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On the map projection
of Rigas Velestinlis “*Charta*”,
the late 18th century
cartographic monument of Greece



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Rigas Velestinlis (Feraios)

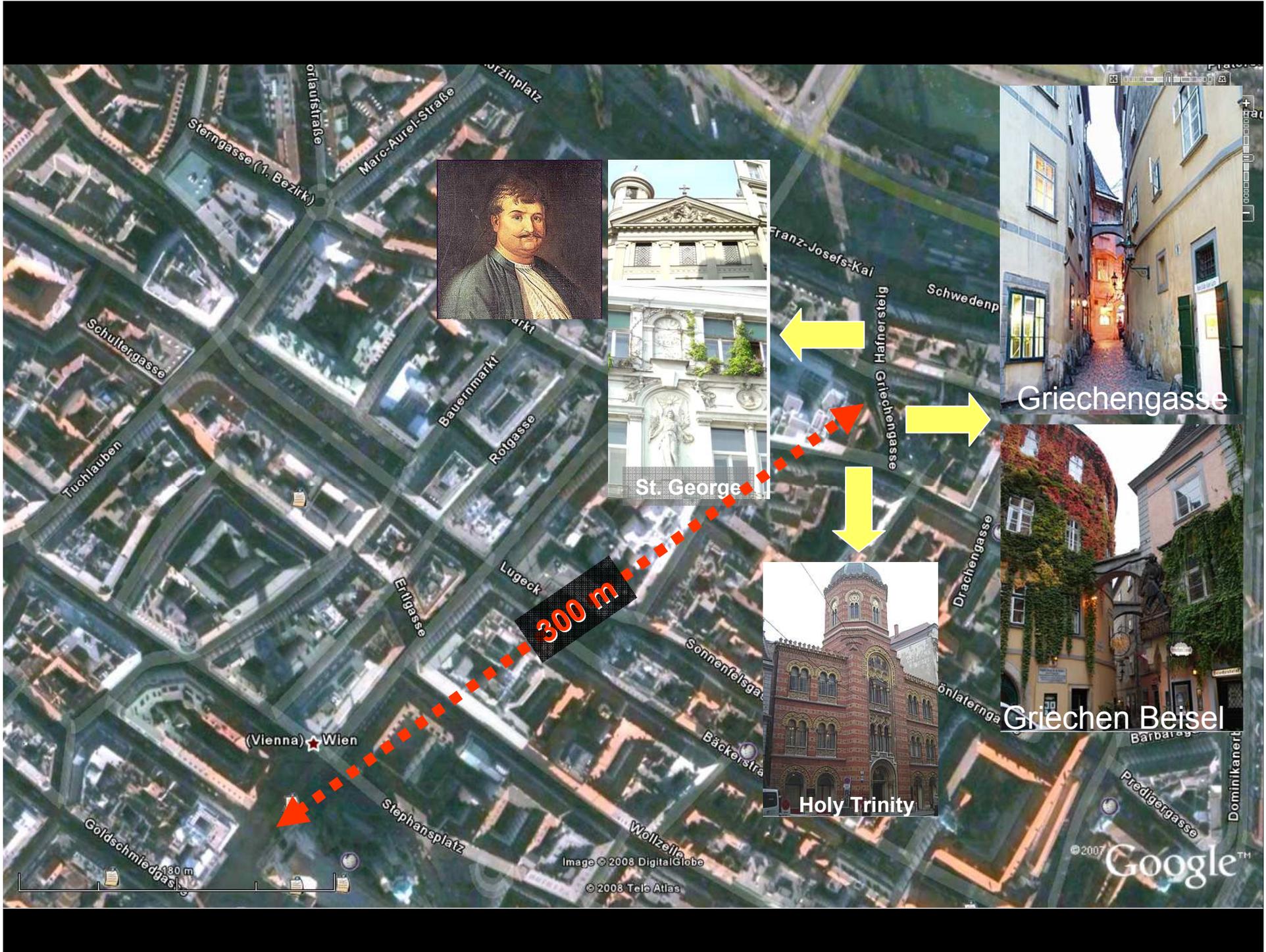
http://en.wikipedia.org/wiki/Rigas_Velestinlis

- Velestino (1757)
- Ampelakia
- Mount Athos
- Constantinople (Istanbul)
- **Bucharest**
- Craiova
- **Vienna**
- Trieste
- Belgrade (1798)

1821, Greek War of Independence



10 cents Euro coin



St. George



Holy Trinity



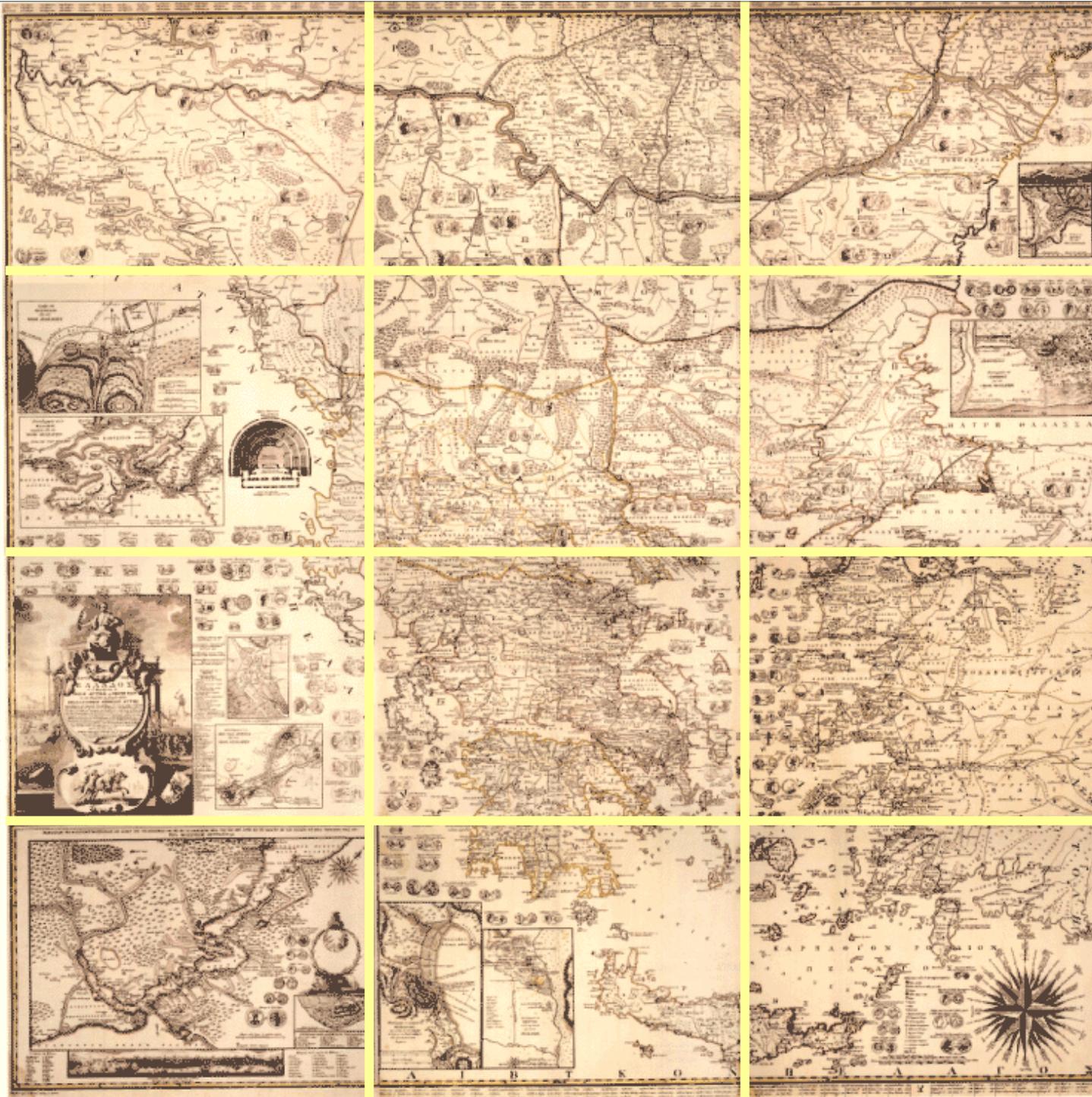
Griechengasse



Griechen Beisel

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1796



12 sheets
~ 200 X 200 cm

~ 70 X 50 cm

Charta

Vienna, 1797

Boutoura



~ 20 surviving (2%)

