

# **THE VIRTUAL MAP LIBRARY OF ANDALUCÍA: AN EXPERIENCE IN THE COMPILATION OF HISTORICAL CARTOGRAPHY**

Ana Asensio Sánchez, Joaquín Cortés José, Antonio Fajardo de la Fuente, Flor Ortega Vallejo

Institute of Cartography of Andalucía. Regional Ministry for Housing and Spatial Planning. Junta de Andalucía – Regional Government of Andalucía

## **Abstract**

The Autonomous Community of Andalucía is an administrative entity located in the south of Spain. Its geo-strategic interest, fertile history and rich heritage have attracted the interest of writers, scientists and artists and have given rise to numerous civilizations. At a cartographic level the region has an important cartographic heritage that has remained largely unknown and has lacked a systematic study. The Institute of Cartography of Andalucía, dependent on the organism of regional self-government (the Junta de Andalucía), in 1985 undertook an ambitious project of inventory, classification and diffusion of this cartographic heritage, with the main objective of offering a useful tool for the development managers of the area (town planners, archaeologists, etc.).

The map library, in this period of time, has worked with the resources of more than one thousand archives, museums and collections, making an inventory of 130,000 documents. Over this long period of time the advance of technology has also permitted a marked improvement in the access of those interested to the images: from the optical medium of the micro-files to the files which can be accessed from the web.

Lastly, the report reviews the main landmarks in the history of the cartography of Andalucía, as well as the most common themes, in accordance with the historical and geographical peculiarities of the Autonomous Community.

## **Introduction**

The Institute of Cartography of Andalucía (ICA), dependent on the Regional Ministry for Housing and Planning of the Territory of the Autonomous Community of Andalucía (Spain), has among its responsibilities the elaboration of the basic cartography and the coordination of the thematic cartography produced by the rest of the management centres of the Junta de Andalucía. A task that has required an enormous effort, and that has undergone and continues to undergo a significant temporary development, has been and continues to be the production of a Catalogue of Historical Cartography for the whole of Andalucía.

The project of compiling the historical cartography of Andalucía that began in 1987 continues at the present time and is a necessarily flexible process due the complexity of access to some archives and the continuous appearance of new sources.

During this time have been visited more than one thousand archives, libraries and public and private collections where not only the more conventional maps which represent all or part of the Andalusian territory have been reproduced, but also those which are related to projects of a very different thematic nature (public works, mining projects, agricultural, land registry), as well as all the urban representation, which includes the engravings and views of towns so common in the German and Dutch atlases which were published from the XVI century onwards.

The Regional Ministry for Public Works and Transport, which began the project, did so with the aim of providing itself with a very important source of geographical-historical information in the face of the imminent development of regional government legislation on the Management of Territory and Urbanism. The analysis and interpretation of the historical cartography allows an understanding of the reality, starting with the study of antecedents and the evolution of the territory, giving us the key and the technical knowledge at the moment of making a correct decision about spatial intervention, this having become an indispensable tool in the management of the Regional Administration.

For other citizens the Historical Map Library of the ICA is a tool of great usefulness: for historians and for those investigators related to the sciences of the earth (environmentalists, urban development experts, agricultural researchers, etc.); but also for private citizens who can find in the Map Library resources to help them solve litigations about boundary disputes, road routes and livestock pathways, etc.

This project has also contributed towards the discovery of a rich documentary heritage, in many cases forgotten and in a lamentable state of conservation. The map is one of the most complex documents, both because of its creation, for which very specialized techniques are used, and because of the different languages in which its data is expressed, something which sometimes leads to difficulty in understanding.

### **The process of compiling the historical cartography of Andalucía**

This process began in 1987 with a comparative study of similar experiences. The selection of the maps was based on the condition that their scale should be inferior to 1: 500, excluding the street plans exclusively related to construction and architectural projects. Also, the chronological time limit established was the decade of the 1950s, since from this time onwards cartographic production proliferated as the use of aerial photography for the elaboration of the maps became a common procedure.

The elaboration of the Catalogue has been carried out in three phases: inventory, cataloguing and reproduction (to begin with by means of microfilming, followed by digital reproduction and since 2006 digital reproduction directly from the original). The work began in those archives where the oldest cartography is kept, or in those organisms which produced basic cartography. Some of the most notable organisms are the General Archive of Simancas, the General Archive of the Indies, the National Historical File, the National Geographical Institute, the National Library and a long list of other institutions, most of which are located in Madrid. Later on, the archives and libraries of the town halls and provincial councils were visited, as well as the archives of the departments of the Junta de Andalucía which have at their disposal material

transferred from the National Government. To these must be added the ecclesiastical archives, those of the important noble houses, those of private companies such as electricity, railroad and mining companies, and the private collections.

