRR's final result in the original experiment came from accumulation of the $c(w,w')$ values for the word pairs *(w,w')*. Therefore it can be anticipated that reducing the number of pairs would bring a drop in the significance of the remainder. If we remove half the pairs, (even randomly), the new result would expectedly be (roughly) the square root of the original result. Therefore, a change from 126 pairs to 63 pairs

could be expected to worsen the original result (which was 0.0000007), a thousand fold.

(2).   We performed the following experiment:

(a) From L'2 we randomly chose a subgroup of appellations, so that the number of name-date pairs created by these appellations would be exactly 63. Thus we got a sub-sample of the original containing 32 rabbis and 63 name-date pairs.

(b) We measured this sub-sample using statistic r4.

(c) We repeated steps (a)-(b) 500 times.

(d) We counted how many times the statistic r4 received a value greater than 0.0009 (the result of EM'3).

The result of the experiment:

In 120 cases out of 500, r4 was bigger than 0.0009.

Conclusion: Even though the value of r4 for L'2 was as low as 0.0000007, the probability that a sub-sample of 63 pairs will have r4 bigger than 0.0009 is quite high:

$$p=0.24.$$

Therefore, the result obtained for EM'3, which has only 63 pairs, is consistent with WRR's original result for L'2, which has 126 pairs.

(B)   In the quote at the beginning of this paper, MBBK also cast aspersions on the measuring procedure. Because their objections relate to the original experiment this is not the place to discuss them. Elsewhere [9] [10] we explain why these assertions are fallacious, and why their suggestion to measure with the "arithmetic average" is mistaken. Concerning measuring with "minimum", it turns out that the results for EM3 are min(r1-r4)=0.0056, which is consistent with the result obtained for L2 using this method.

(C)   If we examine how many appellations (appearing as ELSs in Genesis) Emanuel added as compared to L'2, it turns out to be **four** appellations and one exchange of spelling. **That's all!**

If we add Emanuel's additions to L2, and change his one spelling, we get a list that we will call L2EM3. It turns out that for min(P1-P2) (the only criterion for success when L2 was prepared), we receive **the same result** for L2EM3 as for L2. [It is interesting to note that in the permutation test on L2EM3 the result improves fourfold!]

This proves that the few appellations added by Emanuel onto L'2, were not omitted by Havlin with intent to improve the results: they were omitted for entirely different reasons.

In the following chapter we will explain, among other things, **why** Dr Emanuel chose less appellations than Prof. Havlin. Here we will just mention, that using MBBK's "study of variations" to see whether the appellations chosen by Havlin and omitted by Emanuel were a result of "cooking" shows no such indication. (See [11], chap. V).

Chapter III.   Emanuel's List

We saw in the previous chapter, that Dr Emanuel's *"list c"* constitute a basis for a proof to the validity of WRR's original experiment. Now let's examine *"list c"* itself.

1.   Why did Emanuel choose less names and appellations than Havlin?

In the previous chapter we explained that EM'3 (which was built from *"list c"*) has about half the number of "name-date" pairs as L'2. This is because the number of names and appellations (which have 5-8 letters and which have an ELS in Genesis) in EM'3 is 28, compared to the 52 names and appellations in L'2.

Why did Emanuel choose less names and appellations than Havlin?

(A)   The subject of names and appellations is a field of research in itself (onomatology). To prepare a list like L2 requires a knowledge of Jewish history, especially Rabbinical bibliography, as well as linguistic expertise. Here are some facts about Prof. Havlin.

- For six years he was head of the Information Studies & Bibliography

Department at the Bar Ilan University.

- In his field of expertise he published a book, dozens of biographies and many articles.
- He is the editor of *Alei Sefer*, a journal of Hebrew bibliography and booklore, since '84.
- Names are certainly not his chief occupation, but he has devoted time and thought to this subject: In the bibliographies mentioned above (especially those he wrote for the *Encyclopedia Judaica*), he indicated various names and appellations and commented on them. Concerning the theoretical side of the subject, he gave a lecture at the meeting of the Israeli Society of Genealogy (in whose meetings he participates.)

