

# **History, Cartography and Science: The Present Day Importance of the Mapping of Mozambique in the 19th Century**

**Ana Cristina ROQUE and Paula SANTOS, Portugal**

**Key words:** Cartography, History, Mozambique

## **SUMMARY**

In the late 19<sup>th</sup> century Mozambique territory was subjected to deep systematic surveys in order to map both the coastal situation and all the territory proclaimed under Portuguese sovereignty. Although trying to respond efficiently to the Berlin Conference decisions of 1885, Portuguese were committed, since 1883, in the making of an Atlas of the overseas territories claimed to be under Portuguese control since the 16<sup>th</sup> century. This claim was particularly relevant for the East African Coast where those territories were in the mid 19<sup>th</sup> century disputed by the British and the Germans. Within this scenario and to sustain the Portuguese pretensions, the Portuguese government created in 1883 the Portuguese Commission of Cartography (PCC), an operative institution that should bring together the mapping of the colonial overseas territories and the necessary studies to support it.

The first missions were carried out in Mozambique, as early as 1884, and they marked the beginning of a series of survey and scientific missions. The result was the entire recognition of the coast and the production of the first hydrographic maps on this specific area.

As the PPC ensured both the cartographic coverage of the coast and of the inland, the analysis and evaluation of its work must consider either the scientific methods and instruments used or the cooperation work with Navy, responsible for the permanent and update survey of the coast, and with the Army and the special Commissions for the Delimitations of the Frontiers of the different areas of Mozambique operating in the territory at the time. Other than this, the PCC benefited from the consistent background knowledge on the region, organized from the 16<sup>th</sup> century on, in result of the need to support the persistence of the old trade routes, namely the “Carreira da Índia”.

Considering the above mentioned, this paper aims to enhance the importance of the cartographic production of the PCC concerning the history of cartography and the new techniques and scientific methods used the 19<sup>th</sup> century, as well as in what regards cartography as an historical document, being this last aspect particularly important as these documents provide relevant information on several issues, namely on the geo-climate changes affecting the South African eastern coast, at least from the early 16<sup>th</sup> century onwards. By cross-crossing the information included in these maps with other data on the region, namely the ones collected by the Borders Commissions we pretend to show the importance of the present day information, either because the maps were the basis for the modern cartography or because maps and documents are still today requested by the Mozambique government to rebuilt their actual borders.

# History, Cartography and Science: The Present Day Importance of the Mapping of Mozambique in the 19th Century

Ana Cristina ROQUE and Paula SANTOS, Portugal

## 1. GENERAL CONSIDERATIONS AND HISTORICAL BACKGROUND

From the late 19<sup>th</sup> century on, Mozambique territory was subjected to deep systematic surveys in order to map not only the coastal situation but all the territory proclaimed under Portuguese sovereignty. Previous punctual surveys had been made since the 16<sup>th</sup> century to respond to the Portuguese need to back-up the “Carreira da Índia” and to the pretension of a better overview on some areas that were then considered of prior importance.

In this sense, areas like the Zambezi valley or the coast between Sofala (actual Beira) and Mozambique Island were cautiously described and properly mapped according to the scientific and technological procedures used and known during the 16<sup>th</sup>-18<sup>th</sup> centuries (Fig. 1).



Fig. 1. Zambezi River Delta. Anonimous (1636) *Demonstração dos Rios de Cuama* PMC, vol.V, Est.579A.

However, these maps, though carefully reproducing the areas under surveillance, were lack of accuracy and hardly ever showed either a correct representation of the regions considered or the existent areas under Portuguese political control. In most cases, the regions represented were nothing but the sketch of misknown areas where some Portuguese used to trade. These areas were then reported to have local chief's allies or friends of Portugal but could not be

recognized as being under Portuguese control, even if only for commercial purposes.

