

Communicating (African) biodiversity through capulanas

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Introducing the context: the exhibition “Encountering Africa - The identity of Mozambique through its biodiversity”

Museums are privileged spaces to promote science communication and non-formal science education activities. The Science Museum of the University of Coimbra was established in 2006 to help reunite the scientific collections from the University of Coimbra (Simões et al., 2013). Its collections date back from the XVIII century. Historical collections have been valued in the experience of visiting a museum, and as inspiration to organize different activities that motivate the public(s) to get to know more about the objects, their stories and the historical and contemporary relations between these objects and science and society. They can, as such, be seen as valuable vehicles to engage the public(s) with science (reviewed e.g. in Campos, 2018). With this in mind, and with a focus on biodiversity-related questions, in 2017 the exhibition “Encountering Africa - The identity of Mozambique through its biodiversity” was organized in the Hall of Africa, in the Science Museum of the University of Coimbra (Campos, 2019a; 2019b).

This exhibition used objects from the anthropological, zoological and botanical collections to show the different links between human populations and the rest of biodiversity, and how these links are related to the multiple cultural identities found in humans, and also to the advance of our knowledge on environmental, social, medical or cultural aspects. As described in more detail in Campos (2019a), the main goal of the exhibition was to contribute to raise public knowledge and appreciation on biodiversity emphasizing its fundamental role in human societies. Also important was the valorization of the historical, cultural and scientific heritage of the collections from this museum, showing them with a new perspective: highlighting the cultural and biological diversity of Mozambique using selected objects from the anthropological collection and putting them in dialogue with some objects from the zoological and the botanical collections (from the Science Museum and from the Herbarium of the University of Coimbra). The objects were grouped in four thematic modules - body, house, confrontation and music - in order to illustrate the different ways human societies enjoy, use, and transform biodiversity. The public(s) were greeted at the entrance of the Hall with this text:

“Welcome to Mozambique!

Welcome to Africa!

Welcome to our planet!

We invite the public to visit Mozambique, to be fascinated by the beauty of its cultural diversity and by the way men and women have been able to use local biodiversity, transforming it into a myriad of objects, and to travel from a past that began in the collection and study of those objects to a present that makes us reflect on the sustainable future of nature.

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It is our ambition to contribute to the recognition of the importance and relevance of biodiversity as the main step to the path of sustainable development and to a reflection about the contribution of biodiversity in the construction of cultural and social identities and about the historical routes engraved in the heritage of the University of Coimbra.

This is an admittedly anthropocentric exhibition: we recognize humans as part of biodiversity but it is our goal to emphasize the importance of the remaining species in our daily-life and in our identity. We have thus chosen to highlight the cultural and biological richness of Mozambique selecting mostly objects from the anthropological collection that are organized in four thematic areas - Body, Home, Confrontation, Music - illustrating the different goods and services that biodiversity offers to human societies.

We organized the exhibition in four thematic areas but it was not our intention to give it limits. Because “each one’s boat is in their own chest”² each visitor will be able to identify in the objects different stories, memories, identities or traditions. And will be able to walk between the material and the immaterial, the individual and the collective spaces, the daily-life pragmatisms and the subjectivity of the beliefs and of the artistic manifestations.

Amplifying the exhibition: the Facebook page and the outreach program

From this assumed intention of valuing the museological collections and of promoting an engaged dialogue between historical objects and contemporary questions, the physical space of the exhibition was amplified to the virtual world, through the creation of a Facebook page (<https://www.facebook.com/Exposi%C3%A7%C3%A3o-Ao-encontro-de-%C3%81frica-726639077504343/>), and to other places in the Science Museum and in the city of Coimbra, through the organization of a complementary outreach program targeting different publics.

The objects were further used as catalyzers in thematic bibliographic researches about different aspects related to the objects and the theme of the exhibition. Results from these researches were used to elaborate short texts to feed the Facebook page, and as inspiration to the design of the activities from the outreach program. By doing so, the history of science was articulated with processes of co-construction of knowledge, and the objects from the XIX century found new contexts in different scientific topics from the XXI century.

