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Problems with Probability: A Response

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Reply to Roper's "Plausibility, Probability, and the Cumorah Question."

I would like to thank Matt Roper for taking the time to review my paper. He and I disagree on what constitutes circular reasoning, as well as on a number of different points about how one might understand what the Book of Mormon says about its own geography, but I echo his hope that this exchange will ultimately benefit our inquiries into the questions surrounding Book of Mormon geography.

If I read his response correctly, Roper agrees with the central thesis of my paper—that is, that the text of the Book of Mormon does not absolutely *require* the final battles of the Nephites and Jaredites to have taken place within approximately a couple hundred miles of the book's narrow neck of land, near a hill vastly different in nature than New York's Hill Cumorah. He then says, however, that the point is actually a small one that pales in comparison to the more important question of what scenario for the location of the final battles is more *probable* in light of the text. Be that as it may, it should be pointed out that the idea that the text *required* a limited geography has been central to the limited Mesoamerican thesis and has been a large part of the reason why this thesis has enjoyed such popularity over the years. Any concession on this point is hardly inconsequential.

Roper attempts to minimize other important points in my paper, and I would urge readers to keep the suggestions, caveats, and data I

identify firmly in mind as they read his arguments. The issue I would pursue most rigorously, however, is his belief that we are in any sort of a position right now to accurately identify a most probable scenario for the location of the final battles in the first place. To accurately identify the relative probability of an event, one must have a thorough and accurate understanding of everything that affects that event. Any ambiguities, poorly understood variables, or unknown factors that might affect the event will lessen the certainty with which one can identify the probability of that event happening. For example, if I mix five orange disks with five green disks of the same size and texture, I know that a blindfolded person has a one in two chance of drawing out an orange disk. If I have no idea how many green disks are in the pile, though, I really have no idea what the probability is that a blindfolded person will pick out an orange disk, other than that it is greater than zero (since there *are* orange disks in the pile). As is shown by the long list of surprises, incredible achievements, and strange twists of events that make the study of history so fascinating, history is much more like the pile with an unknown number of green disks than the pile where everything is known. Personalities, natural phenomena, and scores of other variables and factors mix and mingle in incredibly complex ways and often produce very unforeseen results.

One need look no further than the Book of Mormon itself to find examples of such surprises. Based on our current understanding of the ancient world, for example, what are the chances—that is, what is the probability—that a group of men, women, and children could have left Jerusalem shortly before its destruction at the hands of the Babylonians, traveled some 2,500 miles through Arabia, and then built an oceangoing vessel and sailed several thousand more miles to America? Better yet, what is the probability that a similar group could have, or would have, made a similar trip in airtight barges, complete with "flocks and herds" (Ether 6:4), more than a thousand years earlier? Both events were, and continue to be, almost inconceivable for most people, yet they *did* happen, as have thousands of other unforeseen things over the course of human history. The point of all of this, simply, is that given the ambiguities, variables, and unknowns that play a role in determining historical development, the whole notion of probability is very ill suited for reconstructing the activities and movements of people in the past.

This is especially so for Book of Mormon geography. In a text whose authors repeatedly mention the impossibility of recording even a hundredth part of all that is going on (see Jacob 3:13; Words of

Mormon 1:5; 3 Nephi 5:8; 26:6; Ether 15:33), and whose descriptions of geography and many other things are ambiguous and woefully incomplete, the suggestion that we can accurately determine the relative probability of where something happened or did not happen is highly questionable. With so much up in the air, any pronouncement about the relative probability of something happening can only be based upon one's own experiences, worldviews, and assumptions, all of which are highly subjective.[1]

Even if we could assign accurate probabilities to these different scenarios, Roper's method works against his efforts to establish the most probable scenario. Like John Sorenson and others, Roper creates long chains of probable events in an effort to arrive at the probable conclusion. That is, after determining the most probable first step in a sequence of events, these scholars then try to determine which of the next round of options is most probable, and so on. The result is a long chain of probabilities, each following and somewhat based on the previous one but also independent of the earlier decisions at its own level. Rather than leading to the most probable conclusion, however, such a method actually leads to an increasingly *improbable* scenario. This is because the probability of multiple separate events each happening is the product of the individual probabilities. If the probability of something happening is 3 out of 5 (or 60 percent), for example, and the probability of something else happening is also 3 out of 5, the probability of them *both* happening is $3/5 \times 3/5$, or $9/25$ (36 percent)—well below the 60 percent probability of each event happening singly. If we add another event with a $3/5$ probability to the chain, the chance of all three happening drops to $27/125$ ($3/5 \times 3/5 \times 3/5$), or little more than 20 percent. What this means is that the conclusions based on the long and convoluted lists of "probable," "likely," and "more reasonable" events that greet us at every turn in Roper's and Sorenson's analyses are very unlikely to hold much water—again, assuming such individual probabilities could be accurately determined in the first place.

Rather than deceiving ourselves with fuzzy notions of probability, I would advocate an approach to Book of Mormon geography that begins by identifying, from the text, what the *possibilities* are. The next step, as I urge in my paper, is to explore these possibilities from all possible angles—archaeology, linguistics, ethnography, and so on. Only then can we begin to eliminate the unknowns and variables that currently face us. None of this is to suggest that we abandon the limited Mesoamerican thesis altogether—I would be the first to admit

that time may eventually prove it correct, although I confess that right now I find several of its fundamental assertions extremely problematic.[2] Even without these problems, though, it is still only a possibility; there are simply too many unknowns and ambiguities at this point to rank it any higher than that. Other possibilities also exist that are perfectly consistent with the text, and we would do well to start exploring them seriously. RE

Notes

1. Roper, for example, made an involved argument for the state of Coriantumr's health. Considering the limited data available to us and the caution and innumerable tests that modern physicians employ before making a diagnosis in a complex case, the diagnosis of a historical figure's health is highly speculative.

2. Along with those assertions identified in the paper under discussion, see also Andrew H. Hedges, "The Narrow Neck of Land," *Religious Educator* 9, no. 3 (2008): 151–60.