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Topographycal Habsburg Military Activity in Romania

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Abstract
The first of the Habsburg Empire topographical / terrain Raising Iozefini called in the original German, Josephinische Landesaufnahme, was the first unified project that aimed to map the entire surface area of the empire. Iozefini topographic survey was commenced under the reign of Queen Maria Theresa and was completed under the Emperor Joseph II. The maps were drawn by hand, about the scale of 1:28.800 or, more precisely, as usual in time units of measure of 1 inch Viennese corresponded to 400 klafteri. There are no records in altitude value. Playing variations in altitude was made by hatches and not contours. The maps have mostly historical value. They help locate missing today settlements and ancient hearths location of some communities. Exhibits show the traditional look of the old Romanian and Serbian villages, with houses scattered arrangement situation before their systematization.
Keywords: Historical Map, Land, Survey, Topography.

Introduction

In its historical evolution, mapping has proven to be a true "factory of images" that surprised, processed and transmitted (by various instrumental techniques) models and visions of nature and social relations. The mapping is probably one of the first models (if not the first) created by man.

According to some authors, the map has an urban origin. It is true that the development of a city was, is and will be linked to a form of measurement and management of the developed area. It is considered that the appearance of maps - was linked to the need of orientation of the first people (above all-), and then to the need to delimitate the area of hunting and then the area of cultivated land.

Map is a universal instrument adopted by almost all societies as a tool of representing their own world, so that to create an ordered and institutionalized vision of things. In time, the map became the scientific model that has developed due to the use of more and more sophisticated techniques.

Until recently, Babylonian mapping representation, made on a clay tablet discovered in the ruins of the city of Ga - Sur (2500 BC), was considered the oldest map. On this map it appears for the first time cuneiform writing and the first indication of the cardinal and the neighborhoods. The ancient Greeks seem to have been the first who left to posterity the first actual maps. It is considered that Anaximeder of Miletus (611-546 BC) left a representation of the Earth, the first plan sphere. But in time, any trace of this representation was lost. Anaximander made the first nadir view of the Earth. Eratosthenes, Strabo and Diogenes considered that Anaximander was the first who used the gnomon, a principle that represented the basis for the building the obelisk, which in a particular position, made it possible to determine the solstices, equinoxes the calculation of meridian, etc. Anaximander's knowledge led to the development of methods for measuring space and time. The map made by Anaximander was perfectly round, the circular Earth being surrounded by water (Okeanos), and had the oracle of Delphi in its cent. The representation of the land surface in the form of the sphere was developed by Pythagoras and Herodotus. This was scientifically proven by Aristotle in the fourth century BC and by Eratosthenes (third century - century BCE) by performing measurements on the meridian arc in ancient Egypt.

In the Second Century BC, in the Greek island of Rhodes, Hipparchus led astronomical observations and was the founder of scientific astronomy. Hipparchus brought an important contribution to the development of knowledge of the weather map by implementing the first cartographic projection systems.

It is considered that his achievements are the use of sexagesimal longitude partition and the– latitude longitude systems and the first conical projections, and also the scientific use of the astrolabe.

In the early Christian period, the first cartographic representations are considered to be the ones of Agrippa – the Map of the Empire and the works of Strabo – Geographia – about Year 19 C.E. In this period, the Greek geographer Pomponius Mela represented Tracia, in his work entitled "Cosmograph".

Results and Discussion

The largest contribution to the development of cartographic science of his time was brought by Ptolemy (around the years 90-168), the author of the geographical work with more than 8,000 toponym indications, the author of an Atlas with 28 maps made based on a rigorous mapping and supported on points whose geographical network coordinates were known. Ptolemy executed these maps using cartographic projections.

Roman civilization took considerable knowledge from the ancient Greeks, but unfortunately it has not developed it (in terms of mapping). Moreover, the Roman maps lost the cartographic projection (the mathematics base), becoming less accurate.

The most representative map of that time, which is nowadays kept only in copy, is Tabula Peutingeriana image named in this way after its discoverer, C. Peutinger (Figure 1). This map is kept in the Austrian National Library in Vienna. It is executed on parchment and presents the world known by the Romans, from the British Isles to the west, until the Ganges (in the east).The Roman roads are marked on it and also the distances between cities.