National Monument, 1997



Non Greek language references:

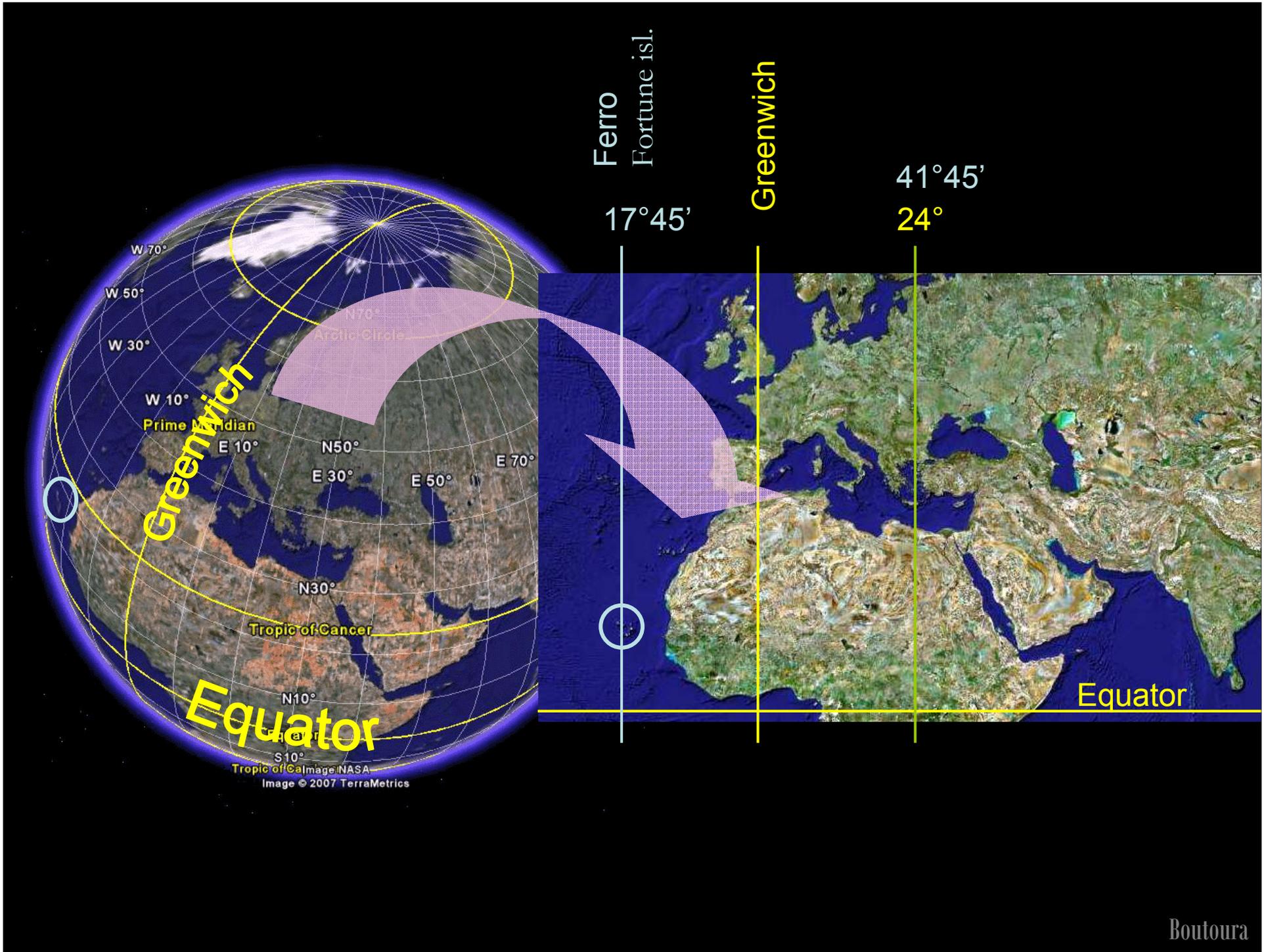
- C. Nicolopoulo (1824), Notice sur la vie de Rhigas, Paris.
- Anonyme (1861), *Magasin Pittoresque*, Paris.
- J.-H. A. Ubicini (1881), La Grande Carte par Rhigas, Paris.
- A. Dascalakis (1937), Les oeuvres de Rhigas Velesinlis, Paris.
- *M. Lopez Villalba (2003), Traducir la revolucion: Nueva constitucion politica de Rigas de Velestino, CSIC, Madrid*
- J.-Y. Guiomar, M.-Th. Lorain (2006), La carte de Grèce de Rigas et le nom de la Grèce', Paris.

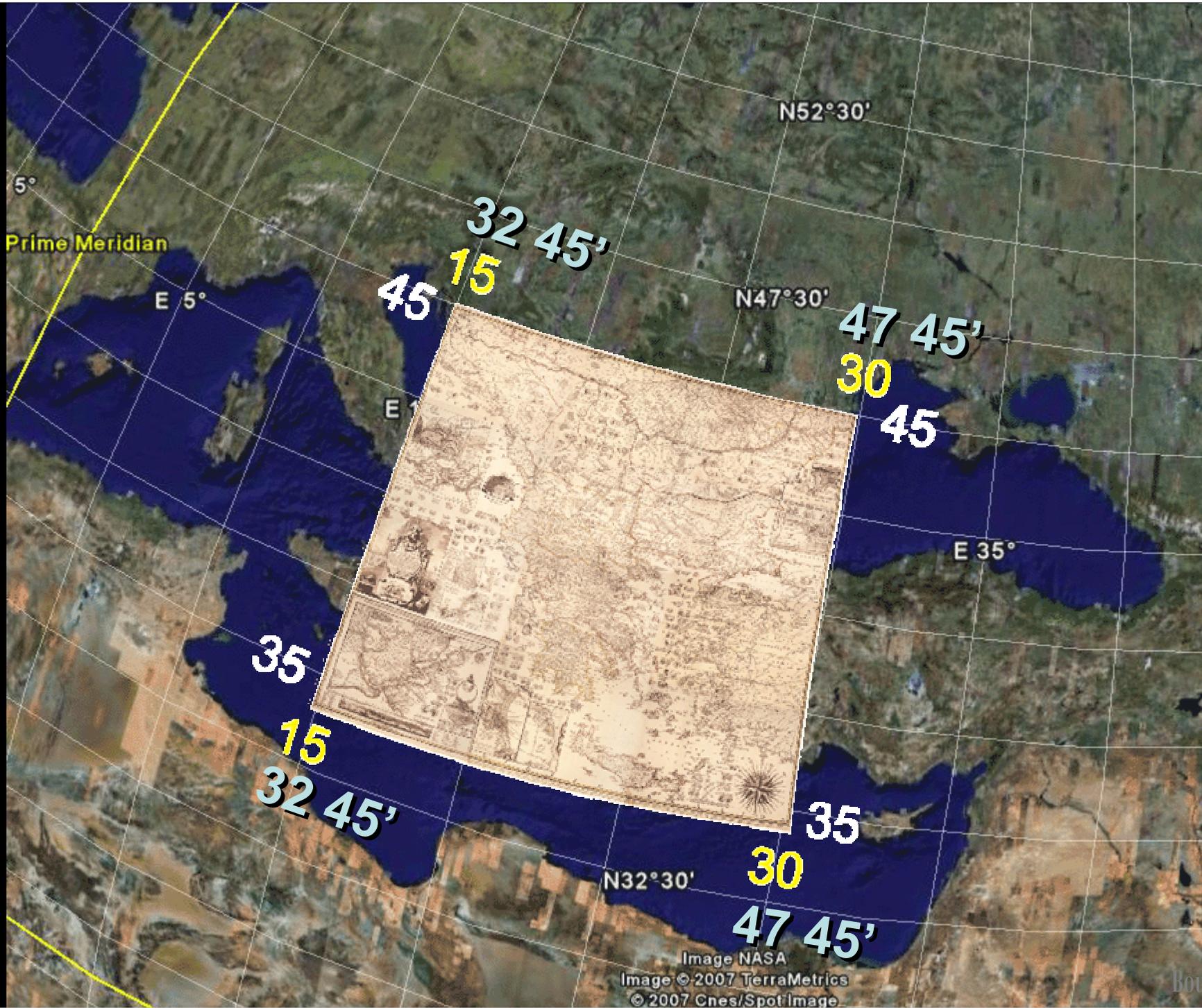
2007 >> [cartography.web.auth.gr]

