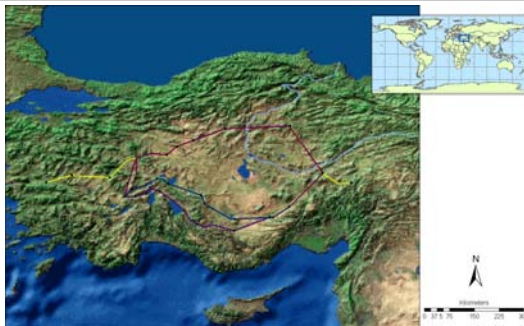


# An Analysis of the Possible Routes of Xerxes and the Persian Army from Cappadocia to Phrygia in Herodotus' *Histories* 7.26

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## Abstract

In this project I sought to present a clear explanation of the interpretive problems raised by Herodotus 7.26, as well as some possible solutions. I have addressed the arguments put forth by various classicists concerning the possible locations of Critalla as well as the different routes they believe Xerxes and his army followed from Cappadocia to Phrygia. After compiling these theories, I plotted the proposed courses using the GIS software, ArcGIS 9. I then used ArcGIS to analyze these routes and placements of Critalla to determine which one I found to be the most plausible. While some of the possible locations of Critalla and proposed routes appear to be better than others, none can at this point stand alone as authoritative.



## Problems

While these worked at the appointed task, at this same time the entire foot army, having assembled, marched along with Xerxes into Sardis, having set out from Critalla in Cappadocia; for it had been ordered for all the army that was going to march by land along with Xerxes himself to assemble there. [2] Now which of the Hyrarches took the prizes set out beforehand by the king, prizes for having brought the best-equipped army, I am not able to say; for I do not even know whether they came to a decision concerning this at all. [3] When they crossed over the Halys River they entered Phrygia, marching through this land they came to Celaenae, in that place the running waters of the Maeander river issue forth and of another river not smaller than the Maeander, to which the name happens to be Catacrates, which from right there in the marketplace of Celaenae empties into the Maeander; and in that place the skin of Marcyus of Silenus is hung up [in the city], which, the story of the Phrygians maintains, having been stripped off it was hung up by Apollo. - Hdt. 7.26

Herodotus 7.26 presents several interpretive problems. First, this passage is the only known reference to Critalla, so its location has yet to be identified with any certainty. It must have been a large fertile area with sufficient access to water in order for it to be suitable as a location for mustering an army. The location of the other city mentioned, Celaenae, raises very little question as it is generally regarded as being situated at Apamea. Second, the lack of detail provided by Herodotus leaves Xerxes' precise route open to interpretation. W. M. Ramsay initially argued in *Historical Geography of Asia Minor (H.G.A.M.)* for a northern route following the well-traveled Royal Road. Later in his career, after traveling through the region, he changed his mind and sketched a southern route for Xerxes in an article in *The Journal of Hellenic Studies (J.H.S.)*. R. W. Macan also proposes a southern course, which follows the route corresponding to a later Roman Road and is different from the one put forth by Ramsay.

## Methods

First, I researched the possibilities for Xerxes' course of travel presented in various commentaries and articles on Hdt. 7.26 and on the road system of ancient Asia Minor. Using ArcGIS 9, I created shapefiles for the Royal Road between Comana and Sardis, Ramsay's routes as presented in *H.G.A.M.* and *J.H.S.*, Macan's proposed course, and the possible locations for Critalla. Latitude and Longitude coordinates for many of the sites in these shapefiles were gathered from a database provided by the Perseus Digital Library of Tufts University. To locate points not found in this database, I scanned two maps, one from volume two of Macan's *Herodotus: The Seventh, Eighth, and Ninth Books* and the other from *Atlas of the Greek and Roman World in Antiquity*. I projected these using the georeferencing tool, with known locations from the Perseus database as control points. Next, I implemented the Spatial Analyst extension to perform viewshed analysis using digital elevation data (DEM). The DEM was 3-arc second (90 meter) Shuttle Radar Topography Mission (SRTM) data purchased from the USGS. The viewshed analysis determines which areas are visible from a specified location. I performed this analysis with each proposed location of Critalla as well as with Ramsay's northern and southern courses and Macan's course. For the line shapefiles, I used the points on each of these routes as the observation points, rather than the entire line. The results of this analysis combined with drainage network data and topographical data gave a clearer picture of the ease of travel possible for an army on each of these routes.

## Acknowledgements

I owe special thanks to:

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- Dr. Gregory Crane, editor-in-chief of the Perseus Digital Library, for access to the Perseus database of Latitude and Longitude coordinates.

