

Response To Professor Sternberg

By Dr. Eliyahu Rips

I am writing in response to the public accusation leveled at me by Professor Shlomo Sternberg of Harvard, that I and my colleague Doron Witztum have "perpetrated a hoax" in our research into equidistant letters sequences in the book of Genesis. Professor Sternberg has made this accusation both in Notices of the AMS and in a coordinated attack in the scholarly journal Bible Review (August, 1997).

Let me first state for the record, unequivocally and firmly, that neither I nor anyone I am aware of has ever altered, falsified, or adjusted our data and/or measurement instruments so as knowingly to generate favorable research results, thereby "to deceive for sport or mischief," (the definition of a "hoax") nor for any other reason. He states that perpetrating a hoax is no "crime," but his ingenuousness is totally transparent: in the world of science there is surely no crime worse than deliberate falsification of research.

To have the accusation of "hoaxer" accepted by one's peers is tantamount to a professional death sentence. To attempt to whip up uninformed public sentiment to believe such an accusation, without benefit of judge, jury or trial, is akin to professional murder, known in the English vernacular, I am told, by the apt expression, "character assassination." This kind of behavior is reprehensible in anyone; but in a Rabbi and teacher of Talmud for over 45 years (as he describes himself in Bible Review), it is especially repugnant.

Let me now briefly address the content of Prof. Sternberg's attack. He offers two arguments, which, in his opinion, "give a concise explanation of why this is a hoax." The first argument reads:

"First of all, the 'decoding of these hidden messages' depends on the letter-for-letter accuracy of the current electronic (Koren) version of the Bible as being the original Hebrew version."

Sternberg's logic runs as follows:

- 1) If there is any hidden content (in the form of ELS pairs) in a text, they were encoded in the "original Hebrew version," which we do not possess today.
- 2) The current (Koren) version of the Bible differs from the original Hebrew version in many places.
- 3) ELS's are destroyed by the changes of the text, therefore even if they were encoded in the original Hebrew version, they will not survive in the current version.

4) The existence of meaningful, content-bearing ELS's in the current Koren version is therefore a-priori impossible.

But this analysis misses the fact that corruption of the text would have an entirely different effect on ELS's with short, medium size and long skips. While ELS's with long skips are likely to be destroyed by insertions and deletions of letters, most ELS's with short skips will remain intact. Even accepting Sternberg's count of "about one hundred discrepancies," there is still room to search for the residuals of a "hidden text".

It is important to stress that the approach of the paper in *Statistical Science* to the problem of a hidden text is a "reductionist" one. By this I mean that instead of trying to decipher "hidden messages" we are looking for statistically significant letter patterns. This is explained at the beginning of the paper on page 429. (The same explanation is also very clearly presented by Allyn Jackson on page 936, first column, in the same issue of *Notices of the AMS*.)

We have chosen for our analysis a specific pattern, namely, proximity (in a certain technical sense) of related words appearing as ELS's. Thus, everything is reduced to a statistical analysis of the significance of such proximity patterns. This analysis, after all is said and done, is a purely scientific problem, on the borderline of statistics proper and "pattern recognition." Similar problems arise and are studied in molecular biology and in the challenges of decoding potential interstellar communications. "Integrity of text" arguments may provide a basis for expecting such patterns or for doubting them (and therefore whether it is worth the effort to look), but as evidence, they are irrelevant.

The second argument reads: "... hidden messages" similar to those of Drosnin, Rips, and Witztum can be produced in any sufficiently long actual text, and such have in fact been produced." The proper scientific meaning of this statement is self-evident to readers of *Notices*, namely: "The insignificance of the letter patterns studied by Rips and Witztum can be clearly proved by comparison with control texts, where such patterns can be produced, and have in fact been produced."

But in any statistical analysis of research findings, the question of significance versus insignificance is decided by the balance of positive and negative outcomes, in control versus test cases, not merely the fact of even a large number of failures in the test case and a even large number of successes in the controls. If one performs 10,000 trials in which out of every ten nine fail, but the odds of a success are only 1 in 100, this is an indication of success, not of failure, in rejecting the null hypothesis. Sternberg is saying that in our research we hid, in a fraudulent way, by deliberate data manipulation, the actual balance of "failures" and "successes" in order to produce the false impression of a high significance level. Only in this fashion may one produce "similar" results in any other text. In other words, Sternberg's statement is not an assertion that control experiments give "similar results" in its proper scientific sense.

It means: "If one manipulates the data at will, then similar results can be produced in any text, and have in fact been produced in just this way." In other words, instead of giving "a concise explanation of why this is a hoax," Professor Sternberg merely states his unproven accusations in

language meant to lead the reader to presume (erroneously) that plain control experiments have disproved our claims.

What in the world could have been my motive in attempting a hoax, knowing that sufficient experimentation would certainly falsify it? Surely I would have to have become deeply and sincerely convinced of the reality of so extraordinary a phenomenon to be willing to present it to such eminent critics of such high qualification and skill; especially knowing how utterly at odds our claim is with their world-view. Anyone who understands how science works, knows that any real scientific recognition of an important new phenomenon occurs only after many independent observers confirm its reality through independent investigation. This is even more true when the claims are of an extraordinary nature.

Even if no defect were ever found in our original paper, the mere absence of independent confirmation would consign it to oblivion. What is not real is not real and never will be confirmed. One who understands this, has no slightest reason in the world to try to produce false evidence for non-existing phenomena. Neither do Sternberg's personal feelings about the subject matter—that it is "puerile," "sordid"—have any bearing on the validity of the scientific research. That Sternberg's letter strikes many professionals as, indeed, "puerile" and "sordid," would have no bearing on any legitimate criticism of our research he might one day develop as an alternative to personal vilification of those he disagrees with. There can be no scientific reason for declaring our research as illegitimate on a priori grounds. It may prove to be good science or bad science; it may prove valid or invalid. But the validity/invalidity of the research can be decided solely on the basis of evidence and dispassionate analysis. Neither can the speculated implications of a positive result (positive from our point of view; negative from Sternberg's) have any bearing on this analysis.

The commentary concludes with a harsh attack on four well known mathematicians who have signed the letter published in a 1988 book by Doron Witztum. This letter is temperate, cautious and carefully worded. In it, the four "encourage further study" of the ELS phenomenon and, knowing full well how easy it would be for reasonable skeptics simply to dismiss the matter without serious consideration, note that the research is "serious." Sternberg describes this as follows: "But the very fact that they banded together to form a committee consisting solely of mathematicians in writing their introduction in and of itself has given rise to the widespread notion that this enterprise is supported by mathematics. In so doing they have not only brought shame on themselves, they have disgraced mathematics. For this they deserve our condemnation, and this is the appropriate forum for such condemnation to take place."

To emigres from the former Soviet Union such as myself and three of the four signatories of that letter, this attempt to control the thoughts and public expression of opinion through public humiliation and shaming is *deja vu* of the most horrendous sort.