Dr Emanuel is presented by MBBK as an expert. He is indeed. He is a researcher at the Tel Aviv University, and his field of expertise is Jewish History (mainly medieval). He says [6]-[8] that his chief interest is the history of rabbis and their place in Jewish History. But he does not regard himself as an expert in appellations, and this subject doesn't particularly interest him. He considers the work he did for MBBK "uninteresting" and has no interest in any more such work. He said that he finds it most uncomfortable working within the constraints of linguistic rules laid down in WRR's first preprint, and he is not used to spelling according to the *grammatical orthography*.

Now, suppose two experts are requested to collect data of certain kind:
- Expert A is expert and interested in the requested data.
- Expert B is neither particularly expert nor interested in this data.

Wouldn't expert A demonstrate more knowledge and thoroughness than expert B in doing the job?

Therefore, is it a surprise that Havlin listed more names and appellations than Emanuel?

(B) We asked [6]-[8] Dr Emanuel about some of his decisions concerning names and appellations.

(1).   We asked why he had omitted certain names and appellations (which Havlin included) which do not seem uncommon in Torah literature.

Dr Emanuel replied that he did not know what to answer. At the time he had thought about the matter: Perhaps he reached a different conclusion than Havlin, perhaps he erred. At present he could not reconstruct his considerations. And he did not wish to redo the work.

(2).   While creating *"list b"* (and *"list c"*), Emanuel omitted certain names and appellations which he had included in *"list a"*. This happened as a result of his examining L1 and the linguistic rules. In several cases we could not understand how his omissions derived from the rules, and we asked him to explain.

Dr Emanuel replied that at this stage he could not explain.

(3).   We asked him about certain inconsistencies in his decisions.

Dr Emanuel replied that at this stage he did not know. Perhaps he erred, perhaps not. "If you like, write a critique. Say that I was inconsistent".

(4).   We asked about deviations from the rules derivable from L1.

Dr Emanuel could not explain this at present, due to the long time since he made his considerations. MBBK writes (in quote at the beginning of this paper) that after Dr Emanuel finished his list, it became clear that:

> "There are some syntactic differences between Emanuel's list and WRR's first list, namely that Emanuel was sparing in use of articles and sometimes used a one-letter abbreviation for "Rabbi". We pointed out these differences to Emanuel, who then made some changes to his list."

In other words, according to MBBK, Emanuel failed to notice two elementary rules in writing appellations. Actually, he missed some more, but MBBK only drew his attention to the most obvious. We think there is a simple reason for this: They were worried that any Hebrew speaking person would easily notice that Emanuel did not work according to the rules derived from L1, and then their goal (to present his work as based on Havlin's rules) would not be achieved.

(5).   We asked about a number of deviations from linguistic rules, pointing out the necessary emendations.

He replied, "I think some of your spelling corrections are justified", and he added, "Well, now you'll have something to answer back with".

<u>Comment:</u> Concerning the appellation ״מגני שלמה״ which he wrote as ״מגיני שלמה״, with an added letter, he thought that he had not erred, because there are bibliographic texts with his version. But we pointed out that those books consistently used "full spelling", including extra letters and not the *grammatical orthography*, and could not be relied on for spelling.

It should be emphasized, that Dr Emanuel was not asked by MBBK to prepare, and did not prepare, a list of rules derivable from L1. All his work was based on his intuitive impressions of L1. Under such conditions it is not surprising that he could not answer most of our queries.

<u>In conclusion:</u>

In light of all this, it is perfectly understandable why it is possible and even anticipated that EM'3 would include less names and appellations than L'2.

2.   <u>The importance of Dr Emanuel's *"list c"*:</u>

The importance of Dr Emanuel's *"list c"*, which is the basis of EM'3, is not because it is more correct and accurate than L2. On the contrary, it is certainly worse in those respects. The importance of Dr Emanuel's *"list c"* is in it's being completely <u>unbiased towards WRR</u>. Any possible bias was to MBBK's benefit:

- For example, because MBBK originally told Emanuel to create *"List a"* with no instructions, rules or guidelines, he had bias towards his original list when he made *"list b"* and *"list c"* (since a person favors his prior decisions, and tries to reconcile them to new circumstances).

- We saw in chapter I sec. 1(B) that MBBK gave instructions relating the dates, through *"hints"*. Who knows how, and how often, such *"hints"* were given concerning appellations?

3. <u>Concerning further lists:</u>

We would like to remark about two of Emanuel's lists *("list a"* and *"list d"*) which were tested in the first stage of MBBK's experiments.

