Museum Leadership in Climate Action

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EDITORS

MIRTHA ALFONSO MONGES
DEBORAH ZISKA
CHEEYUN KWON
HANS VAN DE BUNTE

EVALUATORS

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Table of Contents

In memory of Óscar Centurión Frontanilla (1955 – 2025)

Presentation

From November 15 to 17, 2023, Paraguay was the site of a historic gathering in the evolution of the International Council of Museums (ICOM), as it hosted a conference organized by four of its international committees: the Committee for Museums and Collections of Archaeology and History (ICMAH), the Committee for Museum Management (INTERCOM), the Committee for Communication, Marketing and Audience Engagement (COMMS), and the Committee for the Training of Personnel (ICTOP).

The theme that brought together more than 250 people from 41 countries around the world addressed one of the most important topics of our century: climate change and climate action. The conference took place in the city of Hernandarias, home to ITAIPU Binacional, the world's largest hydroelectric power producer, through the ITAIPU Museum – Tierra Guaraní. Over three days, it invited participants to reflect on the crucial role of museums—within the framework of their new definition—in raising awareness about climate change, and also on their responsibility as community institutions with the tools to disseminate powerful narratives and take a stand on issues of societal relevance.

For these reasons, it is a great honor to present this bibliographic material, which brings together several of the papers presented at the conference. More than 300 pages in Spanish and English invite us to reflect, to become informed, and to dream—through museums—of a fairer, more diverse world, and one that is truly committed to environmental care.

The opportunity to bring together so many committees with diverse interests, approaches, and agendas also made possible the drafting of a joint declaration, which was presented at the ICOM Annual Meeting held in Marseille (France) in June 2024, and which can be read in the following pages.

We hope this material contributes to that noble goal. From ICOM Paraguay, we once again thank all the institutions that made this conference possible in our country: ITAIPU Binacional, the National Secretariat of Culture, the Night of Museums Association, the Paraguayan Association of Museologists and Museum Workers (AMUS), and of course, all the individuals who voluntarily dedicated their time to the many tasks involved in organizing an event of this magnitude. Museums in Paraguay and around the world are not only guardians of historical narratives, but also active participants in planning and shaping the future of our communities—drawing from collective and individual identities and memories, and from the tangible and intangible heritage we are proud to safeguard and share.

MARIA GLORIA GONZÁLEZ
CHAIR, ICOM PARAGUAY (2024 – 2026)

OSCAR CENTURIÓN FRONTANILLA (+)
FORMER CHAIR, ICOM PARAGUAY (2021 - 2023)

Recommendations for 96th Session of Advisory Council

From:
ICMAH, International Committee for Museums and Collections of Archaeology and History
ICTOP, International Committee for the Training of Personnel
INTERCOM, International Committee for Museum Management
MPR, International Committee for Marketing and Public Relations
SUSTAIN, International Committee on Museums and Sustainable Development
DRMC, Disaster Resilient Museums International Committee
ICOM Paraguay, National Committee of Paraguay

Recommendation 1:

We recommend, in order to motivate more museums to apply and compete in various aspects of sustainability, that ICOM consider expanding the criteria for the *ICOM Award for Sustainable Development Practice in Museums* to be more inclusive so that 1) each of ICOM's global regions are represented in the final award winners and 2) small and medium museums are incentivized to compete alongside large museums, which might be done by designating topical categories for awards such as green skills training, carbon footprint reduction, and catalyzing community engagement.

Recommendation 2:

Since it is universally acknowledged that museums have important responsibilities to their stakeholders and communities to carry out urgent climate and sustainable development actions, but often have little to no access to the funds, expertise, resources, materials, or training they need to perform this critical role, **we recommend** that ICOM:

- Identify global and regional initiatives and entities* through the process of managing the *ICOM Award for Sustainable Development Practice in Museums* that provide free and low-cost resources, experts, workshops, and technical training, as well as sources of funding, and disseminate it to ICOM individuals and museums through a platform that is continually updated.

- Provide letters of introduction and support as requested by National Committees and Regional Associations, to facilitate the application process of local museums to obtain funding from foundations, governments, and other donors, enabling museums to become more sustainable and climate neutral.

- Advocate to major foundations and other donors at conferences such as COP 28 and in other forums on behalf of museums to make new sources of funding and technical assistance available to museums to practice sustainable development in all aspects of their operations and community relations.

