

## OLD MAPS AND CHARTS BETWEEN SCIENCE AND ARTS

Josip Faričić

Full Professor at Department of Geography, University of Zadar, Zadar

(e-mail: jfaricic@unizd.hr)

International cartographic association (1995/2003) defines map as *a symbolised representation of geographical reality, representing selected features or characteristics, resulting from the creative effort of its author's execution of choices, and is designed for use when spatial relationships are of primary relevance*. Also, ICA defines cartography as the *discipline dealing with the art, science and technology of making and using maps*. These definitions clearly emphasize connection between arts and science in making and using maps. But, maps are very complex medium of communication about space and in space, as source of geographical knowledge and as a part of visual language by which many different interests, doctrines and world view are communicated. Therefore, it is questionable to what extent the map shows geographical reality, ie whether it is shown on the maps at all. Namely, geographical reality includes (a) the physical appearance of geographical objects that have their own geographical location, their linear and areal dimensions (eg relief, seas, lakes, rivers, vegetation, settlements, roads and their geographical names) and (b) human actions in the physical space which encompass thinking about space that results in making judgments, assessments, and intentions about physical spatial objects, processes and interactions, and then concrete social and economic activities with a direct impact on the environment and the landscape. Perception of geographical reality is influenced by the degree of geographical knowledge the perspective from which the space is perceived (whether it is a sectoral perspective or a culturally and politically conditioned point of view). Mental mapping of space is often based on imagination, prejudices, aspirations, myths and religious motives, not only systematization and conceptualization of spatial data. Map represent geographical reality only if it is the result of a scientifically based survey or some thematic research of the depicted area related to the present. Map can represent geographical reality if it is based on scientific research of the past with an attempt to reconstruct some state or process in some historical period (but, there is no total history...) and if it relates to scientifically based strategic or spatial planning of depicted area (but, the future carries various uncertainties...). Many maps do not represent geographical reality, esp. if the goal is not to show geographical reality at all, but spatiality refers to the world of myth, legend or some other product of imagination (eg in literature), no matter how much it has the basis of geographical reality, or interpretation of that reality.

Old maps (including charts, very important navigational maps) were not only attempts (of varying success) to represent real space, ie indicators of the degree of geographical knowledge of the depicted space, but many maps were reflections of (a) perceptions of space (within a model, for example, the division of the world into climatic zones, basic social communities, religious understanding of the organization of the world, etc.), mixing the real with imaginary images of space and (b) intentions of the author or the client to graphically represent the desired and not the actual state of space (eg political interpretation and aspiration). In the past, mapping was a process of creating graphical spatial representations which employed painting techniques and patterns whose main purpose was to express ideas and feelings about real or supernatural

phenomena by using two-dimensional visual language as a means of communication. Elements of this visual language include lines, shapes, colours, shades, compositions and textures that were utilized in various ways to produce a sense of volume, space, movement and light on a flat surface. In cartography these elements were translated into various cartographic means of expression, primarily into a system of cartographic signs which encode displayed space in such a manner that allows the map user to easily decode / interpret the content of the map, either with or without aids (legend of cartographic signs). Cartographers have been "navigating" between science and art for centuries, which is reflected to a certain degree in dualism of art and science in cartography. Regardless of the fact that maps content was designed often with a primarily utilitarian purpose (clear function / application), great attention was paid to the aesthetics of cartographic presentation, with the aim of achieving harmony in graphic design and embellishing maps with various decorative elements. In Europe this ornamentation was marked mostly by Christian iconography as the predominant artistic expression, but on many maps ancient Greek and Roman mythological elements were depicted. Mapmakers often used fine arts methods, for example, *horror vacui*, avoiding empty spaces in maps by inserting various drawings that have their function as carriers of information and messages (decorative cartouches with title and editorial data, coat of arms, compass roses as element of orientation and decoration etc.). Authors suggested different messages and presented different perspectives on the depicted space. This is why maps and charts are rich in symbolism that goes beyond mere encoding which allows for an easy interpretation of geographic content. So, when maps and charts are interpreted, it is important not only to determine what is shown on a chart and where, but also how and why certain content has been presented (or omitted). In the 18th century, the process of making topographic and various thematic maps was dramatically changed: it was based on surveys and other scientific activities, the map field was filled with standardized cartographic signs, and ornamentation gradually disappeared. However, the artistic touch remains even today because the map as a graphic representation is based on aesthetics related to the appropriate choice of shapes and colours, and the balance and harmony of such a representation as a whole. Cartographers take solutions from fine arts in an attempt to achieve plasticity and persuasiveness in mapping three-dimensional geographical content (esp. relief) into two dimensions.

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Josip Faričić  
University of Zadar (Croatia), Department of Geography  
E-mail: jfaričić@unizd.hr

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**Horror vacui**  
Avoiding empty spaces in charts by inserting various drawings that have their function as carriers of information and messages:

- Flags of the Adriatic states register a complex political situation
- compass roses as elements of orientation and elements of decoration

Antonio Millo, Map of the Adriatic Sea, Venice, 1583