- These lists can't be considered as mimicry of L2, because they lack the constraint imposed on L2: that it should be compatible with L1.
- We think that MBBK's experiments have no statistical value. MBBK's interference in preparation of at least part of the data (see chapter I sec. 1), puts all their data under suspicion of *contamination*.

But, beyond anything else, these lists do not constitute a replication of the original list. MBBK knows very well that we do not claim that the Genesis Code includes initials and abbreviations of names, unless they are usually *pronounced* (like regular names). We claim that the Code includes regular words, names and appellations. "Appellations" includes abbreviations, which are *pronounced* (like regular words and names i.e., NASA). This is not only evident from what is included in L1, but also clarified explicitly by Prof. Havlin [21]. But MBBK did not instruct Emanuel to include only appellations, so he included *many* examples which he admits [8] are *not* appellations but simple abbreviations.

In other words, experiments are being done using lists consisting *mainly* of expressions which no one ever claimed would be encoded in Genesis. The results are then presented as refutation of the original claims! Meanwhile, the reader has no way of knowing what was actually included in their lists. Is there any greater deception than this!?

For the purposes of this paper let this suffice.

Appendix

For the reader's convenience, here are the three lists, which MBBK publicized in DR
Emanuel's name.

1.   Emanuel's "list a":

Here is Emanuel's "list a" as publicized by MBBK (including their notes):

```
# Version of WRR's second list prepared by Simcha Emanuel and David
# Assaf without seeing the work of WRR/Havlin.
```

16 1 ראאבדמנרבונא ראאבד ראברהמאבדמנרבונה ראברהמאבדמנרבונא ראברהמאבד
רבאבדמנרבונא רבאבד ראביאבדמנרבונה ראביאבדמנרבונא ראביאבד ראאבדמנרבונה
גדוליקדמוניינושבנרבונה גדוליקדמונינו ראבד ראבי רבאבדמנרבונה
חשונ/כ/

2 1 סיונ/יג/   ראיצחקי ראברהמיצחקי

3 1 תשרי/יב/   ראברהמבנדבבערהמגידממעוזריטש הקדוש ראברהמהמלאכ

5 0 ראסבע ראברהמסבח ראברהמצבא ראברהמצבע ראברהמסבע

3 1 ניסנ/יט/   ראמקרלינ ראהרנבניעקבמקארלינ ראהרנההגדולהמקארלינ

1 1 כסלו/כב/   ראליעזראשכנזי

2 1 תשרי/ז/   רדאופנהיימ רדודאופנהיימ

2 0 רדהנגיד רדודהנגיד

4 1 טבת/כח/   רדניטו הדנ דנ רדודניטו

2 1 ניסנ/ו/   רחאבולעפיה רחיימאבולעפיה

2 1 אלול/יט/   רחבנבנשת רחיימבנבנשת

2 1 שבט/יב/   רחכפוסי רחיימכפוסי

4 1 ניסנ/יג/   רחשבתי מהרחש רחש רחיימשבתי

3 1 טבת/א/   ריחבכרכ שמעוניאירחיימבכרכ ריאירחיימבכרכ

4 0 ריחסיד ריהודהחסיד ריהחסיד ריהודהההחסיד

3 1 תשרי/א/   ריעייאש ריהודהעאייאש ריהודהעייאש

2 2 תשרי/יא/ טבת/ט/   ריהנגיד ריהוספהנגיד

1 1 אב/כז/   ריהושעבריוספמקראקא

3 1 מהרימט מהריט ריוספמטראני /תמוז/יד/

3 1 ריתאומים פרימגדים ריוספתאומים /איר/י/

6 1 ריעקבביריב ריבר מהריבירב מהריביריב ריביריב ריבירב /איר/א/

3 1 רייחגיז רייחאגיז ריעקבישראלחאגיז /שבט/כו/

9 1 מהרימולינ ריעקבמולינ מהריל מהריעקבבסל מהריעקבבסגל מהריסל מהריסגל
ריעקבהלוימולינ רימולינ /אלול/כב/