2007 – Rigas Charta Year *The cartographic masterpiece of Greek Enlightenment* | Celebrating the 250 years from the birth of Rigas Velesinlis

- Aristotle University [Thessaloniki]
- Hellenic National Research Foundation [Athens]
- National Bank of Greece Cultural Foundation [Athens]
- Kozani Municipal Library [Kozani]
- Sylvia Ioannou Map Collection [Athens]
- Color Consulting Group [Thessaloniki]



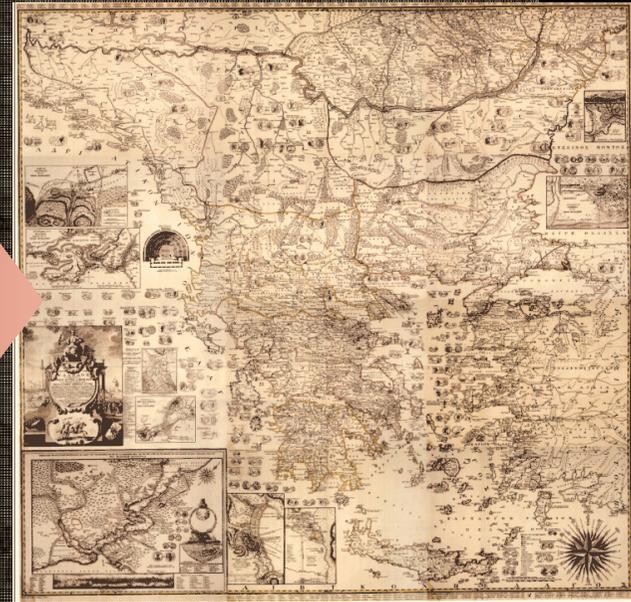
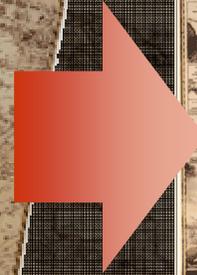