Among the objects exposed, there was a capulana (Fig. 1). Capulanas are traditional fabrics found in many African countries that have multiples voices, as they can be used in multiples ways, in several occasions, and with different meanings. Patterns are very diverse. Capulanas usually display a rich diversity of colourful patterns and several patterns have shapes allusive to natural elements, such as flowers, leaves, shells or animals. These patterns thus offer a unique opportunity to initiate a conversation about (African) biodiversity. Being easy to manipulate, capulanas are also an excellent medium to discuss science/biodiversity-related topics with younger children (Campos, 2019c). This was tested in a series of sessions held in the scope of the exhibition’s outreach program, called “What is hidden in the capulanas?”.

² Makua proverb cited by the Mozambican writer Mia Couto in “Each man is a race”.



Fig. 1: Part of the module “music” from the exhibition “Encountering Africa - The identity of Mozambique through its biodiversity”, held in the Science Museum of the University of Coimbra, showing a capulana and a branch of cotton.

The activity “What is hidden in the capulanas?”

The activity was design within a theoretical framework that considers science communication as a research and working area. It was guided by the five pillars of science communication, or positive responses to science proposed by Burns, O’Connor, and Stocklmayer (2003): awareness, enjoyment, interest, (forming/transformation of) opinions, and understanding. It was further inspired by the type 3 format of science communication - consultative science communication - wherein knowledge is exchanged interactively between scientists and non-specialists publics (Palmer and Schibeci, 2014).

A series of 5 sessions were offered to pre-school children, aged 3 to 6 years old, and organized in groups of 15 to 20 children. The sessions had 3 main parts (Fig. 2). First, 1) they started with an exploration of a terrestrial globe, where the children were able to identify their current country, Portugal, and continent, Europe, and relate it to Africa and to Mozambique. Then, 2) the children were invited to choose their favourite capulana from a pile and find the biodiversity “hidden” in its pattern. This led to a discussion about the species represented, where they live, why some species can only be found in a given part of the world or if a given species is more or less known, abundant or likable. Finally, 3) the children engaged in a “paint your own capulana” activity, allowing children to use and transform the knowledge exchanged during the session, and to use creativity to express it.



Fig. 2: The three main parts of the sessions “What is hidden in the capulanas?”: exploring the terrestrial globe, finding the “hidden” biodiversity in the capulanas, and the “paint your own capulana”.

From a science communication and a non-formal science education perspective, these parts allowed exploring different science-related topics in/with capulanas, namely:

- 1) the exploration of the terrestrial globe and the relative identification of countries and continents allowed exploring topics related to geography;
- 2) finding the biodiversity “hidden” in the patterns of the capulanas, and the discussions around the species represented, allowed exploring topics related to biodiversity, evolution, adaptation, geography, environmental characteristics or human induce changes;
- 3) the “paint your own capulana” activity and the critical observation of the drawings allowed to understand how biodiversity is perceived by young children and how science communication can target the “invisible species” (e.g. most of the drawings were about animals, despite the abundance of patterns related to plants, thus contributing to discussions about ‘plant blindness’ [Jose, Wu and Kamoun, 2019]).

With the permission of the children, some of the drawings from the “paint your own capulana” activity were photographed and then used to complement the illustration of texts on different African species published in the Facebook page of the exhibition (Fig. 3).

