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Digital Project Review Part 2

10 Feb 2019

Review of ORBIS: The Stanford Geospatial Network Model of the Roman World

Metadata

Title: ORBIS: The Stanford Geospatial Network Model of the Roman World

Description: An interactive mapping project that allows users to reconstruct transportation in the ancient world by road, river, and sea and to calculate the duration and financial cost of traveling in antiquity.

URL: <http://orbis.stanford.edu/>

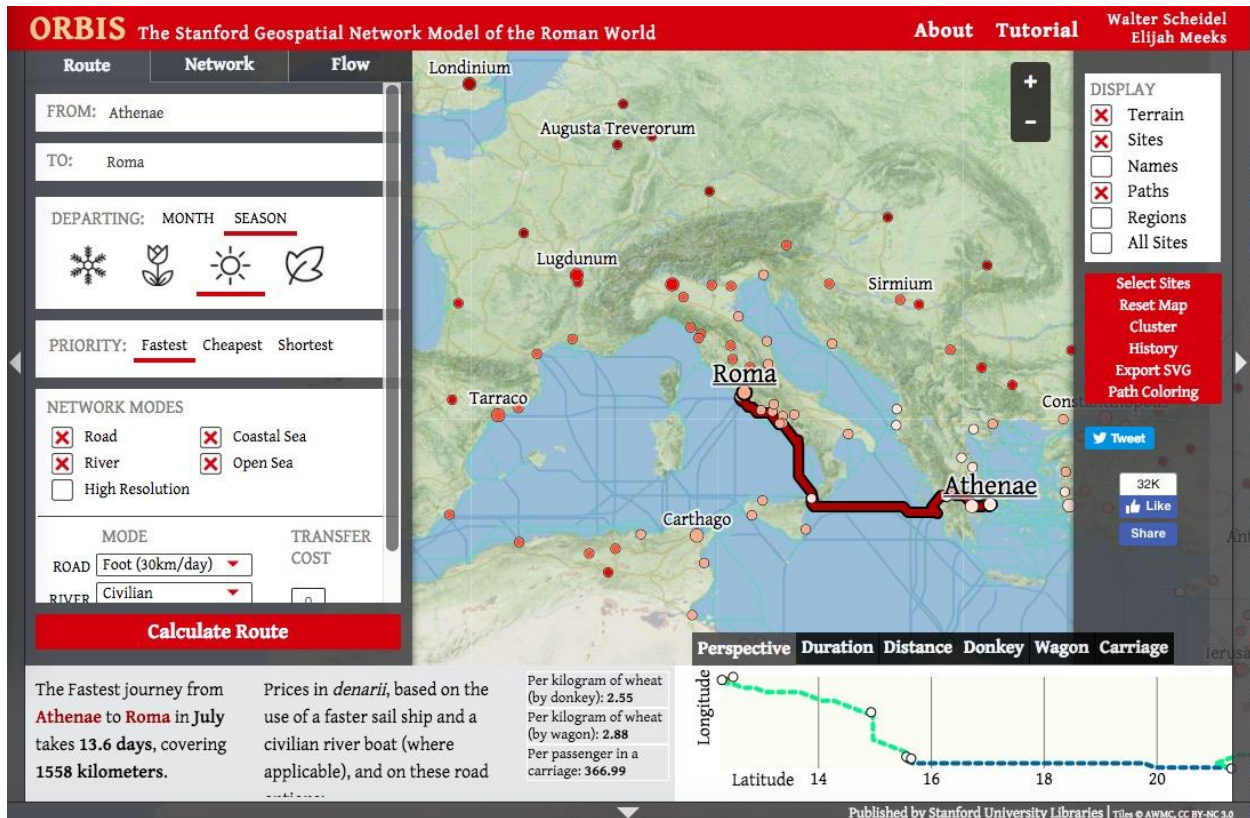
Author(s): Walter Scheidel (Principle Investigator), Elijah Meeks (Technical Lead)