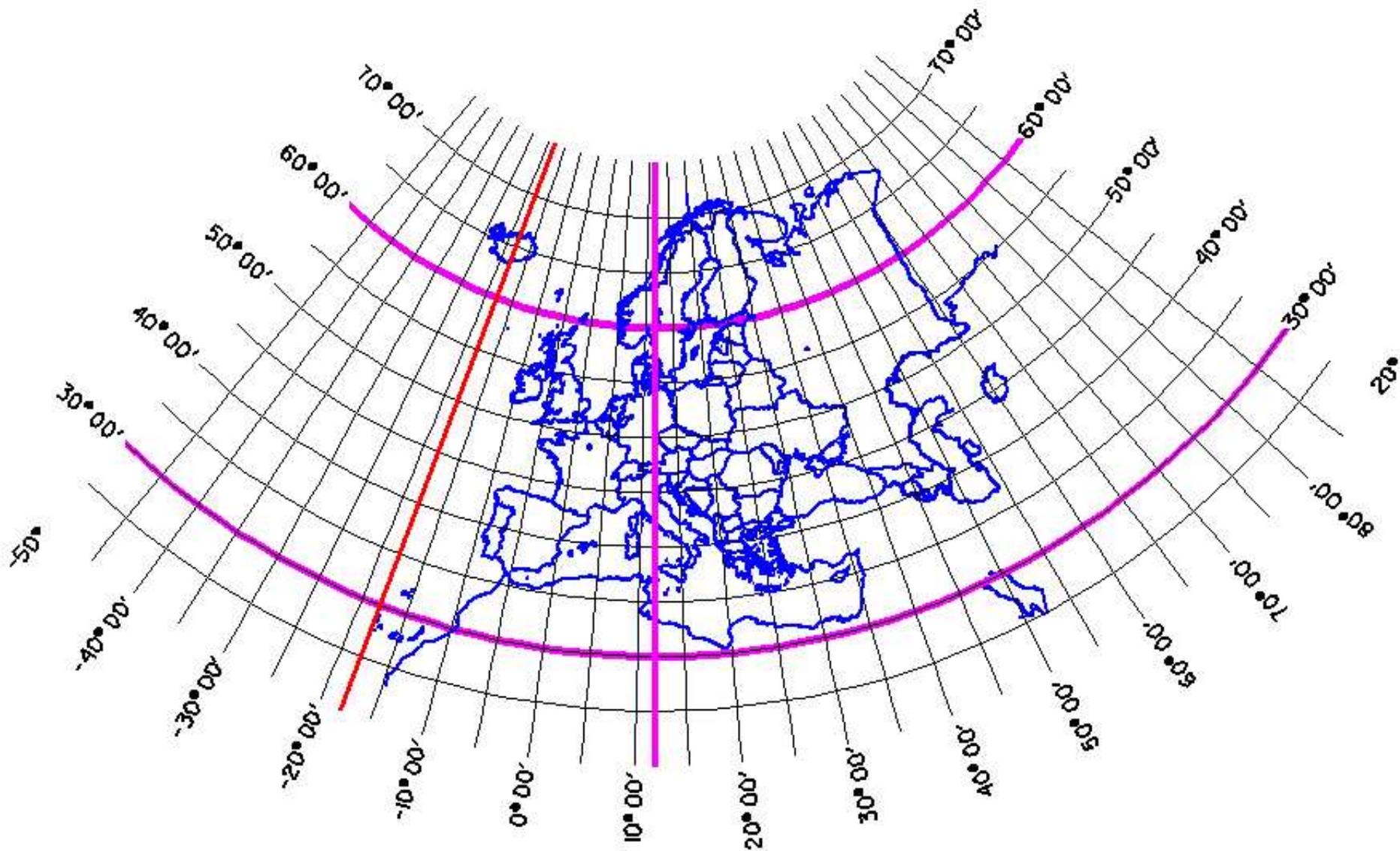
Compatibility

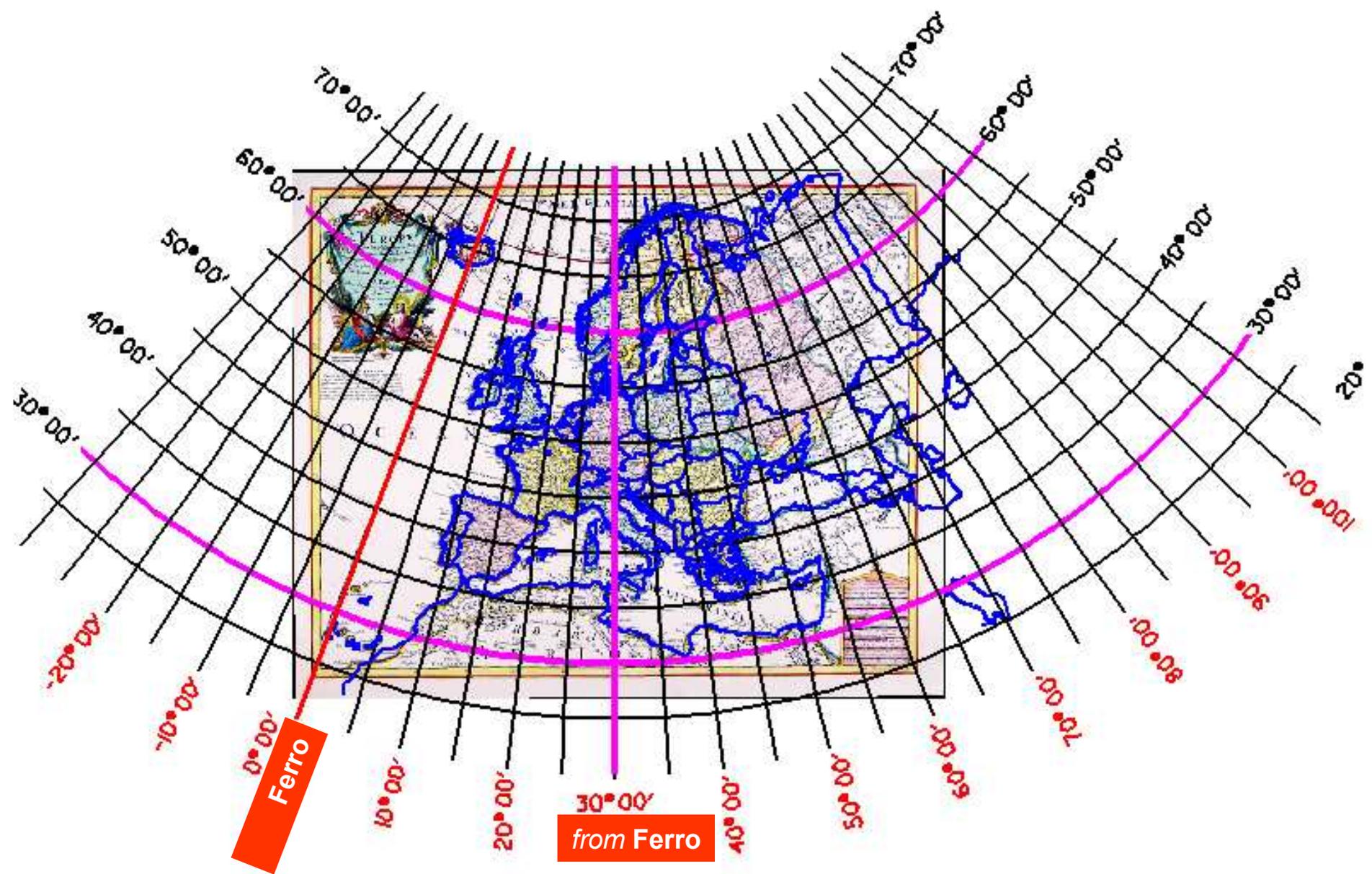


- Coastline + geometric content
- Grid meridians / parallels



Projection: Delisle





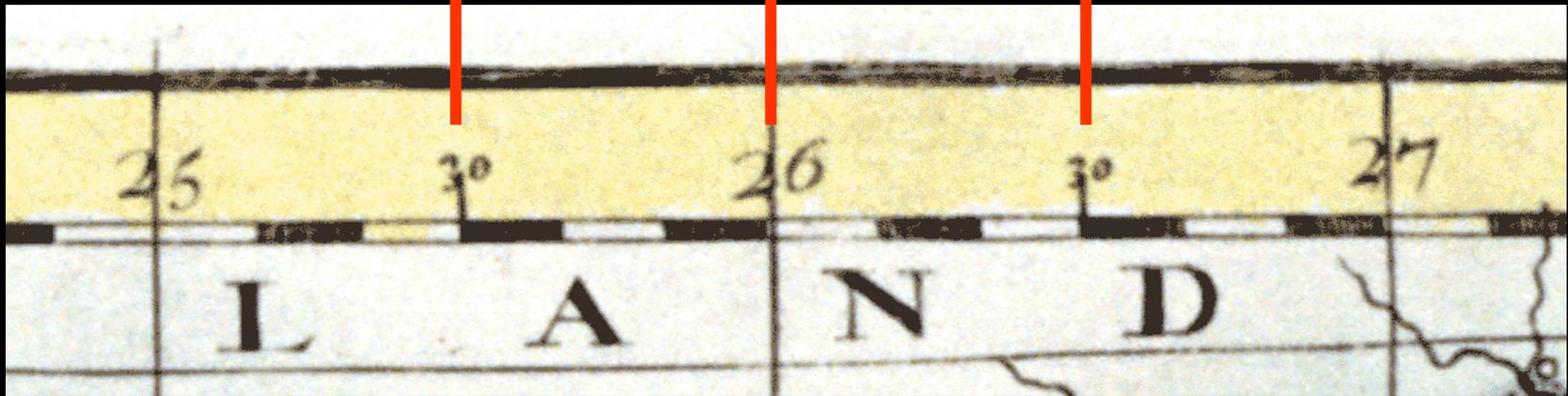
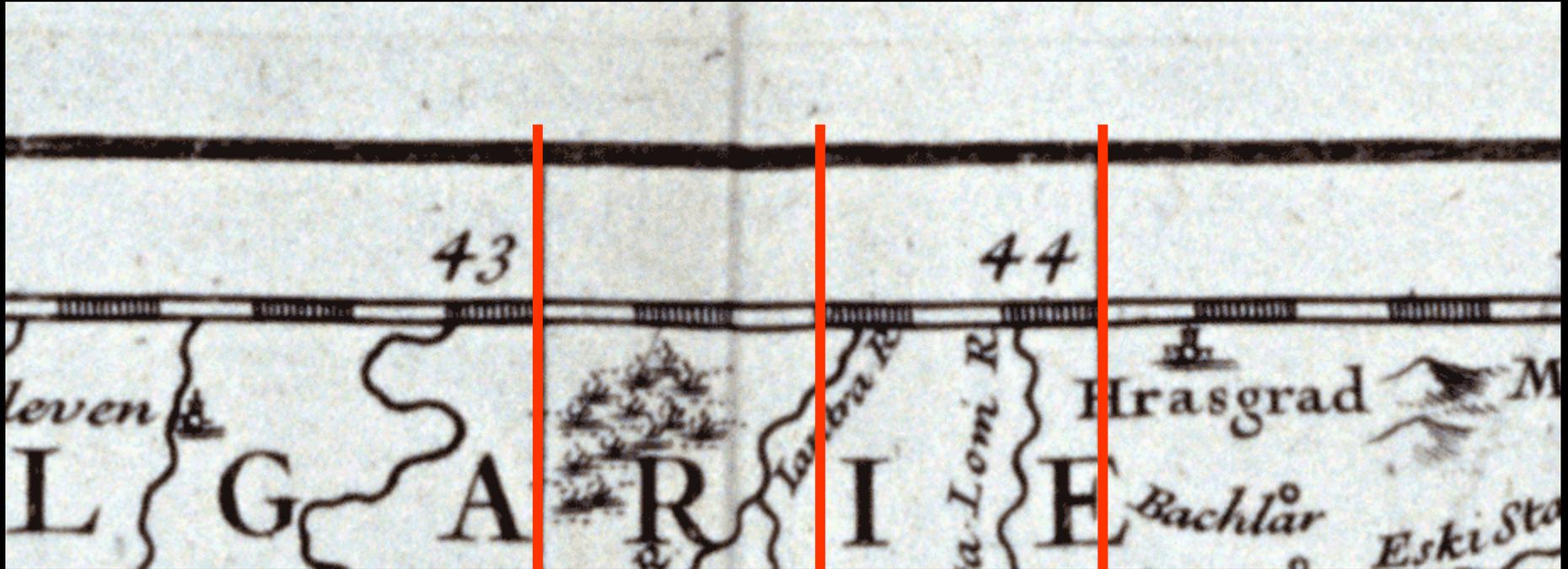