In fact, despite some pioneer Portuguese travels in the hinterland - Lacerda e Almeida (1798), J.P.Baptista and Amaro José (1802-1811) - , and the few attempts to cross the country from coast to coast - Serpa Pinto (1877); Hermenegildo Capelo and Roberto Ivens (1877) and (1884-85) -, the Portuguese remained on the coastal settlements and though their commercial influence extended to the back country, no one could say that they really knew and were effectively dominating the hinterland before the early 20<sup>th</sup> century. In fact, in the late 19<sup>th</sup> century, even after the Portuguese attempt to implements a new administrative organization of the territory under their control, it was impossible to know exactly its real extension because the back-country limits were still unknown (LIMA, 1859:235; FERRERI, 1886:10-11)

The need to know exactly either the extension of what was intended to be Portuguese African territories or the importance of a systematic recognition of the land, people, resources and potentialities was then the main purpose of the new expeditionary missions of the 19<sup>th</sup> century. In this context, compiling the previous information and re-mapping the territory was a priority (Fig.2). Maps would prove the Portuguese had reliable information on the territory, being this knowledge the guaranty to support their pretension of sovereignty over it.

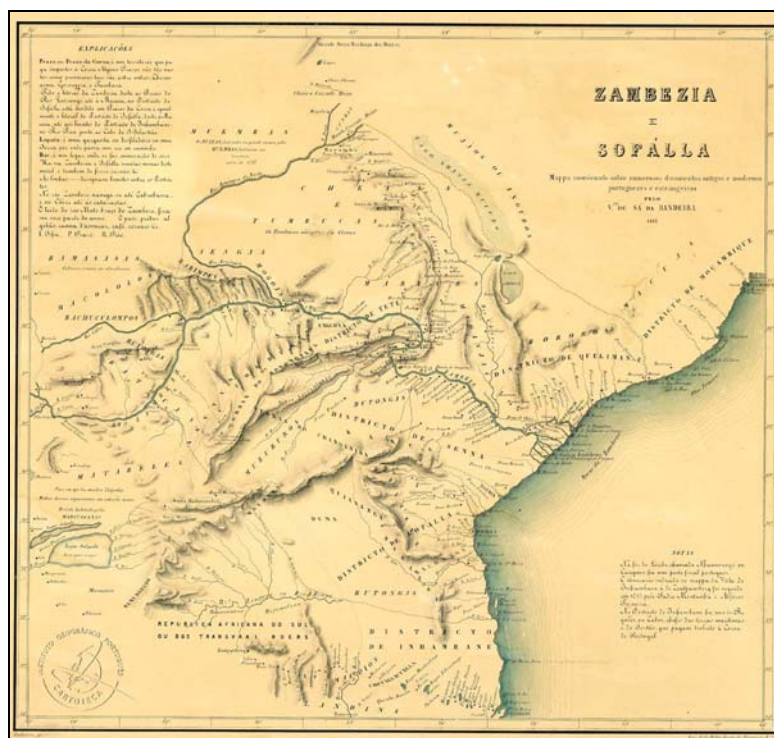


Fig. 2 Visconde de Sá da Bandeira (1795-1876), *Zambezia e Sofalla*.

Coordinate map according to numerous old and modern portuguese and foreign documents.

Portuguese Geographic Institute 0582IGP.

Simultaneously, by the mid 19<sup>th</sup> century, the increasing European interest on Africa and the

situations arising out of the Berlin Conference decisions, created special conditions to draft extraordinary projects foreseeing to this continent an extension of the European industrial development to support the different colonial power's pretensions. Railway roads crossing North-South and East-West African territories were considered as fundamental axes of development reducing distances and facilitating the circulation of goods and people. As the implementation of these projects required the detailed recognition and mapping of the affected areas as well as of all those more or less related to them, scientific mapping of Africa became also a direct result of the European presence and its interests.

Consequently, the European dispute for Africa brought to this continent, concepts of space, property and power absolutely strange to the Africans and its implementation was, in most cases, imposed by force, disregarding any African people's rights or will. Both the African concept of space and the relation people/territory were overthrown by the implementation of a western model based on arbitrary divisions related to the new colonial order and shaped by the imposition of a physical delimitation and demarcation of borders. Therefore, mapping Africa in the late 19<sup>th</sup> century was the outlining of new political units strange to Africa and the Africans.

However, as most of today's African countries inherited and assumed its colonial borders (Resolution on the Inalienability of Colonial Boundaries assumed in Cairo, in 1964, by the Organization of African Unity (OAU), ratified in Durban, in 2002), mapping Africa in the 19<sup>th</sup> century must be seen also as the act of building and shaping the present day African countries.

