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THE DIVISION OF THE TRIBES ON GERIZIM AND EVAL: A MATHEMATICAL SOLUTION ON TERRA FIRMA AND A GEOGRAPHICAL EXPLANATION ON WEAK GROUND

We appreciate the interest shown in our article, and we welcome the polite exchange of ideas that these articles represent. Our initial remarks critique the geographical solution proposed; we proceed from there with a response to the criticism of our own solution. Finally, we conclude with a homiletic postscript. This follows the pattern of our initial article.

A GEOGRAPHICAL SOLUTION: THE PROBLEMS IT POSES

The solution our critics propose—that the tribes were divided by geographical lines, independent of the role and place of the Levites—is difficult to accept. First, the very verses in *Joshua* which describe the division of the tribes offer strong support that the intent of the Torah was to present the tribes in some sort of a numerical balance. *Joshua* (8:33) states:

All of Israel, their elders and their judges stood on this or that side of the ark in front of the Levite Priests that bore the ark of the covenant of God as well as the proselytized and Jewish-born; [*half* of them in front of Mount Gerizim and *half* in front of mount Eval, as Moses the servant of God had commanded at the first to bless the people of Israel].

This article is dedicated in memory of Nathaniel Katz, of blessed memory, who was fascinated with the mathematical mysteries of the Torah.

The book of *Joshua* suggests that the intent was to divide the tribes in half. Any claim that the purpose was somehow unrelated to numerical equality ignores this. Our article merely demonstrated that the word “half” means exactly that. Indeed the description in *Joshua* does not state which tribes stood where, rather merely that Moses commanded that the Jews be divided equally.¹

Thus, the text of *Joshua* itself indicates that mathematical balance was the expected result, as the Hebrew word *hetsyo* is used to explain what the Torah desired; to deny this and to argue that geography or proximity was the “true” lesson is difficult.

Secondly, there is the problem of the proper location of the Levites: were this division of the tribes to be land-based, it would have been most logical to exclude the Levites from the counting of the twelve tribes on the mountain (as they were without land), and place all the Levites clearly in the center, surrounded by the classical counting of the twelve tribes for all geographical purposes. This is consistent with the general rule that any land-based division of the tribes excludes the Levites and counts Efrayim and Menashe as two tribes, rather than as the single tribe of Yosef; this rule is without exception throughout the Torah.²

Third, there is the problem of the location of the tribe of Dan, which for most of its years was bordered by Yehuda, Efrayim and Binyamin. While these writers respond by noting that Dan moved 100 years later, that explanation rings as forced.

Most significantly, the division of the tribes between Gerizim and Eval simply does not represent any sort of fair geographical divide. Were one dividing the tribes between north and south, one would have one group composed of Shimon, Yehuda, Reuven, Binyamin, Dan, and Gad; the second group would have been Asher, Naftali, Zevulun, Menashe, Efrayim and Yissakhar. If one had to include Levi (which we think is not generally done when divisions are geographical), we suppose one could shift Dan for the reasons our critics base on *Judges* 18:23, and combine Efrayim and Menashe to the one tribe of Yosef. However, no north-to-south division can justify separating Reuven and Yehuda, who shared a border. So too, no east-to-west division can justify combining Asher (which is east-most) with Reuven (west-most). One can draw all the lines one wishes, but as any casual review of any tribal map shows, the division called for by the Torah in *Deuteronomy* 27 is not the obvious geographical one and does not seem to indicate any reasonable geographical pattern. This is a case where the geographical lines were drawn after the data was laid out; it is not a convincing explanation.

We could present five other possible geographical or familial models that would be more persuasive, were the tribes to be divided based on proximity. For example: Shimon, Yehuda, Dan, Binyamin, Efrayim and Reuven would be the logical separation of all the southern tribes, or Shimon, Yehuda, Binyamin, Efrayim, Menashe, and Dan would be the logical separation of the Southeastern tribes, or Asher, Menashe, Zevulun, Efrayim, Yehuda, and Dan would be the logical separation of the Mediterranean tribes, or Dan, Binyamin, Efrayim, Menashe, Gad and Zevulun would be the logical separation of the center, or Reuven, Gad, Menashe, Naftali, Zevulun and Binyamin would be the logical separation of the western tribes. This is even more true if one notes that the Levites were spread out over 42 different cities, scattered throughout the land of Israel. In addition, we simply do not understand the final proof-text they cite, which quotes from Nahmanides. *That text supports an alternative division of the tribes into yet a different grouping of six!* How that supports their proposed division eludes us. What these very different groupings show is that attempts to explain the division of the tribes on Mount Gerizim or Eval based on classical groupings (such as familial, geographical or maternal) obviously do not work without considerable tinkering, which makes each of these explanations look forced. Our solution explains this unusual division without tinkering.

In sum, for the reasons explained above, we think that an attempt to explain the tribal division found in *Deuteronomy 27* along geographical lines is forced and extremely unpersuasive. It works, but only with many exceptions, much wiggling and with many questions left unanswered. The mathematical explanation that we advanced does not suffer from these difficulties, and is consistent with the description in *Joshua* that notes that the tribes were divided in “half.”