Delisle (1707)



Senex (1721)

Delisle (1707)



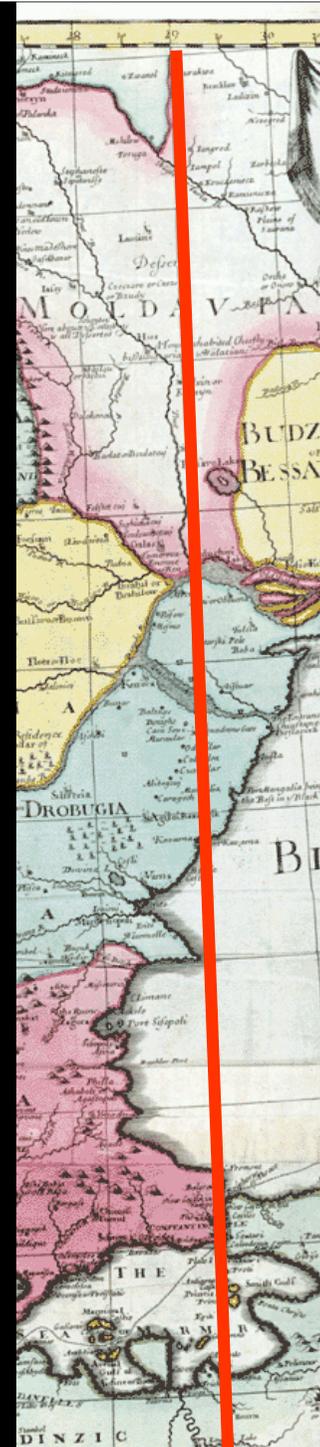
Senex (1721)

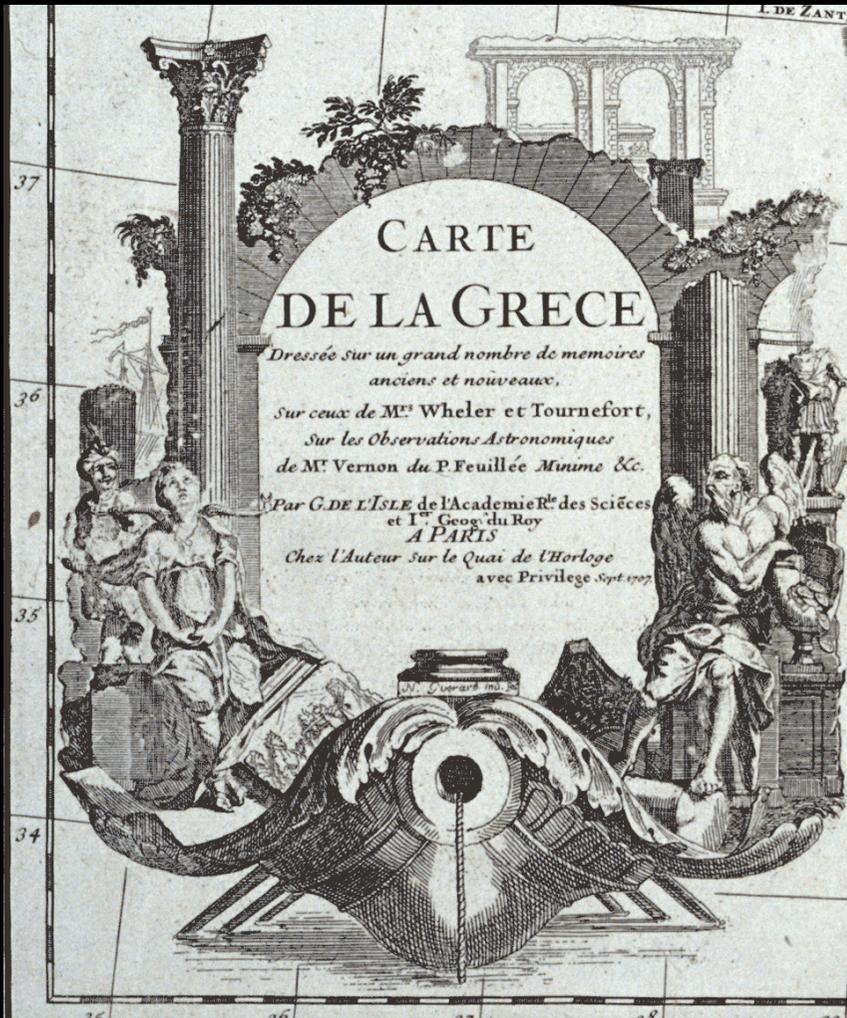
Naxos isl.

Delisle (1707)

