

## SAIL Curricular Project Submission

*SAIL seminar curricular project to be made publicly available on the ACM website.*

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### Overview

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**Department:** History

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**Course/Module/Activity Title:** The arithmetic of distance: a module

**Course Summary:**

*Please provide a short description of your course or module and the expected learning outcomes for students. Be sure to include essential key words or index terms to help users find resources using web-based searches.*

### Course Context and Learning Goals

**Module description:**

This module invites students to consider the relativity of distance. How big is the Mediterranean? It can, of course, be measured and the size rendered in numbers. But size also depends on perception and experience. This is especially true before the development of sophisticated tools for measuring distance. Even now, but especially in the past, people measured the sea relative to other bodies of water they knew or heard about. They also calculated its size in terms of the time it took to travel from one point to another. To understand distance as travel time, the module asked students to use Orbis: The Stanford Geospatial Network Model of the Ancient World. The exercise involved calculating distances in order to imagine how the ancients experienced the size of the Mediterranean.

**Context:**

1) I used this module in two courses: Culture, Society, and History: The Mediterranean, a course for first-year students, and Senior Seminar: Nature in History, for senior history majors.

2) In each course, the module happened early in the course after students had read introductory material on the geography of the Mediterranean. (Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Siân Reynolds, vol. 1 (New York: Harper: 1972). They read the prefaces, a section of Part 1, and they summarized and reported back on the sections.

3) In the first-year iteration, it served as one activity in a six-hour unit on Geology, Ecology, and Society, and in the Senior Seminar it illustrated one method, among others, of doing environmental history,

specifically, in this case, of the Mediterranean region.

### Learning Goals:

*To help your colleagues understand the role of this module in your course or curriculum, please provide a statement of the goals (what do you expect your students to know and to be able to do) that you have for students in the following three areas. Your learning goals should be stated in a form that facilitates their assessment. For example, “students will understand supply and demand” is not particularly helpful unless you can identify the evidence that will demonstrate the students’ understanding.*

1) Briefly describe the **content/concepts goals** for this course or module:

Using Orbis, measure and compare travel times between Rome and four other cities, in summer and winter. Experiment with other variables including cost and speed. Compare to modern figures for air and sea transport. Work with an historical data base.

2) Briefly describe the **higher order thinking skills goals** for this course or module:

Higher order thinking skills goals: Figure out the meaning of the results. In some cases, they do not correspond with expectations. For example, it takes longer to reach some destinations in the summer than the winter. Why?

3) Briefly describe the goals you have for students learning **multidisciplinary analysis** from this course or module:

The database they used reconstructed routes and times based on archaeological, historical, and literary evidence. They did this exercise in the context of a study of ancient cartography.

4) Briefly describe any **other skills goals** for this course or module: Students worked with

partners in order to develop collaborative techniques useful for discussion and, in the case of the seniors, for class discussion and for collaborative research workshops.

## Description and Teaching Materials

### Description:

*This section should include a narrative describing what another faculty member would need to know to be able to teach or to modify your course or module. It should also include all the essential materials needed to do that (or links and references to those materials). If this is a course, you may not want to include all of the supporting materials, but you should include a representative sample.*

- If the material is available on another site please provide the full url.
- If you have the materials in hand, please include them as an attachment with your final submission; be sure to clearly label the materials in the file name.
- If they are published print materials please provide a complete bibliographic reference.
- If the activity is fully documented at another site please provide the url along with a brief (one or two sentence) description of the other site.

*For all materials included, please provide a brief description of each item in the space below, identifying what it is and explaining its role in the course or module.*

Orbis: The Stanford Geospatial Network Model of the Ancient World: <http://orbis.stanford.edu/>

Braudel, Fernand, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Siân Reynolds, vol. 1 (New York: Harper: 1972).

Instructions: Go to Orbis.Stanford.edu; click on Orbis; Mapping Orbis; Interactive distance cartogram

Students received a work sheet asking them to calculate the fastest travel time, in number of days, in winter and summer to and from the cities of Rome, Antioch, Constantinople, and London. (Appendix 1, included at end of this document.)