Place: Stanford University, Department of Classics

Date Created: 2011-2014

Date Accessed: February 2019

Availability: Free



(Figure 1. User Interface)

Content

ORBIS is an interactive mapping project that simulates the transportation network in the ancient Roman empire and allows users to calculate the time and financial expenses associated with various types of travel in antiquity. Visual representation of the model is based on a simplified version of a wide range of transportation routes connecting different cities, roads, rivers, and sea lanes. The user interface is divided into four parts: an interactive map at the center, an input engine on the left that allows the user to customize the conditions of the transport, an output bar at the bottom that displays the time and cost of the transport and, finally, a list of tools available to the user on the right. According to the official introduction to ORBIS,

the project aims to reveal the true shape of the Roman world and provide a unique resource for our understanding of premodern history.¹

As a digital humanities project, ORBIS delivers a clear scholarly argument. Taking account of seasonal variation and allowing the user to choose from a variety of modes and means of transport, ORBIS points to the complexity in determining the cost and time associated with travels in antiquity. Users are quickly drawn to important, yet frequently ignored factors such as the types of river route available to the traveler (civilian v. military), time and costs resulted from transfers between different types of transportation, and the priority of the traveler (fastest v. cheapest v. shortest route). The project thus puts the user in the shoes of an ancient traveler and demonstrates how traveling in the ancient world was defined by both geographical limitations and personal decisions.

The screenshot displays the ORBIS web interface for route calculation. It features three tabs: 'Route', 'Network', and 'Flow', with 'Route' selected. The destination is set to 'Roma'. The 'DEPARTING' section allows selection of 'MONTH' or 'SEASON', with 'SEASON' currently selected and icons for winter, spring, summer, and autumn. The 'PRIORITY' section offers 'Fastest', 'Cheapest', and 'Shortest' options, with 'Fastest' selected. The 'NETWORK MODES' section includes checkboxes for 'Road', 'River', 'Coastal Sea', 'Open Sea', and 'High Resolution', all of which are currently unchecked. The 'MODE' section has dropdown menus for 'ROAD' (set to 'Foot (30km/day)'), 'RIVER' (set to 'Civilian'), and 'SEA' (set to 'Fast'). The 'TRANSFER COST' section shows input boxes for 'ROAD' and 'SEA', both set to '0'. A red 'Calculate Route' button is at the bottom.

¹ Department of Classics. "ORBIS: The Stanford Geospatial Network Model of the Roman World." *Stanford University*, <https://classics.stanford.edu/projects/orbis-stanford-geospatial-network-model-roman-world>

(Figure 2. Input Engine)

As a data-driven project, ORBIS builds on many sources of data that form the foundation of its visualizing and calculating capacity. The project's "about" page explains in detail where the team obtains and how it processes the data that leads to the sites displayed on the interactive map, in addition to how it calculates the route, time, and expenses associated with sea transport, road transport, and river transport, respectively. For instance, the authors indicate that the network is organized around 632 sites, most of which were urban settlements of the Roman period supplemented by a group of landmarks that were significant for travel.² Sites are named and labeled according to *Atlas of the Greek and Roman World* by Talbert, and the size of the label reflects the site's relative significance. With respect to sea transport, it is suggested that the routes are established by looking at evidence in ancient sources which are cited in two modern books published in 1992 and 2005. Where there is a lack of usable evidence, the authors draw inspiration from "comparative historical data that addresses the gap in ancient coverage."³ Unlike routes, the time cost of sea transport is calculated in a slightly different way. The authors explain that the latter is determined by three factors: winds, currents, and navigational capabilities. Instead of looking for primary sources that document winds and currents in the ancient Mediterranean world, the authors seek help from modern weather agencies and utilize their data that focuses on the same area.⁴