3 3 סיונ/יה/ סיונ/טו/ ניסנ/ל/ ריעמדינ יעבצ ריעקבעמדינ

3 1 ראיציקלמהאמבורג ריצחקמהאמבורג ריצחקהלויהורוביצ
/איר/ו/

4 1 רממקרוכמל רממקראכמאל רמנחממנדלקרוכמל רמנחממנדלקראכמאל /שבט/ב/

3 2 רמזכות רמז רמשהזכות /תשרי/יו/ תשרי/טז/

2 1 רממרגלית רמשהמרגלית /טבת/יב/

2 1 רעפיגו רעזריהפיגו /אדרא/א/

3 3 רעמנואלחיריקי אהאחררפה ררפאלעמנואלחיריקי /תמוז/יה/ תמוז/טו/ אדר/א/

4 1 רשרעבי שמש רשש רשלומשרעבי /שבט/י/

2 1 רשלמהחעלמא רשלמהמחלמ /תמוז/כא/

2. **MBBK's "list c1":**

Here is MBBK's "list c1" as publicized by MBBK under the name of Dr Emanuel
(including their notes):

```
# Corrected second list, as prepared by Simcha Emanuel with
# knowledge of the rules and appellations in WRR(1986)
```

11 1 רביאברהמאבדמנרבונא אברהמבניצחקמנרבונה אברהמבניצחקמנרבונא רביאברהמ
בעלהאשכול האשכול הראבי הראביאבד ראבי ראביאבד רביאברהמאבדמנרבונה
/חשונ/כ/

3 1 אברהמיצחקי יצחקי רביאברהמ /סיונ/יג/

3 1 רביאברהמהמלאכ אברהמבנדבבערממעזריטש רביאברהמ /תשרי/יב/

5 0 בעלצרורהמור צרורהמור אברהמסבע סבע רביאברהמ

3 1 אליעזראשכנזי אשכנזי רביאליעזר /כסלו/כב/

3 1 דודאופנהיים אופנהיים רבידוד /תשרי/ז/

דודבנאברהמהנגיד רבידוד ‏ 0 2

טבת/כח/ ‏ ‏ הדנ דנ דודניטו ניטו רבידוד ‏ 1 5

ניסנ/ו/ ‏ ‏ חיימאבואלעאלפיא חייםאבולעלעפיה אבואלעאלפיה אבולעלפיה רביחיימ ‏ 1 5

אלול/יט/ ‏ ‏ בעלכנסתהגדולה כנסתהגדולה חיימבנבנשת בנבנשת רביחיימ ‏ 1 5

שבט/יב/ ‏ ‏ רביחיימבעלהנס חיימכפוסי כפוסי רביחיימ ‏ 1 4

ניסנ/יג/ ‏ ‏ המהרחש הרחש מהרחש רחש חיימשבתי שבתי רביחיימ ‏ 1 7

טבת/א/ ‏ ‏ בעלחוותיאיר חוותיאיר יאירחייםבכרכ בכרכ רבייאירחיימ ‏ 1 5 ‏ ‏ ‏ ‏ [See note]

רבייהודההחסיד רבייהודהחסיד יהודהסגלמשידלוב רבייהודה ‏ 0 4

תשרי/יא/ טבת/ט/ ‏ ‏ יהוספבנשמואלהנגיד רבייהוספ ‏ 2 2

אב/כז/ ‏ ‏ בעלמגינישלמה מגינישלמה יהושעבנ יוספפמקראקא רבייהושע ‏ 1 4

תמוז/יד/ ‏ המהרימט המהריט מהרימט מהריט יוספבנמשהמטרני יוספבנמשהמטראני רבייוספ ‏ 1 7

איר/י/ ‏ ‏ בעלפרימגדימ פרימגדים יוספתאומימ תאומימ רבייוספ ‏ 1 5

איר/א/ ‏ ‏ יעקבבירב בירב רבייעקב ‏ 1 3

שבט/כו/ ‏ ‏ יעקבישראלחגיז יעקבישראלחאגיז חגיז חאגיז רבייעקבישראל ‏ 1 5

אלול/כב/ ‏ ‏ המהריל מהריל יעקבהלוימולינ רבייעקב ‏ 1 4

סיונ/יה/ סיונ/טו/ ניסנ/ל/ ‏ ‏ היעבצ יעבצ יעקבעמדינ עמדינ רבייעקב ‏ 3 5

רביאיציקלמהאמבורג רבייצחקמהאמבורג יצחקהורוביצ הורוביצ רבייצחק ‏ 1 7
‏ ‏ ‏ ‏ איר/ו/ ‏ ‏ רביאיציקלמהמבורג רבייצחקמהמבורג