## Further Study

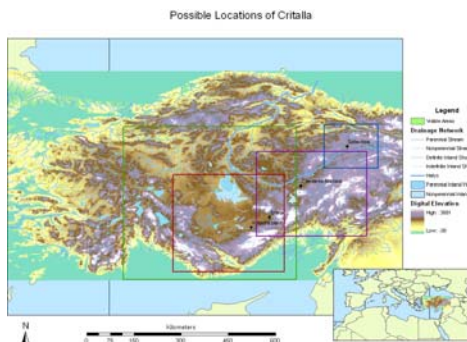
In the future I would like to expand this project in the following ways:

- Perform viewshed analyses on the line shapefiles themselves and not just at key observations points
- Use the buffering tool to analyze the accessibility to water along each route
- Perform similar analyses on the various proposed courses of the Royal Road, as well as other important roads and trade routes in ancient Asia Minor.
- Explore the functions of the 3D analyst extension, possibly creating a better visual representation of the topography and simulating fly-overs through each of the proposed routes.

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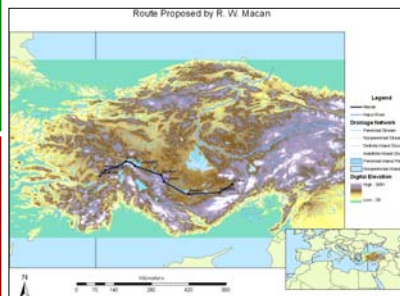
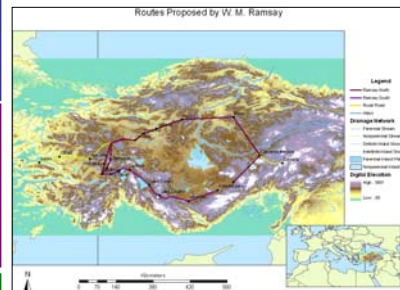
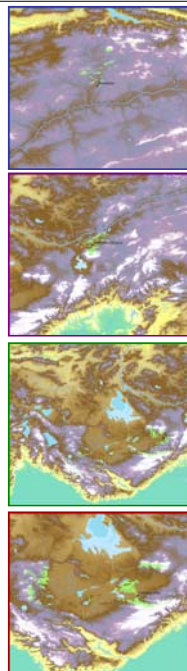
## Results



The outline colors of the maps to the right correspond to the boxes in the map above, indicating the extent of their view.

## Critalla

The small squares to the right represent the results of the viewshed analysis for each of the proposed locations of Critalla overlying the DEM and drainage network data. All of the locations appear to have sufficient access to water and are comparably accessible, however the two southern locations, the plains of Tyana and Kybistra, provide a much larger area in which to muster troops. Similarly, these two points offer a much greater span of visibility, making them good choices for gathering an army if it followed a southern path to Celaenae. Caesarea Mazaca has the advantage of being located on the Royal Road, however, if one argues that Xerxes did not follow this road, then this location is of little benefit.



## Routes from Cappadocia to Phrygia

The maps to the right indicate the results of viewshed analyses performed for each major point mentioned along the proposed routes. The routes must follow either a northern course or a southern one in order to avoid the large arid region and salt lake in the central part of Asia Minor. All three routes adequately avoid this region and therefore could provide sufficient water for a traveling army, the northern course drawing mostly from the Halys River and its tributaries, and the southern courses from various lakes, including Lake Karalis and Lake Trogitis, and other smaller rivers.

The results of the viewshed analyses demonstrate the benefits of taking one of the southern routes. The visible areas on each of the southern routes simultaneously cover a wide area and focus on the routes themselves. There are many more areas which are visible from more than one observation point on each of these courses than on the northern one. This creates greater connectivity to the line of sight, making more of the path visible as one travels. In some cases it is even possible for a traveler to see from one observation point to another. Besides providing better visibility, the southern paths are also much shorter and more direct, making them appear to be better routes. Both southern routes have advantages and would be suitable for a large army to traverse, therefore it is not possible, with this level of analysis, to choose one of them as the best route.

While GIS analyses signify the southern routes as better suited to travel, these alone are not enough to discredit the authority of Herodotus. It is possible that Xerxes, for whatever reason, could have taken a route that worked, but was not the best one available. If one argues that Xerxes took a southern route, which would not cross the Halys River, one must explain why Herodotus included this detail in his account. Some argue that Herodotus simply added this detail to give more color to a section of the journey about which he knew very little. Also, other sections of Herodotus' *Histories* also suggest that he did not understand that the Halys flows in a "U"-shape, but rather thought that it simply flowed south to north and that therefore all east-west routes across Asia Minor must have at some point crossed it. Even though I will argue that the southern courses provide better routes, it is not possible at this point to determine with any certainty which path Xerxes and his army followed.