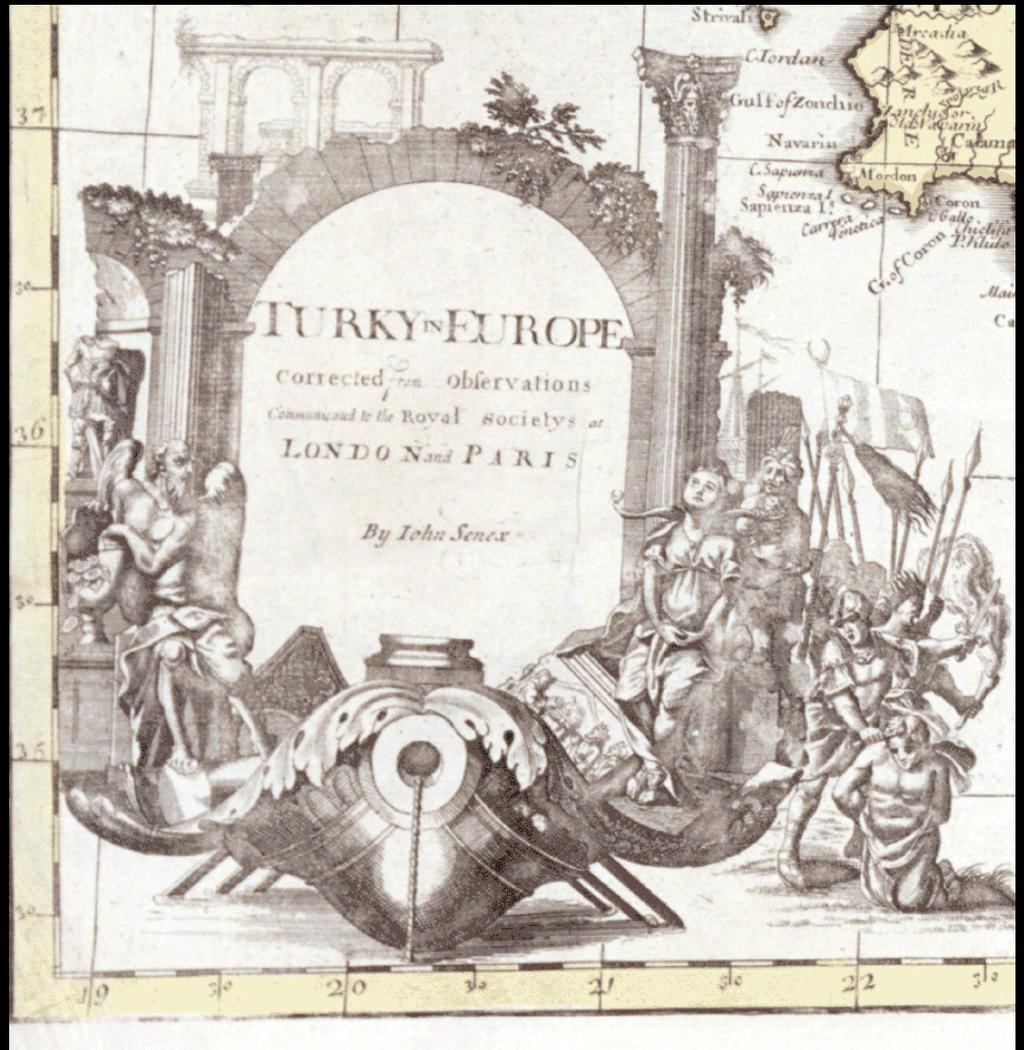


Senex (1721)