This work has been carried out thanks to the signing of agreements with the various archives who have allowed us to have access to, classify and reproduce their cartographic material, which in some cases has helped towards a greater understanding and to guarantee the preservation of some of this material, since in certain archives which lacked the sufficient means for the proper organization and preservation of their material, the personnel working for the ICA, as well as cataloguing the documentation, has carried out the preliminary work of cleaning, classifying, ordering and making an inventory of the maps.

The characteristics of their physical format (papyrus, parchment, paper, cardboard, wood, textile ...) and their dimensions have meant that they have remained folded up in bundles or rolled up as loose maps in the most inaccessible and forgotten places and in the worst conditions of preservation.

A description of each map and a reproduction of the original have been given to each one of the archives and libraries visited, and in many cases a fluid relationship is maintained which allows the exchange of information about cartography and old geographical information.

The project has dealt with a large volume of information: almost a thousand archives have been visited, and 135,000 items have been classified, among them outlines, street plans, views and maps, reproduced on 180,000 35-millimetre black and white aperture cards and 10,000 colour images in a digital format and on slides.

The collection is completed with facsimile reproductions which come from publications of a very different origin and which are accompanied by a bibliographical index of historical cartography.

We must consider this effort to be far from concluded, as work is still going on in archives which have only recently been opened or which have increased their material with new transfers; at the moment work is being done on the Historical Rail Archive, which is where is placed the material from the rail companies which existed before the creation of RENFE, the Spanish national railway network; work is also being done on the Port Authorities Archive, which has inherited the documentary material from the now disappeared Port Works Board.

### **The main themes of the Historical Cartography Catalogue**

The oldest maps representing the territory of Andalucía are from the end of the XIII century. "The Pisana Maps" c. 1290, along with maps from the XIV century, are maps based around the ports which contain information about the Andalusian coast but none or almost none about the interior of Andalucía. Information about older maps like Ptolemy's Treatise (II century) or the works of al-Idrisi (1154) is known from the copies or reconstructions from the end of the XIV century.

In the second half of the XV century the first printed maps, based on the works of Ptolemy are published, and in a series of successive editions the new geographical

discoveries which have been made from the II century onwards are incorporated, in particular those most recently made by the Portuguese of the African islands and coasts. Alongside these printed maps and port maps appears the new and increasingly complex hand-drawn administrative cartography of the Modern Monarchies. One of the clearest examples is the kind of map which is created with information obtained from the new geographical explorations of the Portuguese and the Spanish, which is considered to be confidential information and is jealously guarded by the respective Crowns.

The cartographic renaissance of the XV century produces, because of its genesis, two types of map: printed maps, generally in the form of an atlas, like those published in the Netherlands, Germany, Italy, etc., and hand-drawn maps, produced or commissioned by the Administration of the State or by the management of different jurisdictions such as the ecclesiastical or the noble houses, which represent their properties, exploitations, mills, tuna fishing net placements, etc.

There are series of marine atlases, atlases with the different kingdoms which form the continents, atlases of cities with floor plans, panoramas or views, atlases with illustrative drawings of each country or city, etc. Until well into the XVIII century these atlases are reissued, and in some cases are revised, enlarged or brought up to date, until the arrival of the new cartography to cope with the necessity of each state to know the dimensions of its national territory, the distribution of its roads or the position of its towns and cities, or to reduce and optimize seafaring activity with more precise nautical maps to take advantage of the thriving transoceanic trade.

Andalucía provides numerous and high-quality examples of this cartography, the most important cartographic work being the Marine Atlas of Vicente Tofiño, where for the first time a precise measurement of the perimeter of the Spanish Peninsula can be found. There are statistical, land registry and geographical works from throughout the XVIII century, like those developed by the Marquis of Ensenada and those of Tomás López, which, in the XIX century will correspond to those of Pascual Madoz and Francisco Coello.

In the second half of the XIX century the National Geographical Institute is established in order to create the first National Map. The process begins with the development of geodetic and topographical projects from which three series of maps are obtained: the so-called planimetric outlines (to the scale 1:25,000), levelling maps (to the scale 1:25,000) and the town plans (to the scale 1:2,000), most of the maps from these series being produced in the last quarter of the XIX century and the beginning of the XX century.