A MATHEMATICAL SOLUTION: A RESPONSE TO THE CRITICISMS

Our critics’ opening remarks, asserting that our analysis “follows the recent trend to turn to science and computer-based numerical and statistical calculations to explain and confirm the Torah and its teachings,” seems bizarre; as an even casual reading of the article will confirm, we attempted to do neither. Rather in our view, two burning questions flowed from the verses in *Deuteronomy* and *Joshua*. Specifically:

1. Where did the Levites stand during the ceremony on the mountain?

2. Why were the tribes divided according to the particular allocation given in this verse?

A survey of the commentators caused us to agree (as our respondents stated) that “the Talmud offers no intuitively reasonable resolution” to these two problems. We agreed with the talmudic view that it is difficult to accept either of two more extreme views that all of the Levites were either on or off the mountain, as the Torah explicitly states them to have been in both places. Thus we viewed the two talmudic opinions that substantively divided the Levites as more logical. (It is worth noting that their approach makes absolutely no attempt to explain the unique role of the Levites in this rite. The biblical verses raise two obvious problems: the reason for the tribal division, and the proper placement of the Levites who appear to be in two places at one time. Our solution addresses both these issues in an interrelated manner and advances a single integrated solution; their explanation simply ignores the problem posed by the need of the Levites to be in two places at one time—and having ignored that problem, with its four different answers posed in the Talmuds, they note that their solution is consistent with the various talmudic answers—but only because they do not address that difficulty.)

Upon reflection, we noticed that once one places approximately 8,800 Levites in the middle, true equality is achieved, and that one of the talmudic explanations coincides with this approach. Our contribution to the literature merely notes that one view found in the Talmud does just that—and one can then logically understand the division of the twelve tribes: they were divided in the way they were in order to promote numerical equality while keeping tribal identity. This explanation, we felt, was superior to any one of the nine explanations we found in the classical commentators as to why the tribes were divided the way they were. It is particularly elegant in that it solves two problems—the division of the Levites and the division of the tribes—with a single observation, which is itself the simple understanding of the verses in *Joshua*: that the tribes were placed on the mountains “half of them in front of Mount Gerizim and half in front of Mount Eval.” While our solution does call for some division of the Levites in order to reach this result, in our view the text of the Torah reasonably calls for the division of the Levites into two groups—those on the mountain and those in the valley.

The first and key argument of our critics is their discussion of population and age variations between the various censuses; their discussion, however, misses the crucial point. To demonstrate that the proportions

of Levites between the ages of 30 and 50 is different at the end of the forty years in the desert from the beginning, our critics show that the total populations for each of the tribes varies considerably over the forty year span. The essence of their argument is that since many tribes fluctuated in total population, the age proportionality of the Levites, too, must have fluctuated.

It is important to understand what our critics agree to. The Torah gives exact numbers for all the tribes, including the tribe of Levi, at the time of the entry into Israel in *Numbers* 26; upon exit from Egypt, the Torah provides all of that information as well. It also informs us that 38.48% of the total number of Levites counted were between the age of 30 and 50, and thus eligible to work in the Tabernacle. Our critics disagree with our statement (found in our initial article) that:

It is reasonable to assume, in the absence of any evidence to the contrary, that an approximately similar percentage of Levites were aged 30 to 50 at the end of the 40 years in the desert. Thus, there would be 8,850 Levites between the ages of 30 and 50. The group of Levites on the mountain would be all the remaining Levites, and their population would be 14,150.

Their argument that this statement is incorrect hardly seems persuasive for three reasons. First, for the totality of the eleven tribes other than Levi, the total population change from the first census to the second was less than 0.3% (3 out of a thousand), which makes our assumption that the age proportionality of Levites has not genuinely changed in any considerable way quite logical; a 0.3% change is very small. Second, the comparison of the census of all the Levites in *Numbers* 3:39, which states that there were 22,000 Levites older than one month of age at the time of the Exodus, and the census found in *Numbers* 26:63, which states that there were 23,000 Levites one month or older at the time of the entry into the land of Israel, is a change of less than 5%. Unlike many other tribes, the tribe of Levi grew in small proportion, and it is reasonable and logical that the age proportion stayed constant as well. Third, the Levites did not share the inclination of the rest of the Jews to sin while in the desert, and thus were never punished with the divine punishments that tended to kill only specific age groups.

In sum, there certainly is no evidence leading one to conclude that our assumption that the age proportionality of the Levites remained constant is wrong. Indeed, our critics appear to concede this crucial point in their note 22, to our surprise.