In this context, the cartographic production of the colonial period became an important instrument to perceive the territory and the way it was constructed and organized, but also a relevant document for a better comprehension of the history of each country, its evolution and changes.

## **2. PORTUGUESE COMMISSION OF CARTOGRAPHY (1883-1936)**

Although trying to respond efficiently to the Berlin Conference decisions of 1885, Portuguese were committed, since 1883, in the making of an Atlas of the overseas territories claimed to be under Portuguese control since the 16<sup>th</sup> century. This claim was particularly relevant for the East African Coast where those territories were, in the mid 19<sup>th</sup> century, disputed by the British and the Germans. Within this scenario and to sustain the Portuguese pretensions, the national government created in 1883 the Portuguese Commission of Cartography (PCC), an operative institution that should bring together the mapping of the colonial overseas territories and the necessary studies to support it. The PCC worked for more than 50 years in Africa and in the Far East where the Portuguese were present since the 16<sup>th</sup> century and its production constitutes the basis for all the cartography works that, until today, were done in those areas. Thus, the Map Archive of the PCC is not only an important historical repository of cartographic information but also an indispensable instrument for a global comprehension of the evolution and changes of the areas mapped by the Commission.

Albeit the PCC was specially assigned to make the cartographic coverage of the Portuguese colonial territories, its members were often requested to participate in other works, more related to the physical demarcation of the frontiers and being directly involved in the territorial demarcation of the present day African countries of Mozambique, Angola, Guinea-Bissau, Cape Verde and S.Tomé.

Within this context and regarding its cartographic and hydrographic work in Mozambique, the PPC ensure both the cartographic coverage of the coast and of the inland and just between 1884 and 1899, produced and edited 23 maps covering the most significant areas of the North Central Coast.

Accordingly, the analysis and evaluation of its work must consider either the new scientific methods and instruments used that made this task possible, or the cooperation work with other official services and Commissions, namely the Navy, the Army and the special Commissions for the Delimitation and Demarcation of the Frontiers of the different Mozambique borders operating in the territory at the time. Other than this, the PCC benefited from the consistent background knowledge on the region, organized from the 16th century on, in result of the need to support the persistence of the old trade routes, namely of the “Carreira da Índia”.

## 2.1. Fieldwork and map production

The first mission of the PCC was carried out in Mozambique, as early as 1884, between the Nyassa Lake and the Quirimbas Islands and it marked the beginning of a series of survey and scientific missions in view of the recognition and mapping of the most interior regions. Known as *Pinheiro Chagas Expedition*, this expedition was led by Serpa Pinto and Augusto de Cardoso and, although with less impact in the public opinion and in the scientific circles than the previous expedition of Serpa Pinto in 1877, the result cannot be considered of minor importance.

Witnessing, somehow, the end of an era marked by the great travels in extension and the claims of sovereignty over a vast area linking the possible Portuguese territories from the Atlantic to the Indian Ocean (Mapa Cor-de-Rosa project), this expedition realized the need for the systematic exploitation of precise geographic spaces and advocates its occupation based on a effective presence and knowledge of those territories. In this context, and to the North of Mozambique, this expedition results, in fact, the first systematic recognition of the hinterland between the Quirimbas Archipelago and the Nyassa Lake and its cartographic representation (Fig.3). However, as all the expeditions had to start and end in the coast and the most important rivers were the “main roads” to reach the hinterland, the immediate consequence of these expeditions was not only the cartographic coverage of the coast, but also the map-making of the hydrographical system.

Preliminary results came out in 1884 and 1885, when the first hydrographical maps of the central and northern coast were published - the *Plan of the Harbor and entrance of the*

*Inhamissengo River*, 1884 (Fig.4) and the *Plan of the Estuary of the Punguè River*, 1885– and a series of systematic survey missions started in the Zambezi basin.

The outcome of these works provided the effects of the use of new scientific methods and more appropriated technology and equipment and showed the close cooperation between the PCC and the Navy. Although under the coordination of the Commission, the naval officers were responsible for both the permanent update of all information and changes occurring in the coast of Mozambique and its map making.