The historical cartography contained in the database of the ICA embraces an extensive series of topics which have been brought together in a contents list of more than 900 entries, of which some stand out because of the large volume of documents that they include: railroads, highways, mines, land registries, military, public works, hydraulic works, among others.

The explanation for this can be found in the establishment in our territory of the railroad network from the end of the XIX century to the beginning of the XX century. The case of the highways is similar because of the construction and maintenance of the highway network during the same period. Inside these two big thematic blocks can be found

maps of very different types and scales, from plotting maps and general works plans with very little detail to partial maps of kilometric points using a higher scale (1:5,000 to 1:1,000) linked to works projects and the maintenance of a network that was growing in parallel with the mechanization of society. A large number of these documents can be found in the General Archive of the Administration of Alcalá de Henares (Madrid).

Maybe the most voluminous thematic block is that which is related to mining activity, due to the wealth of metallic minerals and carboniferous deposits to be found in the Andalusian subsoil and to the exploitation of these carried out from the second half of the XIX century onwards by large companies with foreign capital. The typology of the maps that we find within this thematic block is very varied: mining concessions, demarcation mines, short mines, mines to compete against other mines, mining facilities and investigation permits.

The cartography most requested by users, because of the important territorial information contained therein, is land registry cartography. The land registry maps or maps of estates show the extent, the value and the characteristics of the land. A land registry map shows the limits of the plots, as well as the physical structure of the property and the way in which the earth is used, providing descriptions of surfaces, situation, boundary lines and farming or other uses which have been made known by the territorial property. The scale of land registry maps is of great importance, because as the purpose of this type of map is to provide a precise description of the land and facilitate its identification, the scale should be large enough for each plot to appear on the map as a recognizable unit. It is therefore a highly detailed cartography which is usually produced using a scale of 1:5,000 and even 1:2,000. As we have already said, this is probably the most consulted old cartographic series of Andalucía, that which is of the greatest interest to the general public, since it can be used to clarify issues to do with the boundaries between properties, the layout of old roads, livestock pathways, etc.

The index of cartography related to hydraulic works is also of great importance, given the chronic lack of water in Andalucía – a situation that has been improved over the course of the centuries by supply projects and the construction of reservoirs or channels/pipes, the documentation for which can be found in the archives of the Hydrographical Confederations – and the works to guarantee the navigability of the River Guadalquivir.

Another of those sectors which contribute a great number of references is agriculture, the region's main source of wealth until very late on in the XX century. The topics related to agricultural activity present in the Catalogue include plot concentration projects and projects to modernize cultivation, both types commissioned by the National Institute for Agricultural Settlement.

### **The new forms of access to cartographic information: the digital map collection**

The Institute of Cartography of Andalucía decided that the best way to preserve the original maps and plans was by making their existence known, as well by sometimes collaborating on projects for their preservation and restoration and promoting awareness of the value of historical cartography as important documentary heritage, of great usefulness for the analysis and the administration of land.

To this end, between 1994 and 2008 were published the catalogues for each one of the eight provinces of Andalucía, and since 2004 the possibility of consulting the database of the Map Library on the web page of the ICA ([www.juntadeandalucia.com/viviendayordenaciondelterritorio/cartografia](http://www.juntadeandalucia.com/viviendayordenaciondelterritorio/cartografia)) has been offered. Also, since 1996 in the headquarters of the Institute anybody who wishes to consult the historical cartography of Andalucía will be attended to, both in person and by writing a letter or e-mail ([cartografia@juntadeandalucia.es](mailto:cartografia@juntadeandalucia.es)).

In December 2008 the images of each map were added to the Historical Cartography web search engine, to allow their identification and search based on descriptors such as author, place name, topic or chronological period.

To these items have been added others which until recently were located in foreign archives, as is the case with the topographical maps produced by the German armies and by the American Army Map Service at the beginning of the 1940s, the originals from the Library of Congress in Washington having been digitalized, or with the first flight to provide complete coverage of Andalucía, known as the "American Flight," which was carried out in 1956-57.

## **Conclusion**

The Virtual Map Library of Andalucía is the result of an effort over a prolonged period of time that has required significant investment but which allows, thanks to the new technologies, the use of information the direct access to which has not always been possible due to the large distances between one archive and another, and which is offered not only to institutions or investigators, but to anybody who might be interested, since one of the objectives of the Institute of Cartography of Andalucía is to encourage the diffusion of cartography and related products (orthophotographs, atlases, aerial photographs and other publications), in accordance with its vocation as a public service.

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