שבט/ב/ ‏ ‏ מנחממנדלקרוכמל מנחממנדלקראכמאל קרוכמל קראכמאל רבימנחממנדל ‏ 1 5

תשרי/יו/ תשרי/טז/ ‏ ‏ הרמז רמז משהזכות זכות רבימשה ‏ 2 5

טבת/יב/ ‏ ‏ בעלפנימשה פנימשה משהמרגלית מרגלית רבימשה ‏ 1 5

אדרא/א/ ‏ ‏ בעלגדוליתרומה גדוליתרומה עזריהפיגו פיגו רביעזריה ‏ 1 5

בעלמשנתחסידימ משנתחסידים רפאלעמנואלחיריקי ריקי רבירפאלעמנואלחי ‏ 3 5
‏ ‏ תמוז/יה/ תמוז/טו/ אדר/א/

שבט/י/ ‏ ‏ הרשש רשש שלומשרעבי שרעבי רבישלומ ‏ 1 5

תמוז/כא/ ‏ ‏ בעלמרכבתהמשנה מרכבתהמשנה שלמהבנבשמהמחלמ רבישלמה ‏ 1 4

תמוז/כא/ ‏ ‏ רביאליהבעלשמשל אליהלואנצ לואנצ רבישלמה ‏ 1 4

חנוכבנמשה רביחנוכ 0 2

רבימאיראש מאיראייזינשטאט מאיראייזינשטאט אייזנשטאט אייזנשטט רבימאיר 10 1
סיון/כז/   בעלפנימאמירות פנימאמירות המהרמאש מהרמאש

Note: After publication of our paper, Dr Emanuel realised that the appellation חותיאיר is properly spelt חות יאיר. Correcting the error makes hardly any difference to the results of the experiment. The overall significance levels given in our paper as 0.066 and 0.108 are still true.

3.   Emanuel's "list d":

Here is Emanuel's "list d" as publicized by MBBK (including their notes):

Third list of rabbis, prepared by Simcha Emanuel and David Assaf
without seeing the work of WRR/Havlin.

ניסן/ל/   ראברודא ראברהמברודא 2 1

איר/יב/   רזאידליצ רזאיידליצ ראברהממשהזרחאיידליצ ראברהממשהזרחאייידליצ 4 1

ראהרנברכיהמודינא ראהרנברכיהממודינא ראהרנברכיהממודינא 5 1
תמוז/כו/   ראבממודינא ראהרנברכיהמודינא

ניסן/כא/   ראריהליבברשאול 1 1

אדר/כא/   ראמליזנסק ראלימלכבנאליעזרליפאמליז'ענסק ראלימלכמליזנסק 3 1

סיון/יג/   ראפרימהכהן ראפרימבריעקבהכהן 2 1

אדרא/ב/   רגבריאלעשקלסמקראקא 1 1

טבת/ד/   רגחפצ רגרשומחפצ רגרשמחפצ 3 1

טבת/כב/   רהיללברנפתליהירצ 1 1

סיון/ז/   רחיימאברהמישראל 1 1

ניסן/כב/   רירוזאניס ריהודהרוזאניס 2 1

ריעקבשאפורטאש ריעקבשאפורטה ריעקבששפורט ריעקבששפורטש 6 1
איר/ד/   ריששפורטש ישפה

איר/כח/   רימקורביל רימקורבייל בעלהחותם ריצחקמקורביל 4 1

תמוז/ו/   רייאלגאזי רישראליעקבאלגאזי 2 1

רמשהבריהונתנגלאנטי רמשהבריהונתנגאלאנטי רמשהבריהונתנגנגלנטי 8 1
שבט/כא/   רמגלאנטי רמגאלאנטי רמגאלאנטי הרבהמגן המגן

ניסנ/כא/   רממטראני מביט רמשהמטראני 1 3

שבט/כד/ כסלו/כד/ טבת/כד/   רנכצ רנפתליהכהנכצ 3 2

תמוז/כ/   רננהאנובר רננהנובר רנתננטעהאנובר רנתננטעהנובר 1 4

אב/יג/   רננשפירא רנתננטעברשלמהשפירא 1 2

אלול/י/   רפמקורצ רפנחסבנאברהמאבאמקארעצ רפנחסשפיראמקורצ 1 3

תמוז/ז/   רשאולבראריהליב 1 1

אלול/א/   רשאבואב רשאבוהב מהרשא רשבא רשמואלאבואב רשמואלאבוהב 1 6

ניסנ/ו/   מהרשיק רשקצנלבוגג רשמואליהודהקצנלבוגג 1 3

מהרששכ מהרששכ רשמואלברייוספפיוזפאשאטונהכהנ רשמואלברייוספפיוזפאשאטינהכהנ 1 4
תמוז/יד/