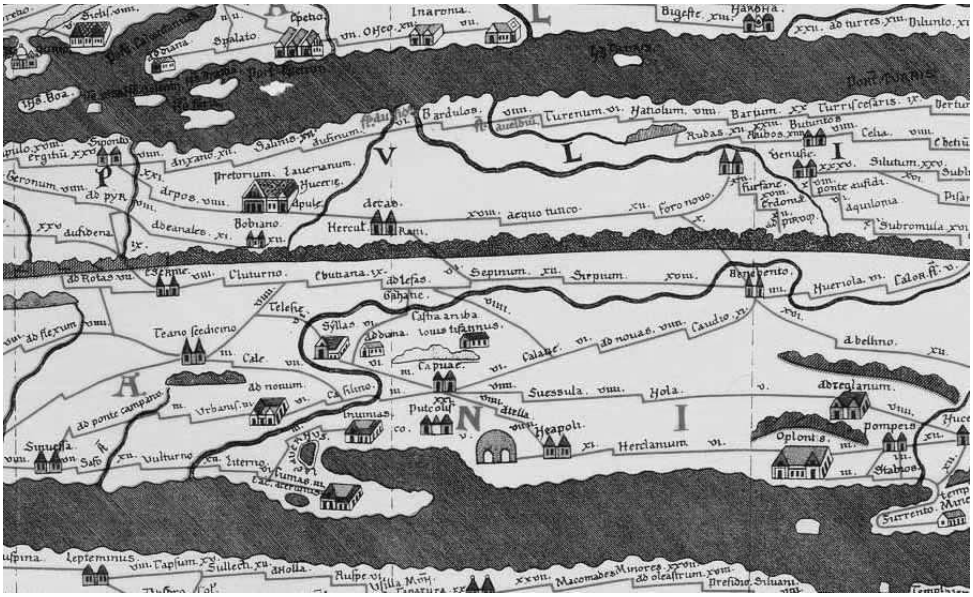

Figure 1. Tabula Peutingeriana detail of Aequum Tuticum

During this period, on the Asian continent, Pei Hsiu (224-273) executed a map of the Chinese Empire, and developed the principles of cartography. We have just references on this map, due to the reason that it was lost.

In the Middle Ages, the medieval worldview was heavily influenced by Christianity, by the questions that concerned the thinkers of the time: the issue of the place and role of the man in the universe. The vision of the medieval world upon valences of humanity was closely related to the church doctrine. The characteristic representations of this period are the Terrarum Orbis (TO) Maps. The maps which used TO representation were considered to be created by Beatus of Libeana – who was a monk who lived in the eighth century. These maps were based on ancient simple representations of the pre-Christian world. This representation was developed in the following five centuries, until the appearance of the cartography developed for navigation, starting with the fourteenth century.

In eleventh century, Jerusalem, the theological center of the world, became the geometric cent of TO maps, and virtually the center of the world. In TO model, the point O represents the Earth, and the letter T divides the world into three parts: Europe, Asia and Africa, that were placed around the Mediterranean Sea by the called Mare Nostrum. This tripartism was influenced by the level of knowledge at that time - North America and South America were not yet discovered - and on the other hand, it was in full compliance with the precepts of the church - Trinity or the Saint Trinity.

Towards the end of twelfth century, the use of compass was common and the needs of knowledge were increasing. Thus, in early 1300, a new mapping was born, which derived from totally different requirements than the Christian medieval cartography, addressing this time to the needs of navigation. The maps of the Arabs cartographers generally introduced an element of order in the execute on, the details of the terrestrial area are more geometricized, being drawn with the ruler and the compasses. During the thirteenth century, through the Arabs, the compass has been introduced in Europe and it has become an indispensable tool in the general orientation and in particular for navigation.

Navigators' requirements extended to precision maps. Thus, the maps from the monasteries maps and the TO type do not meet anymore the requirements of the time. Their place was gradually taken by another cartographic product, really valuable – the portulans. Portulanswere a kind of regional maps that allowed identification of coastlines and the calculation of distances. In general, portolans were associated with "books" (documents), which contained a description of coastal areas and of shipping times. The portolans (map + book) became a tool, and not only a symbolic, allegorical and metaphorical image. Along with the compass, the portolans allowed the calculation of the distances between two ports (or shipping time, depending of the wind speed and direction).

In the Netherlands, the Cartographic development had a great progress. Wilhelm Janszoon Blaeu (1571 – 1638) made the "Novus Atlas", known as "Blavian Geography" containing 6 volumes and 400 maps. He refers to the first triangulation performed in the Netherlands in 1610 (Figure 2). Netherlands maps contained many fine decorative elements developed both inside and outside the map (the wind roses, real and fantastic animals, and so on). Usually, these decorations covered unexplored or unknown areas.

Other famous Dutch cartographers of the period were: Frederik de Wit, Hendrick Doncker, Johannes Janssonius, Justus Danckerts and Nicolas Vischer (Brotton).