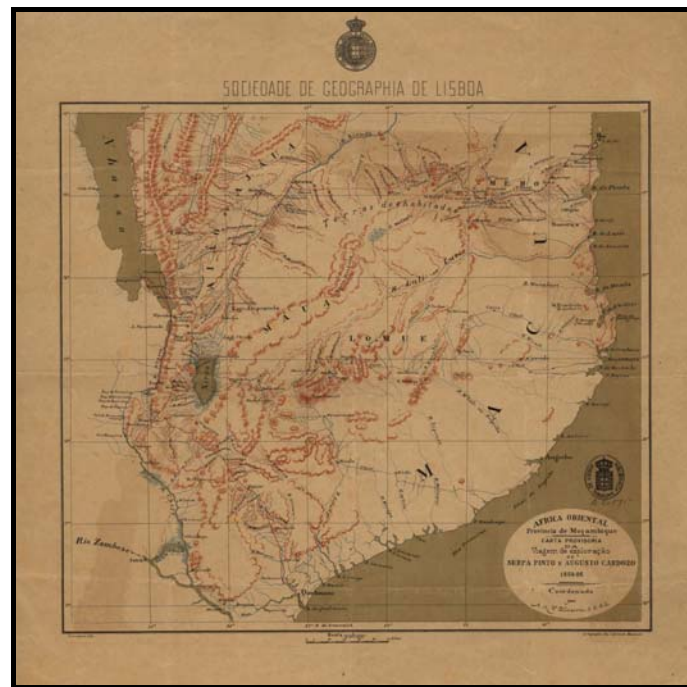


Fig.3. Pinheiro Chagas Expedition (1884-1886)  
Sociedade de Geografia de Lisboa. Available at <http://www.socgeografialisboa.pt>.

The peculiar conditions of a seashore under continuous change, the specificity of the monsoon system and the secular combination of marine erosion and of the silting up of the coast together with the alternation of droughts and floods affecting the entire area had forced the Navy to a permanent survey long before the PCC started its work. Therefore, all the works concerning the coast and the hydrographical surveys were done in a close cooperation with the Navy, while the prospecting of the interior often had the collaboration of the Army.

In fact, one way to testify the Portuguese sovereignty or the eventual military occupation of the back-country was precisely the production of the scientific and detailed cartography of those territories. And in this sense, both cartography as science and the PCC missions were considered essential instruments for the implementation of the Portuguese colonial power over a much wider territory than the one corresponding to their historical presence and influence in East Africa.

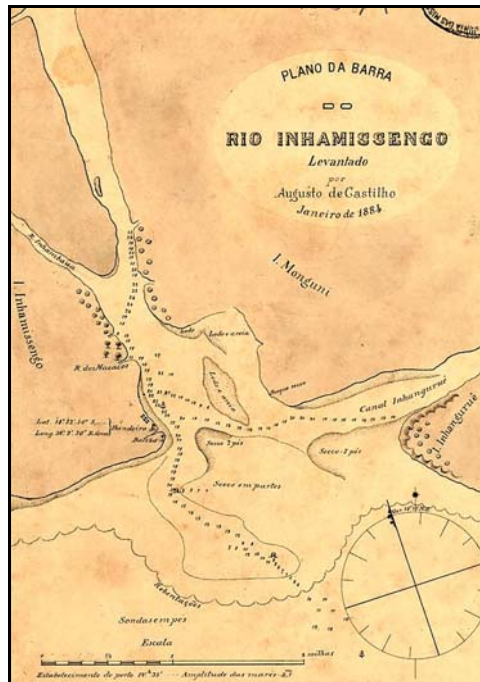


Fig.4. *Plan of the Harbor and Entrance of the Inhamissengo River (1884)*  
 IICT, Archives of the Portuguese Commission of Cartography, CEHCA P04C028A.

This particularity brings us to the specificity of the PCC field-work and to one of the most interesting characteristic to consider when we analyze it: Its cooperation and interdisciplinary quality. No matter the specificity of the PCC purposes and commitments, all the work had to be done in a cooperation basis involving not only scientists and technical experts - cartographers, navy or army officers, geographers, topographers, geodesy specialists, designers... - but also living local people with a deep knowledge of the different regions to map and able to provide the necessary support and understanding requested for the scientific work to be done. And this combination would have been impossible without an effective occupation of the territory. From this point of view cartography, territorial occupation and borders definition were part of the same process and the result was both the definition and the international acceptance of a precise geographic area recognized under Portuguese political control, and the artificial creation of a future African country.