Another hand-out compared travel times from Rome to Constantinople, Alexandria, Verona, and Carthage in the ancient world and now by air and by sea. (Appendix 2)

Results led to a discussion of the impact of weather, winds, and currents on sea travel in the ancient period and to the implications of the large distances (measured in time traveled) for trade, control of the Empire, and the exchange of people and ideas.

For the first-year class, the Orbis exercise accompanied a study of descriptions of the earth and the place of the Mediterranean in it including those of **Hecateus** (550-480 BCE); **Strabo** (18 CE), **Claudius Ptolemy**, (90-168 CE), **Christian T-O maps**; **Piri Reis** (c1470-1553/4), the **Mercator** (1569), **Google Earth** globe.

#### Teaching Notes:

I used a PowerPoint supported lecture/discussion for the maps. It took about an hour. Reserve at least one hour for the Orbis exercise and another hour for the discussion. I allotted less and found that it took students more time than I anticipated to figure out the program and to calculate the distances.

Having students work in pairs is a good idea because they can share computers, technical expertise, and talk some about what they find. Orbis is reasonably easy to use, but it generated some frustrations. For example, it is hard to calculate the distances to London, because they fall off the screen. Next time, I would omit London.

I should also have allotted more time to the discussion, particularly to the comparison of how ancients understood the geography of the Mediterranean and how they experienced it.

Consider adding time or a complementary homework assignment to allow them to explore some of the other features of the site, including calculating overland trade routes for goods and for military maneuvers. The site also offers studies based on the data which could have been useful either for content or for research methodologies.

## Assessment and Resources

**Assessment:** Post-exercise discussion determined how well they used the results to identify patterns and how well they identified the variables most useful in explaining them.

### Resources:

Orbis: The Stanford Geospatial Network Model of the Ancient World: <http://orbis.stanford.edu/>

Braudel, Fernand, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Siân Reynolds, vol. 1 (New York: Harper: 1972).

Hecateus: Cartographic Images-<http://www.henry-davis.com/MAPS/carto.html>

Strabo: Wikipedia Commons: [http://commons.wikimedia.org/wiki/File:World\\_map\\_Strabo.jpg](http://commons.wikimedia.org/wiki/File:World_map_Strabo.jpg)

Ptolemy: Holy Cross, The Ptolemy Machine:

<http://shot.holycross.edu/nsmith/projects/ptolemymachine.html>

Medieval map, T and O maps, Medieval Arab: La géographie d'Idrisi from the pedagogical section of the Bibliothèque nationale de France, [http://classes.bnf.fr/idrisi/feuille/to/ind\\_map.htm](http://classes.bnf.fr/idrisi/feuille/to/ind_map.htm)

Piri Reis: Medievalists.net: <http://www.medievalists.net/2010/04/05/piri-reis-book-on-navigation-kitab-i-bahriyye-as-a-geography-handbook/>

Mercator: c.1569 [www.math.ubc.ca](http://www.math.ubc.ca) or Google Mercator, 1569 for images of the map

## Appendix 1

### Travel time in the Ancient Mediterranean

#### Fastest travel time

To	From					
	Winter	Summer				
London	Rome		Constantinople		Antioch	
	39	25	62	46	66	53
Rome	London		Constantinople		Antioch	
Constantinople	Antioch		Rome		London	
Antioch	Constantinople		Rome		London	

Average time in days

Some approximation

## Appendix 2

### The arithmetic of distance

#### From Rome to

	Kilometers	Antiquity	Present-ship	Present-plane
Constantinople	1400	21 days	3 days	2 hrs., 13 min.
Alexandria	2000	15 days	3 days	2 hrs., 56 min.
Verona*	450	14 days	2.3 days	1 hr., 1 min.
Carthage	600	4 days	0.8 days	1 hr., 15 min.

\*Overland. Sea route to the closest port (Venice). Add time to get from Venice to Verona.

Ancient times from Orbis; current sea (at an average of 20 knots) from Ports.com; flight time from TravelMath.