So too, their observations about how many members of the tribes of Reuven, Gad and Menashe might have actually been present is interesting, and reflects changes in the composition of the Jewish nation from the time of the divine directive to bear witness on the mountains, and the subsequent decision of some tribes to stay on the east bank of the Jordan river. This result, a direct violation of the agreement these two tribes made with Moses found in *Numbers* 32:26-27, was not desired or considered proper by God, and was not contemplated in the tribal division. In addition, we would note that many commentators, including one Tana in *Yerushalmi Sota* (7:4), as well as *Tosafot* (*Sota* 36a, s.v. “*mai ve-hetsyav*”) in the Bavli assume that all of the members of Reuven, Gad and Menashe were, in fact, present, thus mooted this whole discussion.

The issue our critics raise concerning the Levites being counted from the age of 30 days, and everyone else from year 20, is an excellent one. For reasons that we do not comprehend, the Torah chose to do that, and we assume that when numerical balance in the tribes were sought, these same figures were used, even if we cannot explain why they were counted in that exact way. The solution proposed by our critics—something to do with some form of adulthood—seems to completely miss the point, as adolescents are certainly adults according to Jewish law, and we have not yet raised the issue of women, who are also obligated in Jewish law! Rather, these were the authorized numbers used throughout the Torah for counting purposes, and it is reasonable to assume that one would use them for computational purposes here as well, which is what we did.

CONCLUSION

In sum, the book of *Joshua* states that the tribes were divided on Gerizim and Eval evenly, and we infer from that explicit verse that such was not a mere coincidence, but the purpose of the division. We note as well that this even division is best achieved by dividing the Levites so that approximately 8,800 of them are in the valley and the rest on the mountain. This proposed solution resolves three questions. First, it explains an otherwise difficult division of the tribes in a logical way, without any exceptions, adjustments or corrections. Second, it explains why and how some Levites might be on the mountain and others in the valley. Finally, it explains why the book of *Joshua* states that the tribes were divided “in half” while the Torah divides them into a specific set of six,

in that this division actually does divide the tribes in half. Indeed, even if one were to discount the mathematical precision of the solution proposed in the name of Rashi and Maharsha because of the extrapolations regarding the precise number of Levites in any particular age group from the first census to the second, our general explanation remains logical. The tribes generally, and the Levites specifically, were divided on Gerizim and Eval in a manner designed to place an equal number of Jews on each mountain; with this conceptual understanding of purpose one can explain why the tribes and Levites were divided in this unique way. The classical tribal divisions generally employed (maternal, geographical, or other) do not accomplish this type of division and thus are not used in this case.

What constitutes a “good” *devar Torah*? What makes a proposed explanation feel “true” or compelling? At minimum, the proposed explanation must be consistent with the known textual constraints, i.e., it must “solve” the Torah puzzle at issue. But additionally, a genuinely compelling solution should support the ethical teachings and themes conveyed by the Torah in that context. As we noted in a postscript to our original article, the equal partitioning of the Israelite tribes between the mountains of Gerizim and Eval symbolically conveys the teaching of Hazal, that we should always view ourselves and the entire world as being in perfect balance between good and evil, such that each action we take has the potential to tip that balance. This message resonates strongly with the major themes of personal *behira* (free choice) and accountability that are repeatedly emphasized in *Deuteronomy* in connection with Gerizim and Eval and in the broader context of blessing and curse. See, e.g., Deuteronomy 11:26-32 and chapters 27-30, especially 30:15-20.

Of course, we wholeheartedly agree with the ethical message suggested by our respondents—namely, that one’s friends and surroundings can significantly impact one’s spiritual development, as Hazal have taught in various places. But to us, the message of *behira* and accountability seems much more in tune with the blessing/curse context of Gerizim and Eval. As our respondents observe in their opening sentence, the assembly upon Gerizim and Eval was intended to teach that “the Israelites [are] masters of their own fate.” The partition of the population into equal groups on the two mountains, like carefully balanced weights on a scale, contributes beautifully to that message.

NOTES

1. We might speculate that the reason for this statement in *Joshua* might be that the division of the tribes found in *Deuteronomy 27* was no longer the optimal division and perhaps (but no more than perhaps) one could even assert that in reality the tribes were divided differently because of population changes, or because of the lack of full participation of some of the tribes.
2. Or in the alternative, their explanation only works according to the talmudic view that all the Levites were in the middle—a deeply counterintuitive view, as the text of the Torah explicitly states that the Levites were on the mountain, and not in the middle.
3. See *Numbers 4*. After the first year in the desert, Levites aged 30 to 50 are numbered at 8,580, while the total number of Levites counted there is 22,300. The 30 to 50 age group thus comprised 38.48% of the total.
4. 38.48% of the Levites at that time which we are told in *Numbers 26* is 23,000.
5. Such as, for example the 24,000 killed in the Ba'al Peor plague described in *Numbers 25:9*. This plague, striking those who were sexually active with Midyanite women, presumably was somewhat age-centered, and did not randomly distribute its victims in all age groups.
6. *Tosafot* states that in order for the tribes to be mathematically equal, 8,870 Levites must have been in the valley. This calculation is predicated on the proper numbers of all the tribes being in place, including Reuven, Gad and Menashe.