Needless to say that cooperation meant also that knowledge, field-work methodologies and techniques, means of transportation and even equipment and people were shared on the several survey works, usually lasting for 3 or 4 months, according to the environmental conditions and the availability of human and material resources. However, it must be said that despite this cooperation, some areas, like the coast between the Cape of Saint Sebastian and Moebase including the Sofala sandbanks, were impossible to explore and to map before the second half of the 20<sup>th</sup> century since it required expensive equipment and techniques still not in use by the Portuguese at that time (MHM, 1940).

Other than the political agenda or the technical difficulties faced by the PCC teams, the Commission had also to take on other problems, mainly related to the political and social instability and the local wars, like the Gaza wars or the attacks of the Swazi on the Lourenço Marques region in the late 19<sup>th</sup> century, or to the need to proceed with the official border demarcation and delimitation of the country. Although not always affecting directly most of the areas under surveillance, both situations interfered with the Commission works either because war effects will distress all the people in the region and their daily life, or because material and human resources were then prior affected to these conflicts and the Commission teams was often requested to take part in diplomatic actions, regarding peace negotiations and treaties on the borders definition.

In this context might be important to underline that, in the end of the 19<sup>th</sup> century, PCC members were directly involved either in the special commissions for the delimitation and demarcation of the Mozambique borders with the Transvaal (Fig.5), the Swaziland and the Maputaland, or in the negotiations for the delimitation of the frontiers of the territories of Manica, Barué, Nyassa, Chire and Rovuma.

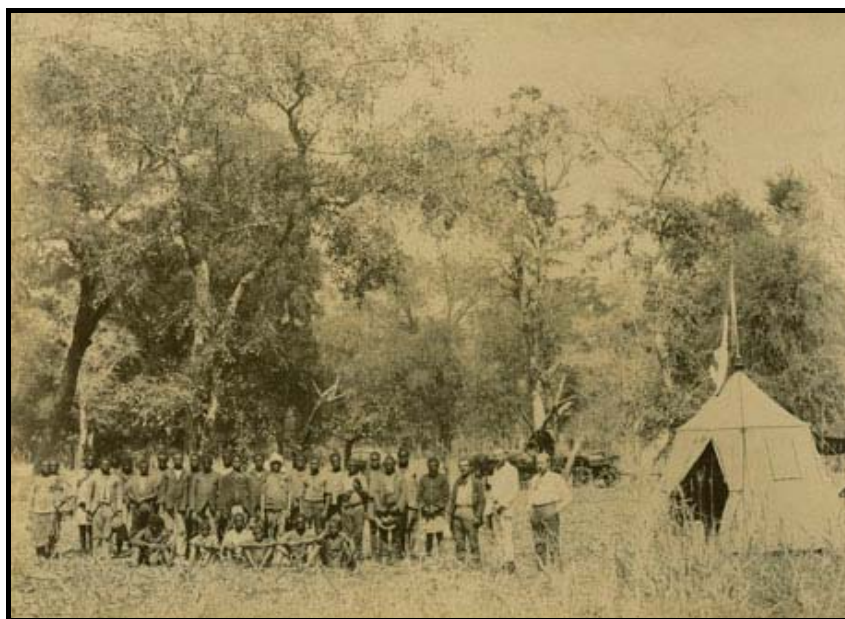


Fig.5. Limpopo camping near the border. Portuguese Commission for the Delimitation of the Lourenço Marques District (1890-1891)  
IICT, Historical Overseas Archive. Alb. 10, n° 3266.

Curiously, these interruptions did not imply the abandonment of the cartographic surveys but only forced a slight deviation from the coast to the inland areas given rise, for example, in the late 19<sup>th</sup> century, to the recognition of the main river basins of Southern Mozambique, namely the ones of the Maputo (Fig. 6), Nkomati and Limpopo rivers.