ניסנ/יה/ ניסנ/טו/   רשמורפורגו רשמשונמורפורגו 2 2

תמוז/כא/   תנחומירושלמי תנחומהירושלמי רתנחומ 1 3

Acknowledgments

Bibliography

1. Witztum, D., Rips, E. and Rosenberg, Y. (1994). Equidistant letter sequences in the Book of Genesis. Statist. Sci. 9 No. 3 429-438.
Available at http://www.torahcode.co.il/pdf_files/pub/wrr.pdf.
2. McKay, B. D., Bar-Natan, D., Bar-Hillel, M. and Kalai, G. (1999). Solving the Bible Code puzzle. Statist. Sci. 14 No. 2 150-173.
3. A telephone conversation with Dr S. Emanuel, 22 Dec. 1999, about 19:50.
4. A fax sent to Dr S. Emanuel, 23 Dec. 1999, about 20:30.
5. A telephone conversation (+fax) with Dr S. Emanuel, 30 Dec. 1999, about 18:10.
6. A telephone conversation with Dr S. Emanuel, 31 Dec. 1999, about 11:00.
7. A telephone conversation with Dr S. Emanuel, 31 Dec. 1999, about 13:00.
8. A telephone conversation with Dr S. Emanuel, 19 Jan. 2000, about 20:00.
9. Witztum, D. (1999). Concerning the statistical test that was published in our paper in Statistical Science. Available at
http://www.torahcode.co.il/english/pdf_files/persi2e.pdf

10. Witztum, D. (1999). Concerning the statistical test that was published in our paper in Statistical Science, Part B. Available at http://www.torahcode.co.il/english/pdf_files/persi4e.pdf.

11. Witztum, D., Beremez, Y. (2000). MBBK's Study of Variations. Available at http://www.torahcode.co.il/english/variate.html.

12. Witztum, D. (1999). The Nations Sample, Part II: The Range of Stories. Available at http://www.torahcode.co.il/english/pdf_files/nations2e.pdf.

13. Witztum, D. (2000). Of Science and Parody: A Complete Refutation of MBBK's Central Claim. Available at http://www.torahcode.co.il/english/pdf_files/parody1e.pdf

14. Bar-Hillel, M., Bar-Natan, D. and McKay, B. D. (1997). You Can Skip Also in War & Peace. Galileo. No 25 52-57.

15. Witztum, D. (1998). A Refutation Refuted. Galileo. No 26 75-76. Available at http://www.torahcode.co.il/english/pdf_files/galile.pdf

16. Bar-Hillel, M., Bar-Natan, D. and McKay, B. D. (1998). Torah codes: puzzle and solution. Chance 11 No. 2 13-19.

17. Witztum, D. (1998). The Seal of God is Truth. Jewish Action. 58 No. 3 25-32.

18. Bar-Hillel, M., Bar-Natan, D. (1996). A letter to R. Aumann, dated 27 Nov., question no. 5. Found in: Document 2 (1997). Bar-Hillel and Bar-Natan inquire – Witztum and Rips respond. Available at http://www.torahcode.co.il/english/pdf_files/docum2e.pdf

19.   Bar-Natan, D. and McKay, B. D. (1997). Equidistant letter sequences in Tolstoy's "War and Peace" (draft). http://cs.anu.edu.au/ ~ bdm/dilugim /WNP/draft. Bar-Natan, D. and McKay, B. D. (1999). Equidistant letter sequences in Tolstoy's "War and Peace". http://cs.anu.edu.au/ ~ bdm/dilugim /WNP.

20. Witztum, D. (2000). Concerning the choices of dates for WRR's Rabbis samples. Available at: http://www.torahcode.co.il/english/pdf_files/date1e.pdf

21. Havlin, S. Z. (1996). Statement of Opinion. Document 1, Available at http://www.torahcode.co.il/english/pdf_files/ havlin1e.pdf