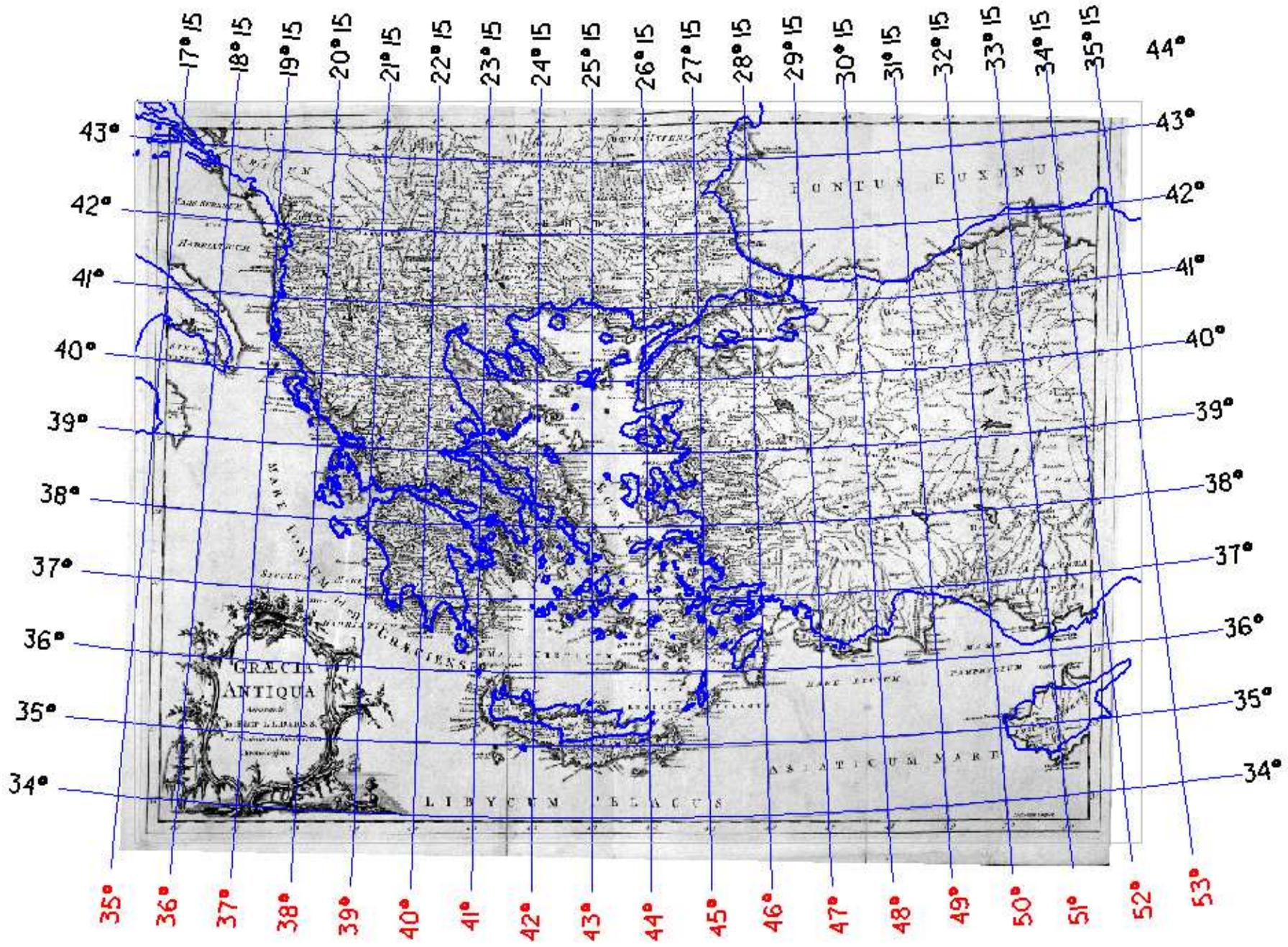
Delisle



Senex

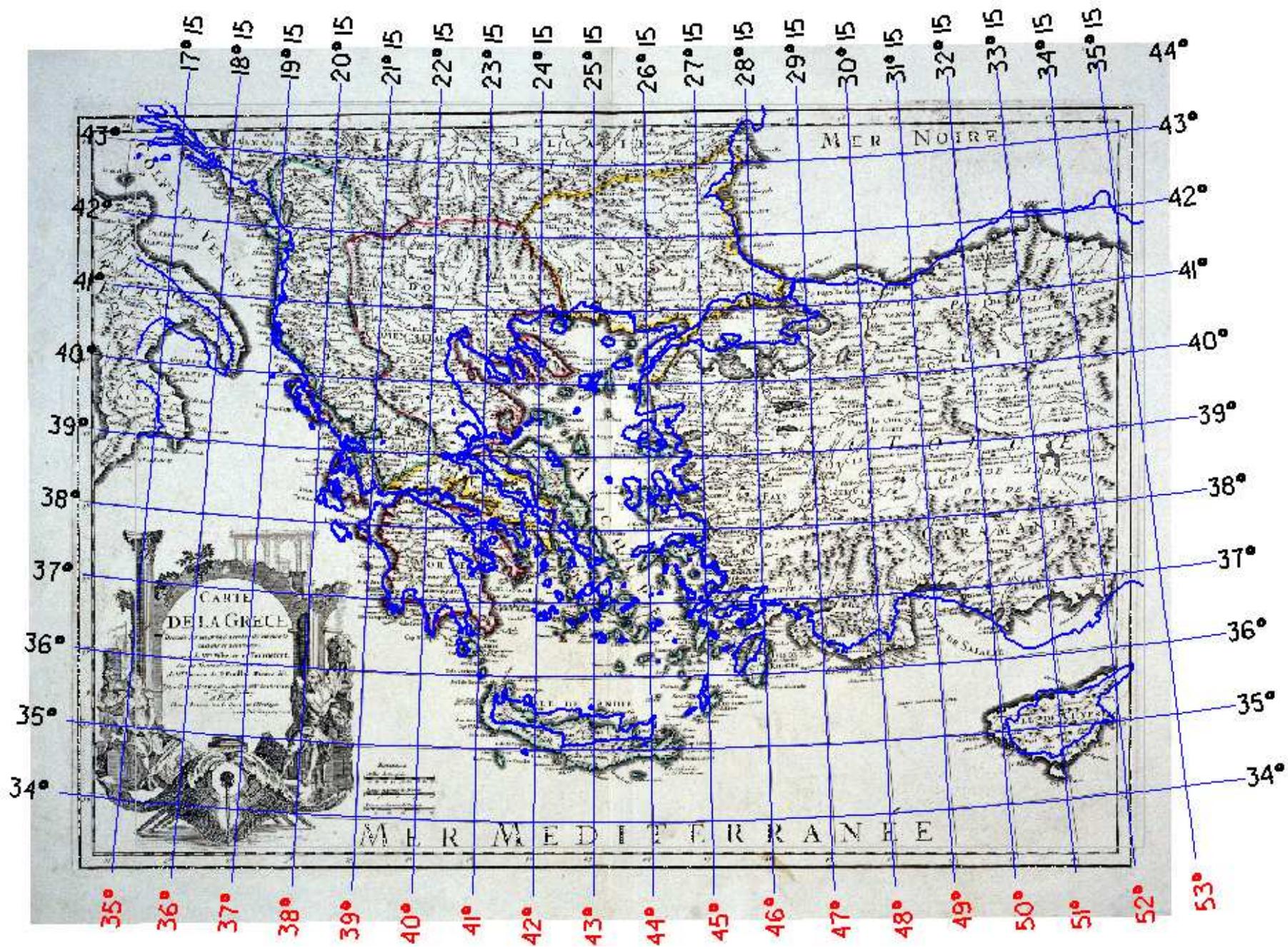


Blair 1768



Blair

Boutoura



Delisle

Boutoura



Delisle 1700 (1794)



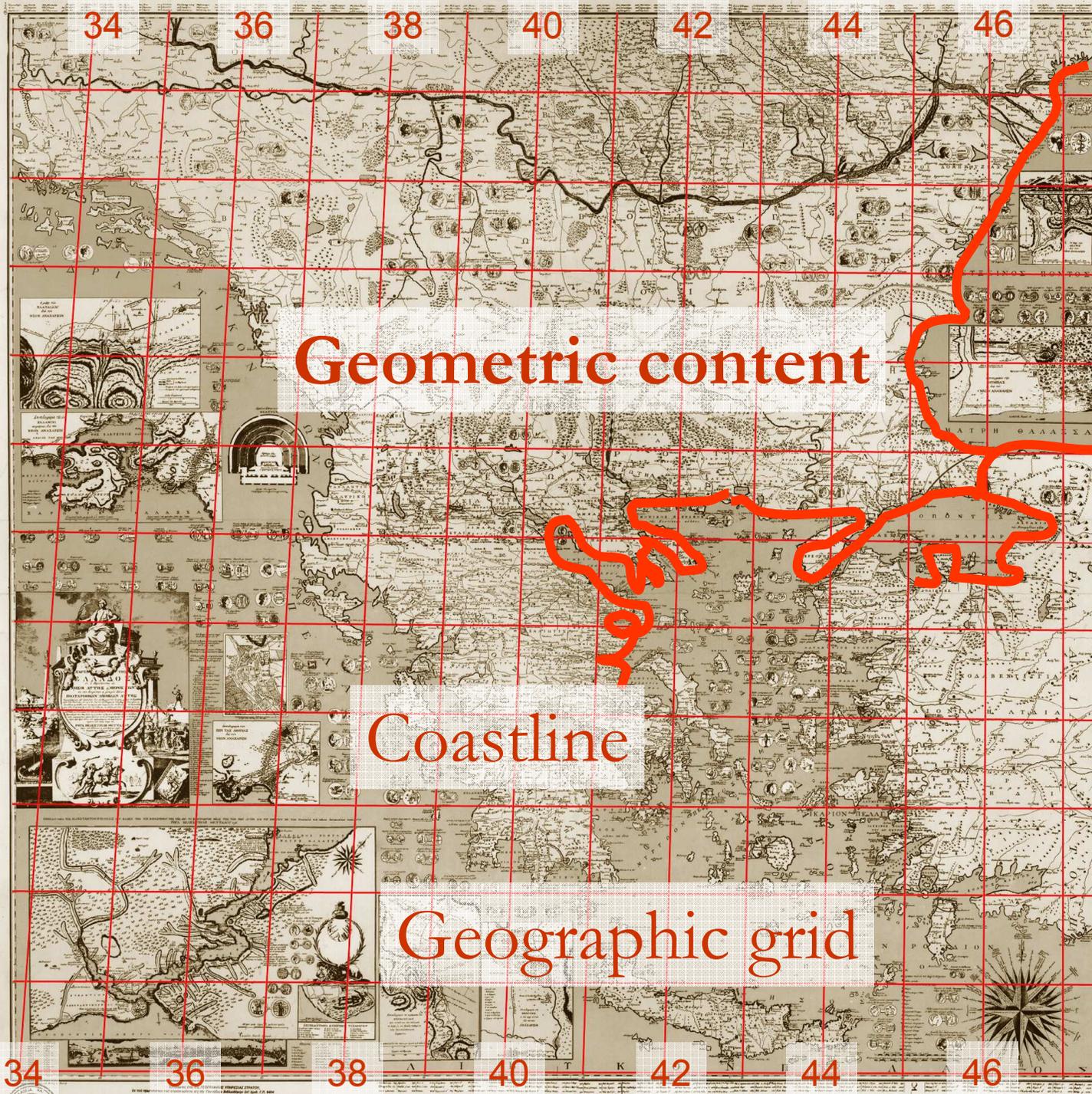
Lotter 1778



Delisle 1700 (1794)



Lotter 1778



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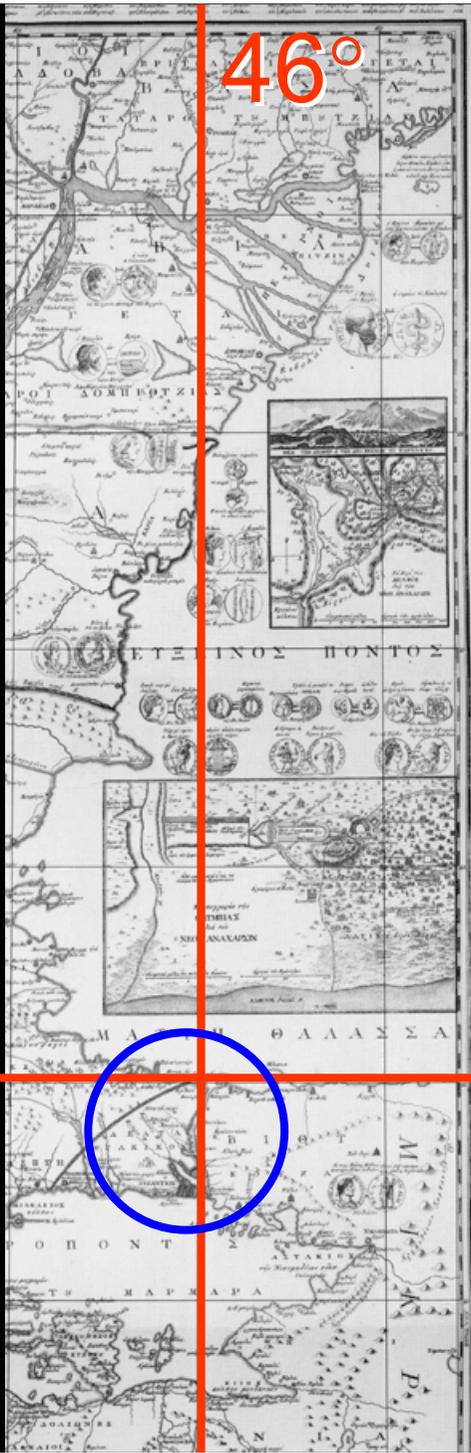
44

46

Geometric content

Coastline

Geographic grid



Geographic grid





Charta VS Delisle

Navigation

(Charta _ Lotter)



On the map projection of Rigas Velestinlis “Charta”, the late 18th century cartographic monument of Greece

2 Rigas Velestinlis is one of the most important figures of Modern Greek history in the second half of eighteenth century. Born in Thessaly, he lived only 41 years and he was mainly active in Bucharest and Vienna. He assassinated in Belgrade. More, for a rapid reference, can be found in this Wikipedia address.