Under these circumstances to draw up a precise cartography went on slowly, but slowly became synonymous of persistence and continuous work thus resulting in a successful and reliable knowledge on the region and a very detailed register of all the relevant features of the coast and the inland areas.

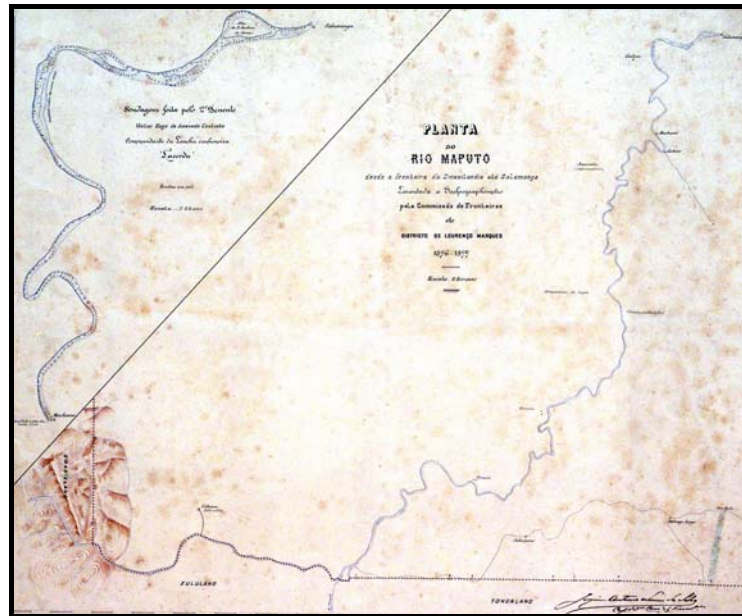


Fig.6. Plan of the Maputo River from the Swaziland border till Salamanga. Commission for the Delimitation of Lourenço Marques Border (1896-1899) IICT, Archives of the Portuguese Commission of Cartography. CEHCA P0C018.

On what concerns the mapping of the coastal areas and more specifically the rivers mouths, deltas or estuaries, one of the most significant output of these continuous and systematic surveys was the detailed register of the processes of the silting up of the coast and of marine erosion; being this register particularly significant when associated to the presence or absence of other elements like the lighthouses.

Archival documents regarding lighthouses show that the first one built in this coast was located in the Zambezi Delta. However, though mentioned by Afonso Moraes Sarmiento in 1890 as existing on the left bank of the Inhamissengo estuary, it is no longer referred to in the maps of this area three years later, and only its former position, in an area already referred to as “being swallowed by the sea”, is mentioned in the 1893 maps. Eventually built after 1884, as it is not mentioned in Augusto de Castilho’s map, its short life, less than 10 years, evinces not only the waters’ progression on that coast but also how wrong Castilho was about the Inhamissengo River.

While in charge of the surveys on the Zambezi Delta, Castilho had explored the Inhamissengo, the Luabo and the Chinde rivers and he was persuaded that the Inhamissengo was the best access to the Zambezi River and a suitable place to establish an alternative harbor, once the Chinde harbor was already showing signs of silting up. However, by the end of the 80's he came up to the same conclusions for each one of these rivers. Changes were happening so fast in this area that two years were more than enough to make islands and river streams disappear, to show up new sandbanks and to change drastically the structure of the entire Delta. In 1869, having used the British maps of 1858 and the Portuguese ones of 1861, he could only say that those maps had not been of great help to him. They were as completely inaccurate as the ones he was making would be in a couple of years (CASTILHO, 1869:197).

This will be a recurrent situation for a significant area of the central Coast of Mozambique. No matter the continuous and systematic missions under Portuguese or British surveyors or the modern scientific equipment then available, the permanent coastal changes made impassable its accurate and updating mapping. Thus, for some specific areas, like the above mentioned Sofala sandbanks, only mid 20<sup>th</sup> century scientific procedures, instruments and techniques will provide the possibility to overstep these difficulties.

A similar situation happened with the signs used to identify the different places marked on the maps, with particular relevance for those identifying the entrance of the ports or the river bars and the areas affected by deep and quick changes during the day or according with cyclical or seasonal disturbances; reason why they were extremely careful in registering any permanent or temporary obstacle as well as in pursuing systematic surveys of the same area during the all year in order to obtain a precise and update information on every working area.