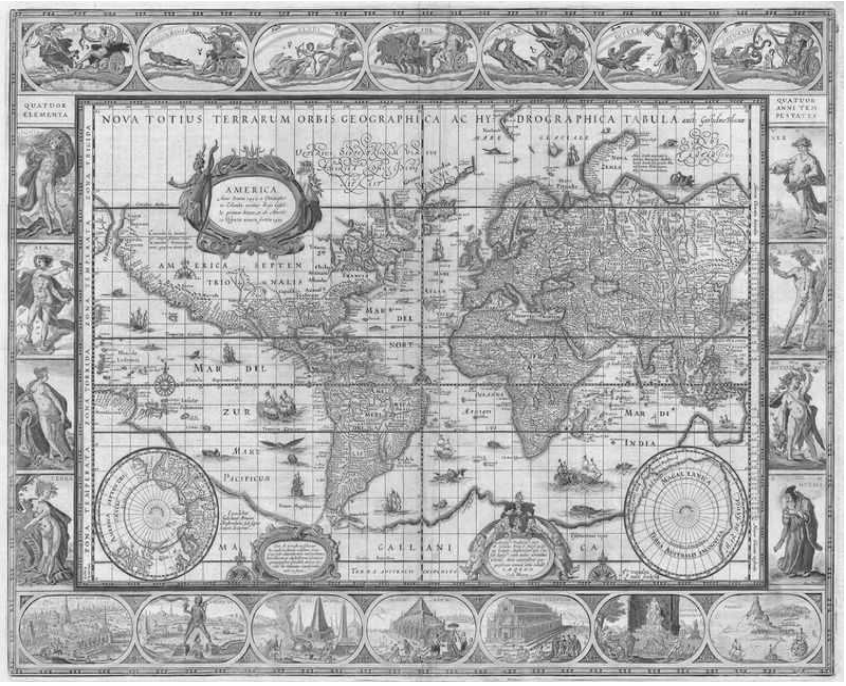

Figure 2. Willeam Janszoon Blaeu – Map of the world

One of the most valuable Dutch cartographers was Gerardus Mercator. He studied geography, geometry and astronomy. In 1569 he published the famous world maps (Figure 3), in which were represented the coasts of the Central America, and it is delimitated the Asian continent (including the SE of the continent). Mercator was the first one who used uses the first projection cylinder that will have his name and it is the basis of the projections used nowadays:

UTM (Universal Transversal Mercator), The loxodromică projection existsdue to his work (Brotton).

An outstanding contribution to the development of cartography has Hondius family. "Nouvel Atlas a Theatre du Monde", which was published in 1656 in Amsterdam. It initially had five books, to which was added another one (historical atlas).

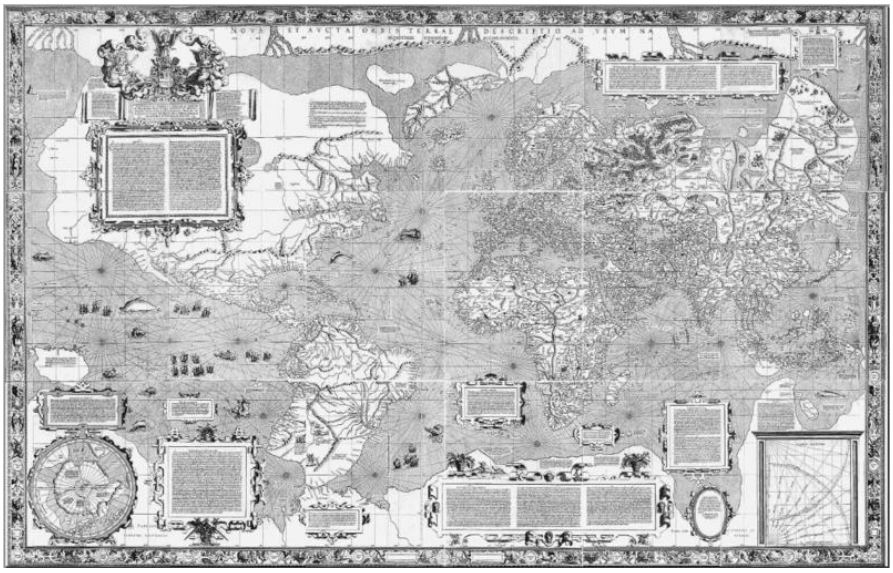

Figure 3. Carta do Mundo de Mercator (1569)

If the sixteenth and seventeenth century were the golden centuries of Dutch cartography, the eighteenth century can be called the Golden Age of the French Cartographic school. The general context was: the states interested in navigation used to organize big trips (for scientific explorations) whose purpose (among others) was also to determine precise coordinates for the completion and improvement of existing maps. Such journeys were made by Cook from England, by Bougainville from France, Spanish Kruzenshtern from Russia or Malaspina from Spain.