- Support the potential collaboration of SUSTAIN, INTERCOM, ICMAH, ICTOP, DRMC, ICOM Paraguay, and MPR, and others as appropriate, in co-organizing a session on *Museums and Sustainable Development*: *Real Challenges and Solutions,* with the objective of giving a voice to museums challenged by climate change and delivering the opportunity for them to network directly with experts and donors to explore sources of funds, resources, materials, and training.

SESSION 1 – WELCOME TO THE ANTHROPOCENE: MEETING THE CHALLENGES

WORDS FROM GORANKA HORJAN
INTERCOM CHAIR

Dear colleagues and friends, you who have travelled shorter and longer distances, are the main conference force and I am looking forward to the work ahead since we have a demanding task to lead our museums into action to reduce the negative impact of climate changes. With an action driven conference INTERCOM and other co-organizing committees aim to inspire and offer guidance on how museums can be part of the solution in actions to turn the wheel of fortune for our planet.

More and more we hear how the domination of the western colonial mindset contributed to what we have now and this mindset has been challenged by many indigenous communities so it is time to listen to them and learn something. The selection of the conference venue is an opportunity for that. For centuries they have been in balance with nature and in a short time saw a huge scale devastation – the environment irreversibly affected by overexploitation which is not only economical but also has a huge socio-political impact. In such an alarming state of affairs museums have a difficult role to play.

Their responsibility is to raise awareness and identify how and where they can contribute to climate action and support sustainability models. As INTERCOM always emphasizes, change has to start in its own corner and museum leaders have the greatest responsibility to initiate the process and closely monitor achievements. Let me paraphrase the thoughts of the famous Bulgarian writer Georgi Gospodinov from his novel THE SHELTER OF TIME: The Anthropocene is the first era in which the ginko biloba, the fly, the turtle and the ice of Antarctica immensely feel that something has changed. We humans are on the way to becoming the World Apocalypse and at the same time we are our own Apocalypse! For INTERCOM, the role of museum leadership in climate action should be stronger, should include personal commitment and museum administrators and leaders are expected to come up with innovative solutions to make their institutions and their communities, visitors and the general public more actively involved in preventing the negative impacts of the Anthropocene and climate change.

We have to change our mentality because the alternative is terrifying and many contemporary art museums also show the consequences in their exhibitions. A recent survey by NEMO provides facts and figures on what museums are doing, from incorporating relevant topics and raising awareness, consistency and communication, to changing the way they care for infrastructure and follow appropriate guidelines. It is not surprising that infrastructure is seen as an area with much room for improvement and that only two in ten museums say they could implement green solutions. We have to do better! This conference will help us recognize the risks in our work and will encourage us to develop the necessary skills and training models. In addition to forming alliances to face challenges more efficiently. Climate change is possibly the biggest and most complex challenge facing society, so the response cannot be a simple, short-term action. Let's join forces in this long and demanding process.

Thank you!

Ethnodevelopment in climate action

Oscar Fernando Galeano (Paraguay)

Abstract

This paper is based on a multidimensional study, carried out in the territories of the indigenous communities of Guavirami and Kambay, belonging to the Guaraní linguistic family, of the Mbya Guaraní ethnic group, located in the districts of Trinidad and Jesús in the Department of Itapúa, for a postgraduate thesis, based on scientific research and field work.

Given the above, and taking into account the grueling processes of postgraduate academic studies, we gained significant information on the past, present and future of ethnodevelopment in Paraguay.

Similarly, we were able to determine the dimensions of development of these native populations, where the socio-cultural, economic-productive, environmental, political-institutional and human-personal activities of the communities interact and generate human dynamics inside and outside the spatial environment they inhabit. This situation generates an overarching knowledge of important aspects of indigenous inhabitants and their relationship with the nature surrounding them, throughout history.

This study facilitated access to an extraordinary world unknown to locals and outsiders: silent, coexisting and even invisible to the vast majority of the country's population. Our research gave us profound and engaging knowledge of the invaluable ancient wealth of the indigenous peoples of Paraguay.

Regarding the environment, the ideas, sense of belonging and vital thinking of indigenous people towards nature arise, affirming their existential relationship and substantial respect for the land and their natural heritage. Since time immemorial, good environmental practices reaffirm that the customs, uses and traditions of native communities, transmitted from ancestral inhabitants to the present and future populations, are the basis for the most suitable and favorable socio-environmental actions that help to mitigate the effects of climate change.

The knowledge and ancient culture of the aboriginal peoples, marked by their mystical fusion with nature, makes them unique human beings and demonstrates their ability to adapt to climate change, based on the long history of these ethnic groups which corroborates their great resilience in the face of adverse environmental scenarios.

