### Ptolemy's 'Geographia' and the Birth of GIS

Leif Isaksen University of Southampton

Digital Humanities, Hamburg, June 2012

### Or, New Perspectives on the Pre-History of the Map

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"The Universal Cosmography according to the Tradition of Ptolemy and the Voyages of Amerigo Vespucci and others"

#### Waldseemüller, M. (1507)



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#### "The Universal Cosmography according to the Tradition of <del>Ptolemy</del> and the Voyages of <del>Amerigo Vespucci</del> and others" **Marinos Alexandros** <del>Valuscentuller, M.</del> (150**×**)



### Claudius Ptolemy







# Chorography vs. Geography (GH 1.1)

| Chorography  | Geography   |  |  |
|--|---|--|--|
| "It should be the task of chorography to present<br>together even the most minute features"  | "Geography should present the the countries<br>themselves along with their <b>grosser features</b> "  |  |  |
| "Chorography requires landscape drawing and<br>no one but a man skilled in drawing would do<br>chorography."   | "Geography does not require [landscape drawing]<br>at all, since it enables one to show the positions<br>and general configurations [of features] purely by<br>means of <b>lines and labels</b> ."  |  |  |
| "Chorography has no need of mathematical method."  | "[mathematical method] takes absolute precedence."  |  |  |
| "Chorography deals above all with the <b>qualities</b><br><b>rather than the quantities</b> of the things it sets<br>down; it attends everywhere to likeness, and not<br>so much to proportional placements" | "Geographydeals with the <b>quantities rather than</b><br><b>the qualities</b> , since it gives consideration to the<br>proportionality of distances for all things, but to<br>likeness only as far as the coarser outlines [of the<br>features], and only with respect to mere shape." |  |  |
| "[Chorography] sets out the <b>individual</b><br><b>localities</b> (for example, harbours, towns,<br>districts, branches of principle rivers, and so on)"  | "While [Geography shows] <b>the known world as</b><br><b>a single and continuous entity</b> , it's nature and<br>how it is situated [including] gulfs, great citiesand<br>the more noteworthy things of each kind"  |  |  |

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# Marinos of Tyre

"Marinos of Tyre seems to be the latest [author] in our time to have undertaken the subject [of Geography], and he has done it with absolute diligence." (*GH* 1.6)

"We have thus taken on a twofold task: **first** to preserve [Marinos'] opinions [as expressed] through the whole of his compilation, except for those things that need some correction; **second** to see to it that *the things he did not make clear* will be inscribed as they should be, so far as is possible, using the researches of those who have visited the places, or their positions [as recorded] in *the more accurate maps*." (*GH* 1.19)

What did Marinos 'not make clear'?

What are 'the more accurate maps'?

### The Missing Map

"When one is putting the cities in their positions, one might have an easier time labelling those that are on the coast, since in general some indication of position is noted for them, but this is not so for the inland ones, since their relative positions with respect to each other or with respect to the cities on the coast are not indicated, with few exceptions - and in these instances sometimes only the longitude is defined, sometimes only the latitude" (GH 1.18)



"Marinos did not have time to draw a map" (*GH* 1.17)

# Boundaries, Mountains, Interiors & Islands



### Cities of the Interior

Interior



### Cities of the Interior



### Geographic Maps

"A world map requires a large globe, so that the aforementioned section of it containing the oikumene, being such a small fraction of it, will be sufficient to hold the suitable parts of the oikumene with clarity and give an appropriate display to the spectators. Now if one can fashion a globe this large it is better to do it in this way, and let it not have a diameter less than 10 feet. But if one cannot make a globe of this size or not much smaller.one ought to draw the map on a planar surface of at least 7 feet" (Strabo, Geo. 2.5.10)

### Geographic Maps



### Chorography Revisited

"The coordinates of the places that have not been so travelled, because of the sparseness and uncertainty of the research, have been estimated according to their proximity to the more trustworthily determined positions or **relative configurations**, so that none of the places that are included to make the *oikumene* complete will lack a defined position" (*GH* 2.1)

![](_page_16_Picture_2.jpeg)

#### Madaba Mosaic (*mid-6th C.*)

### 'Precision'

![](_page_17_Figure_1.jpeg)

### 'Precision' Distribution

![](_page_18_Figure_1.jpeg)

## The Diaphragm

![](_page_19_Picture_1.jpeg)

# The Diaphragm

| Sacred Cape<br>38 1/4, 2 1/2   | Caralis 36, 32 1/2 | Tainaros<br>34 3/4, 50                   |   |  |
|--|--------------------|--|---|--|
| Baetis Mouth (W)<br>37 1/6, 5 1/12<br>Pillars of Hercules<br>36 1/4, 7 1/2 | Lily<br>3          | baeum<br>6, 37<br>Pachynus<br>36 1/3, 40 | Rhodes<br>36, 58 2/3<br>Issos<br>36 1/4, 69 1/3 |  |
|  |                    |  |   |  |

# Temporal Coordinates

![](_page_21_Figure_1.jpeg)

![](_page_22_Figure_0.jpeg)

![](_page_23_Figure_0.jpeg)

![](_page_24_Figure_0.jpeg)

![](_page_25_Figure_0.jpeg)

# Boundaries & Temporal

![](_page_26_Figure_1.jpeg)

![](_page_26_Figure_2.jpeg)

#### M +1 +2 +3 +4 M +1 +2 +3 +4 M

![](_page_26_Figure_4.jpeg)

# Boundaries & Temporal

![](_page_27_Figure_1.jpeg)

![](_page_27_Figure_2.jpeg)

# Ptolemy's chorographic sources?

![](_page_28_Figure_1.jpeg)

# A New Pre-history

- 1. The GH's purpose is to set terrestrial localities within their wider cosmological setting.
- Geography and chorography are individually insufficient. Geography is too sparse, chorography unrelated to the earth's surface, and thus astronomical phenomena.
- 3. The GH is an entirely original composition, pegging rich chorographic content to the sparse geo-temporal framework of Marinos.
- 4. The traces of these source materials may still be identified, providing a new window on the (pre-)history of mapping

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Berggren, J. L. & Jones, A. 2000. *Ptolemy's Geography*. Princeton

Stückelberger A. & Graßhof G, 2006. *Ptolemaios: Handbuch der Geographie*. Basel Wikimedia Commons.

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![](_page_30_Figure_16.jpeg)