At the same time, there were organized surveying campaigns to determine the length of the meridian arc, to specify the shape and size of the Earth. This work involved a network of 2,000 triangles and determination of 18 bases. In 1744, Cassini began to work on the first national topographic map, made systematically on scientifically bases. This map, entitled "Carte geometrique" started began to appear in 1756, but all 182 sheets it contained (scale 1:86.400) lasted for the next three generations.

At the elaboration of this work participated: the son of Cassini, Cesar Francois Cassini (1714-1784) and the latter's son, Jacques Dominique Cassini (1784 – 1845). Guillaume De l' Isle (1675-1726) dedicated his work to the elaboration of atlases; he brought corrections in "Atlas Nouveau" to the Dutch maps developed by Sanson (finally rectified Mediterranean longitude from 62˚ to 42˚, California is represented as a peninsula, etc.).

In England, eighteenth century, the development of navigation entails the development of mapping science. Edmond Halley (1656 – 1742) initiated the creation of the first thematic maps. In 1700, he published a map of magnetic declination in the Atlantic, and then, in 1702, he

extended the representation of the entire world (except the Pacific where data are not available). Aaron Arrowsmith (1750 – 1823) developed extremely precise public works such as Pacific Map (1798) and "General Atlas" (1817).

The Progress of Jozefinian Topography

This first Jozefinian topography progress (in German- Josephinische Landesaufnahme), called "the first progress" is the first project topographic lifting unit of the Habsburg Empire. The progress was at the beginning of 3589 drawn and colored plans by mapping cartographers of that time. After the topographic progress was completed up to 4096 sections. Closure was named after the Emperor Joseph II (Kain).

Making maps had a military motivation. During the seven – years War; the War took place between 1756 – 1763. During the war it was felt the lack of precise maps. Field Marshal Daun proposed to the sovereign Maria Theresia in 1764 to order the officers of the General Staff to map unit component countries of the Empire. To this date, map making attributions were landowners who commanded maps of their properties. On May 13, 1764, after receiving the sovereign's approval, the War Council (Hofkriegsrat) gave orders to be started the first general topographic surveys (Figures 4 and 5).

Figure 4. Grand Principality of Transylvania
Source: www.ridicarea_topografică_iozefină.ro

Figure 5. Map Legend
Source: www.ridicarea_topografică_iozefină.ro

This work began in Bohemia and Moravia. Jozefinian Topography, which began under the reign of Maria Theresa, was completed under the Joseph II, Habsburgic Emperor. The maps were drawn by hand and were made at a scale of 1 inch Vienna: Vienna klafteri 400 (which corresponds approximately to scale 1:28 800). Variations in altitude were shown through hatches and not contours. Based on the set topographical lifting, there were executed maps at a scale of approximately 1:115 200. This set is also considered as part of Josephinische Landesaufnahme.

Tyrol area was not topographically lifted, because there already existed the cartographic work Tyrolensis Atlas, executed by the cartographers Aniche and Blasius Hueber in 1774, at the scale of 1:103 800.

Finally, Jozefinian topography resulted in more than 4,000 drawings, made between 1764 – 1785 Transylvania. Subsequently until 1806, there have been executed for the territories from south - western Germany, small portions of Switzerland, France and Venice.

Initially, the set of maps existed in only two copies, one for the king and one for the military. Both were kept secret.

Depending on the skills they have developed, the plans differ qualitatively, both graphically and technically. Without a common measurement basis (triangulation), the drawings cannot be assembled into a map.

Significant progress has been made in representing the land, the hills and the perspective was replaced with representation in plan. There were landscapes represented by drawing of crosses, lines and shading angles (Figure 3). Since the maps and descriptions were produced for military purposes, it was important that the land to be indicated very precisely (slopes and flat areas, mountain slopes and valleys). Forests, rivers, arable land and other properties were presented in detail. Cultivated areas were also closely represented, and also all types of settlements, buildings and roads, etc.

For national security reasons, the map was protected as a strict military secret. The use of the map was initially permitted only by the king and it was granted to persons selected by him, after fulfilling certain security measures.

Conclusions

The military survey maps were not important to the general public, as they were kept strictly as a military secret in the Military Archive in Vienna. With the opening of the archives, they have become an invaluable source for studies of historical landscapes. Increasing numbers of reprinted or scanned historical maps from different sources are available today. The usefulness of these maps could be significantly improved with georeferencing to allow more sophisticated spatial analyses in geographical information systems, in combination with the other data sets.

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