One must recognize that these works were slow and required the permanent presence of surveyors especially in those areas more exposed to these changes and that in spite of the efforts to produce an updated cartography the results were, in some cases, far from corresponding to what was expected, as we can see by the references to the coast of Beira, in the report of Antonio Enes:

“I went upstream the Púnguè and I got stuck where a whirlpool was marked in the maps, as it was full filled with riverbed quicksand ... I went upstream the Búzi, deep and narrow, dashing against the mangrove roots, and at the end I bumped into a sandbank... I found the river lanes tortuous and twisted, jammed by sandbanks and hampered by fierce currents ... (and) the only possible place for a settlement was a very small area constantly threatened of being swallowed by the sea during the equinoctial tide” (ENES, 1893:13).

(free author's translation)

The effort in view of a cartographic precision is also depicted in the standardization of the conventional signs included in the maps. In fact, it compelled the use of proper lettering instead of the “recognition sings” used in the log books and maps since the 16<sup>th</sup> century.

Although sensitive to these changes, other areas were not so difficult to map and evince important characters mainly featuring the signs to identify certain points.

Pursuing the tradition of the old log books, flora and vegetation, bordering the coast and the river banks were minutely registered while isolated trees were pointed as references to be considered when approaching certain areas.

In fact, 19<sup>th</sup> century cartographers seemed to have been well aware of the forest diversity and some species as the Australian pine, the Palm and the Coconut trees or specific coastal ecosystems, such as mangroves and mud flats, are often referred to certain areas. The first ones were mostly taken as identification coast signs and thus named as “notable trees”; being indispensable to rectify this information if, by any incident, they had disappear. As for the mangroves they were specially signed for estuaries and deltas while for some hinterland rivers, streams and lagoons the sedges, rushes and cane breaks were predominant and carefully considered when interfering or obstructing the fluvial navigation.

Additionally whenever the explorers could not precise the diverse species occurring in a certain area they made use of different ways to show the diversity observed. The sketches of the different tree crown shapes – irregular, round and triangular – provide a kind of a guide to understand regional differences and supply information for future studies. Meanwhile, those more frequent became part of the letterings included in modern maps in order to enclose standard signs easily recognized by everyone.

## **2.2. Present day importance of the PCC legacy**

Despite the fact that most of the maps produced by the PCC were still missing the precision and accuracy of the later geodetic works led by Admiral Gago Coutinho in the scope of the Geodetic Mission of Eastern Africa (1907-1910), does not mean they are less important or cannot be considered a non reliable source of information.

In fact, according to the scientific and technique equipment available as well as the existent human resources and their capacity to act and move in the field, the PCC work embodies the first trustworthy cartographic information on the region.

The maps produced inform on topics so different as the geographical, hydrographical and physical characteristics of the coast, the specific marks and standard signs for the recognition of the different areas, the natural obstacles to the navigation and the precise conditions to sail safe as well as on the coastal areas affected by marine erosion and /or the silting up processes or the vegetation and coastal ecosystems and of the inland areas.

Moreover, these maps inform, with quite a detail, on the itineraries of the military expeditions and recognition of the territory, on the border lines and on all the different stages of the border

definition process of demarcation and delimitation as well as on the existent roads and railroad railways and how they progressively extend in the country.

No less important is the information given on the population, the identification of the local ethnic political units, the division of property, the regional distribution of the cultivated areas with the specific indication of what was produced or the forest products and other natural resources.

It is not intended to present here a list of all the possible data these maps can provide. The above mention items were only an example of the kind of information enclosed in these maps and just to enhance its importance not only as a map, considering its technique or scientific parameters, but also as a historical document providing relevant information for a better comprehension of the all area and of its evolution, persistence and changes.

Within this context one of the outputs of the study of these maps could be, for instance, the mapmaking of the coastal situation reflecting the natural changes already in progress in the 19th century, namely climate changes, but not affected by the strong human pressure of the late 20th century. Furthermore, the analysis of the historical data on the coastal evolution would allow a clear perception of specific natural processes, like the disappearance of extensive mangrove areas in a straight relation with the silting up process affecting coastal areas, river beds, deltas and estuaries, at least from the 16th century on.