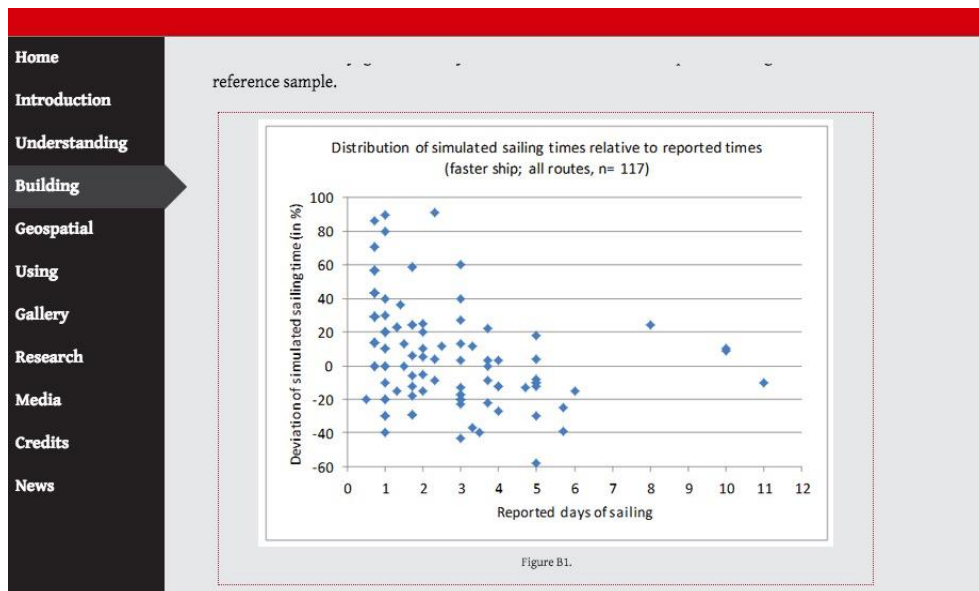
It is noteworthy, however, that users cannot access the computing process behind a specific calculation. The webpage does provide a general guideline of how the team processes the raw data, which could be helpful in giving the user a sense of the behind-the-scenes

² Stanford University. "Building ORBIS: Historical evidence." *ORBIS*, <http://orbis.stanford.edu/#cite2>

³ Ibid.

⁴ Ibid.

procedures. A self-assessment of the deviation pattern is also provided, which compares the machine-generated figure against the “reported result in the reference sample.”⁵ The assessment is presented in the form of a graph and shows that the machine-generated result is “reliable in the aggregate.”



(Figure 3. Assessment of the Deviation Pattern)

While the collection and the organization of data are mostly done in the backstage, the authors also make a few notable scholarly decisions that are visible on the front stage. To begin with, all sites are denoted with their ancient names rather than modern names. For example, modern-day Rome is labeled as “Roma” and Athens is labeled as “Athenae.” This could cause some confusion for those who are not familiar with the names of ancient cities, especially since the webpage provides no “translation table” that could help the user find the right name. However, it does demonstrate the authors’ attention to details and faithfulness to historical truth. Secondly, the project includes a list of tools designed to aid scholarly research. For example, the

⁵ Stanford University. “Building ORBIS: Historical evidence.” *ORBIS*, <http://orbis.stanford.edu/#cite2>

webpage allows the user to quickly jump to a specific zone by drawing boxes on the map. Users can also download the map in specific formats which can be edited in other platforms/apps.

Finally, sites and routes are brightly painted against the background, so that the users can quickly pinpoint where the sites are, what means and modes of transportation are available, and how one route compares to others.

Overall, the project features an interface that is user-friendly. The functions of the navigational buttons are either self-explanatory or explained in a brief note when one clicks on the buttons. Sites, routes, and territories are clearly labeled and colored, allowing easy navigation on the part of the users. Time and costs are calculated instantly, presented both in figure and graphs. Because of the project's easy accessibility, it is suitable for a variety of audiences, ranging from scholars with prior knowledge in the field to students and the general public who are simply interested in exploring travels in antiquity.