3 A number of places in Vienna recalls Rigas presence and activities there, just 300 metres from the center of the city. In the street of the Greeks and in the two Greek-Orthodox churches. Rigas opted for St. George!

4 Some on the Rigas *Charta* (number of sheets, dimensions)

5 About 20 maps are existing today in the World and in Greece, about 2% of the total

6 The non-Greek language literature on Rigas *Charta* is rather poor. Since 2007 dense research activity have started in Greece **revisiting the cartography** of Rigas *Charta*

7 In any study dealing with the projective underlying of an old map, it is important the depiction of the grid of meridians and parallels. The form of the **cartographic graticule** is defined from and defines the system of projection in use. In addition, the projection in use influences the form of the **geometric content** of map and of its dominant geographic shapes as it is the **coastline** which in the case of Greece is almost emblematic. Based on these assumptions in this work it is attempted the approach of Rigas *Charta* map projection by a comparative analysis of the **same period maps** with respect to two basic map elements as it is the **map graticule** and the geometric geographic **map content**, as well as the degree of their **compatibility** since both are depended on the **projective system**.

The basic start in designing and studying the system of projection especially of the old maps is the **origin of coordinates** especially of the geographic longitude. As it is today the Greenwich meridian the

origin of longitudes, in the 18th and 19th century maps it was popular the use of the Ferro island (according to the Ptolemaic tradition) in 17 degrees and 45 minutes west of Greenwich. In these two definitions of longitude origin in the central part of Greece runs the 24 degrees meridian from Greenwich and the 41 degrees and 45 primes meridian from Ferro.

In this study the projection of Rigas *Charta* is investigated with respect to the map standards of the period as well as the compatibility of the coastline and of the geometric – geographic content with respect to the map graticule.

- 8** The area depicted in Rigas *Charta* is the window of the surface of the earth between the parallels from 35 to 50 degrees and the meridians from 32 degrees and 45 primes to 47 degrees and 45 primes from Ferro, which is from 15 to 30 degrees longitude from Greenwich.
- 9** After the map framing of *Charta* we search the degree of compatibility of the coastline and of the geometric content with respect to the image of the meridians and the parallels on the basis of the projection system.
- 10** In the late 18th century when Rigas prepared his *Charta* the Delisle map standard was dominating cartography, associated with the Ferro zero meridian and Delisle's conic map projection, as it is shown in his 1707 map.
- 11** Using Delisle's map projection we designed the actual shape of Europe introducing the base 30 and 60 degrees parallels and the 12 degrees central meridian. In red is the Ferro zero meridian.
- 12** If we trace on the same map the grid measuring the longitudes from Ferro and adjust mathematically the 1707 Delisle map, we observe a spectacular agreement both on map grid and the content of the two maps.

13 Delisle produced a variety of maps representing Greece and the surrounding area as these almost identical here.

14 But Rigas *Charta* approximates partially the area of the Delisle map like from 1707, even if *Charta's* area is closer to a map by Senex from 1721 an obvious Delisle copy as far as it is concerned the geometric content and the map grid.

But also the digital fitting analysis show that the overall geometry of both maps is identical...

15 As it is shown in this detail, even if the origin of longitudes is different, from Ferro in Delisle map, from Greenwich in Senex map, the correspondence of the map content is absolute as it is seen in the coincidence of the Naxos island meridian.

16 The same holds also here concerning the Constantinople meridian. Delisle meridian is 46 degrees and 45 primes and Senex meridian is 29 degrees which makes exactly the difference between the longitudes origin of Ferro and Greenwich, namely 17 degrees and 45 primes.

17 The similarity is striking also in the cartouches which are simply inverted!

18 The map by Blair from 1768 represents a large area depicted in Rigas *Charta* where the map grid is entirely drawn.

19 Fitting digitally this map to a modern map (in blue) drawn in Delisle projection we observe a good agreement of the grid and of the geometric content without a significant deformation of the original.

20 The same holds also for the 1707 Delisle map.

21 The Lotter map from 1778 in two sheets can be considered as a perfect copy of Delisle two sheet map from 1700 and 1794 copy. Here we should stress that the right edge frame line of both maps is passing from Constantinople. This line is not of course the trace of a meridian.

22 Also here the cartouches of the two maps are identical.

23 Rigas *Charta* is a map of the same period apparently based on some of the previous maps. Its grid is traced on the frame of the map and its coastline looks detailed and the map content is rich. Let us see the relation of *Charta*'s grid, the coastline and the map content in relation to the previous maps.

24 Focusing on the area associated to the city which presumably was the most important to Rigas, that is Constantinople, the reference point for the Greeks, we observe that the 46 degrees meridian in *Charta* passes from that city despite the fact that in all other maps passes almost half degree westwards. It is possible to make the hypothesis that this error was the result of a confusion related to the right line edge of the framing passing from Constantinople as it was designed on the maps used by Rigas for drawing *Charta*. The right edge line was taken as the image of the 46 degrees meridian.

But also in the parallels depiction an almost half degree displacement is evident.

25 If ignoring this important particularity a best fitting of *Charta*'s content to Delisle's counterpart is applied then the fitting gives an excellent result with the exception of Corfu which apparently is copied from other maps. The fitting shows a perfect compliance with Delisle map standard concerning the shape and the spatial positioning on the map.

26 The same holds by fitting *Charta* to Blair's map. A closer look shows that though the map content of the two maps is almost the same and the grid in Delisle projection (in blue) coincides to those in Blair's map, the Rigas *Charta* grid follows the meridian pattern in the central part of Greece but deviates considerably at the edges. What really happened here? Most probably, the strong focusing of Rigas on the map content, the extended dimensions of *Charta* and the copying techniques which probably were implemented, as analyzed recently by Evangelos Livieratos, lead to the erroneous drawing of the grid. Obviously Rigas designed an impressive map but was not familiar with map projections. A hypothesis can be expressed here that Rigas intensively choose an integer longitude for

Constantinople opting for the symbolism rather than for a map projection reliability.

27 Closing this presentation it is worth to show the approximation of Rigas *Charta* map content to those of the Delisle standard, using the digital navigation tool developed by Francesco Guerra and his group in Venice.

Conclusion. The Rigas *Charta* belongs to the Delisle map standard which was very popular at that time. The maps based in this standard are quite similar both in the grid (even if the origin of longitudes differs) and in the map content. *Charta's* map content is compatible to that of maps belonging to the Delisle map family with the deviation the drawing of the grid which appears only on the map frame as it is the case with the most map used in this study.

The research is still in progress!

Thank you