Similar approach can be done on the border issues. Either by natural causes or by political pressure, boundary marks have disappears in many places along the border line affecting the normal and regular management of the border and enhancing the need to know exactly the location of those marks and of the border line itself to avoid political conflicts.

As in all maps, behind every map of this collection there's a world of subjects to unveil. A world the cartographer had to organize in view of the specific assignment of each mission ad purpose of the final map. However, in spite the precision of the cartography, these maps can also be analyzed as historical written documents and, consequently, the answers we expect to find there depend ultimately on the way we read them and on our purposes according to the present day problems we want to understand in a historical perspective. In this sense, every map of this collection is a small but important piece of the History of Mozambique and of the South East African Coast.

## REFERENCES

CASTILHO Augusto de (1869), “Relatório à cerca das bocas do Zambeze, e com especialidade do Rio Inhamitanga”, *Boletim Oficial do Governo da Província de Moçambique*, 1869, nº45, L.M.

ENES, Antonio (1893), *Moçambique: relatório apresentado ao governo*, 3ª ed., Lisboa, Agência Geral das Colónias, 1946.

FERRERI (1886), *Apontamentos de um ex-governador de Sofala*, Lisboa.

LIMA, J.J.L. de (1859), *Ensaio sobre a estatística das possessões portuguesas na África Ocidental e Oriental, na Ásia Ocidental, na China e na Oceânia*, Lisboa, Imprensa Nacional.

MHM (1940), “Relatório resumo dos trabalhos da Missão Hidrográfica de Moçambique desde 1930 a 1940”. Setembro de 1940, p. 9-10 (printed copy). Biblioteca do Instituto Hidrográfico Português, Lisboa.

## BIOGRAPHICAL NOTES

Ana Cristina Roque is a researcher at the Tropical Research Institute in Lisbon. Has a PhD in History of Discoveries and Expansion and works mainly in projects related to the History of Mozambique. Presently she coordinates a project on the Portuguese scientific missions of the 18<sup>th</sup>-20<sup>th</sup> centuries, in the former Portuguese colonies, with a special focus on the border's process and the scientific knowledge used and produced during this process, namely in terms of cartographical representation.

From among her publications, the most related with this thematic are:

“Sources for the history of the southern border of Mozambique: Preliminary results of a project on the archives of the *Portuguese Commission of Cartography*”, special issue of the *Journal of Borderland Studies on African Borders*, 25 nº2, September 2010, pp.77-93, 2010.

“Disputing borders: the case of Mozambique – Thongaland border (19th-20th century)”, *European Social Science History Conference*, Ghent, 13<sup>th</sup>-16<sup>th</sup> April, 2010

<http://www2.iisg.nl/esshc/programme.asp?selyear=10&pap=7683> (last access January 2011).

“Reconhecimentos Hidrográficos na Cartografia Portuguesa da Costa Centro e Sul de Moçambique no século XIX”, *Africana Studia*, 9, CEA – Universidade do Porto, pp.187-204, 2007 (in collaboration with Lúcia Ferrão)

“Reconhecimentos hidrográficos na cartografia portuguesa da costa Norte de Moçambique” in SANTOS, M. Emília e LOBATO, (coord.), *O Domínio da Distância*, Lisboa, IICT – Departamento de Ciências Humanas, pp.109-120, 2006 (in collaboration with Lúcia Ferrão).

She is an effective member of the *Portuguese Geographic Society* and of the *Commission on Geography Mathematics and Cartography*, and member of the *ICA: Working Group on the History of Colonial Cartography in the 19th and early 20th centuries*, of the *African Borders Network Association (ABORNE)*, of the *Association for Borderland Studies (ABS)* and of the *International Commission for the History of Nautical Science and Hydrography (ICHNS)*.

## **CONTACTS**

Dr. Ana Cristina Roque  
IICT - Tropical Research Institute  
Rua da Junqueira 30, 3º  
1349-007 Lisboa  
PORTUGAL  
Tel. + (351) 21 360 05 81/82  
Fax + (351) 213 600 587/89  
Email: ana.roque@iict.pt  
Web site: <http://www2.iict.pt>