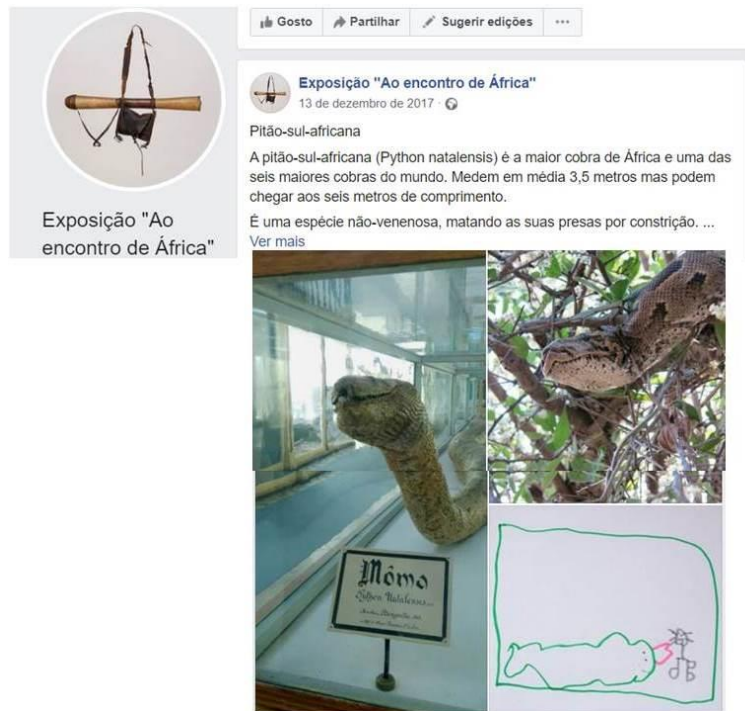


Fig. 3: Example of a drawing used to illustrate a text about the African rock python (*Python natalensis*) in the Facebook page of the exhibition “Encountering Africa - The identity of Mozambique through its biodiversity” (in Portuguese only)

Widening the usefulness of capulanas for science communication

As an example of other possible activity making use of capulanas, the workshop for adults “Fabrics that talk: aesthetics, memories and knowledges” (<https://www.ces.uc.pt/pt/pthttp://www.ces.uc.pt/pt/agenda-noticias/agenda-de-eventos/2017/panos-que-falam/apresentacao>) allowed expanding the scientific contents. Again departing from the natural elements identified in the capulanas, in this workshop the debates were mainly framed around cotton, the prime fiber used in the manufacture of capulanas. The topics included the high diversity found in the genus *Gossypium*, the geographic distribution of the species, the processes of cotton domestication, with the consequent loss of genetic diversity, and the environmental, cultural, economic and social transformations caused by these processes and the commercial uses of cotton (as discussed by, e.g., Wegier, Alavez and Piñero, 2016).

Some of the contents debated were how the commercial cultivation of cotton is almost solely done using cultivars not native to the regions. For example, the domesticated species native from the south of Africa (and the Arabic peninsula), *G. herbaceum*, the “Levant cotton”, corresponds to less than 2% of the world production (e.g. Patel et al., 2016). But is a widely used species in many African countries because of its medicinal proprieties, and the seeds can be used to feed the cattle or domestic animals (e.g. Chitura et al., 2018). Moreover, commercial cotton cultivation is linked to forces of oppression in different geographic and temporal scales, from the colonial history of many African countries to present day neo-colonialism (e.g. Isaacman, 1982; Isaacman, 1992;

Bruggeman, 2017). Capulanas are thus also a very good vehicle to communicate past and present aspects of history, anthropology or sociology interweaved with biology or ecology, in a perspective of truly interdisciplinary science communication.

Final remarks

The sessions described here showed a high potential to engage the audience, promoting co-construction of knowledge from shared stories and perceptions, and are easily done with other traditional and non-traditional fabrics, widening the geographic area and the discussion about different species or other topics related to biodiversity or environmental sustainability.

Furthermore, since traditional fabrics are connected to social and cultural aspects of human societies, it can be used as communication vehicles for delivering a diversified range of messages or reaching different groups, including publics traditionally less interested or engaged with science.

Capulanas, as well as other traditional and non-traditional fabrics, can give us an engaging context to deepen our knowledge about different aspects of biodiversity and human social and cultural dimensions. They can be seen as an exciting example of the entanglement of nature and culture, a picture of our relational world: “*things and beings are their relations, they do not exist prior to them*” (Escobar, 2015) and “*living beings of all kinds constitute each other’s conditions for existence; they interweave to form an immense and continually evolving tapestry*’.” (Ingold, 2011).

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