As for the contribution of ethnodevelopment in museums on climate action, it is important to define and establish a general framework of action and focus on ethnology as the science that studies the origins of the Paraguayan indigenous culture.

These ethnic groups have inhabited our country since before the Spanish conquest and constitute a Living Culture & Historical Wealth that prevails to this day, providing countless teachings, which must be shown to the public to generate feelings of appreciation and everlasting impact on the country's young population and, most especially, on future generations. It is a priority to project educational policies from the initial, primary and secondary school levels, as well as in the family environment, towards the tradition of visiting museums to promote access to the knowledge and use of ethnic legacies for socio-environmental awareness raising and educational formation.

The habitual actions of human beings, knowledgeable on the climate and concerned about its natural heritage, must be reflected in museums, with a focus on revaluing what is ours, what is autochthonous, authentic and ancestral.

The virtuous chain of know-how and hereditary tasks of indigenous peoples needs to be disseminated through teaching-learning processes headed by museums, through exhibitions of historical archives, ethnic collections, documentation, bibliographic, infographics, stories, iconography, illustrations, anthropological, archaeological and historical research, newspapers, magazines, scenic representations, digital platforms and relevant documentaries, to expand the knowledge and relationships with citizens.

These times require paradigm-breaking to allow the connection and interaction between Museums and Libraries, Newspaper Archives, as well as with Anthropological and Ethnographic Centers and Institutions, so as to build consensus and coordinate joint work based on museum criteria, with a view to highlighting and making visible the rich history and indigenous expertise regarding the preservation of the environment.

Keywords: Ethnoterritories, Ethnodevelopment, Indigenous Communities, Environment, Climate Action.

Resumen

El presente trabajo se fundamenta en un estudio multidimensional, realizado en los territorios de las comunidades indígenas de Guavirami y Kambay, pertenecientes a la familia lingüística Guaraní, de la etnia Mbya Guaraní, localizadas en los distritos de Trinidad y Jesús del departamento de Itapúa, para la elaboración de un trabajo de tesis a nivel de postgrado, respaldada en una investigación científica y trabajo de campo.

A partir de dichas premisas y teniendo en cuenta los arduos procesos que un estudio académico de postgrado implica, se obtuvieron significativas informaciones que atañen al etnodesarrollo pasado, presente y futuro en el Paraguay.

De igual forma, el trabajo posibilita la determinación de las dimensiones del desarrollo dentro de las cuales dichas poblaciones originarias se desenvuelven, en donde las actividades socio-culturales, económico-productivas, ambientales, político-institucionales y humano-personales de las comunidades interaccionan entre sí generando dinámicas humanas al interior y al exterior del ambiente espacial en la cual viven. Dicha situación conlleva al conocimiento acabado de aspectos importantes relacionados entre los habitantes originarios y la naturaleza que los rodea a largo de la historia.

El presente estudio facilitó el acceso a un mundo extraordinario desconocido por propios y extraños, silencioso, coexistente y hasta invisible para la gran mayoría de la población de nuestro país. La investigación efectuada permitió obtener conocimientos profundos y entrañables que hacen a la invalorable riqueza milenaria de los pueblos indígenas que habitan el Paraguay.

En referencia al medio ambiente, fluyen las ideas, el sentido de pertenencia y el pensamiento vital que los indígenas poseen con relación a la naturaleza, afirmando el relacionamiento existencial y respeto sustancial que tienen con la tierra y el patrimonio natural en donde viven. Las buenas prácticas ambientales desarrolladas desde tiempos inmemoriales reafirman que las costumbres, usos y tradiciones propias de las comunidades nativas, transmitida de los habitantes antepasados a las poblaciones presentes y futuras son el camino para emprender las acciones socio-ambientales más aptas y favorables que contribuyan a mitigar los efectos del cambio climático.

Los conocimientos y la cultura milenaria de los pueblos aborígenes, marcada por esa fusión mística con la naturaleza, los convierte en seres humanos únicos e irrepetibles, lo que demuestra su capacidad de adaptación al cambio climático, basados en la larga historia de vida de estas etnias, corroborando su gran resiliencia ante situaciones adversas del medio ambiente.

A los efectos, de la contribución del etnodesarrollo en los museos en la acción climática es relevante delinear y establecer un marco general de acción y focalización desde el punto de vista de la etnología, como ciencia que estudia los orígenes de la cultura indígena paraguaya.

Es así que, las etnias que habitan nuestro país desde antes de la conquista española, constituyen una Cultura Viva y Riqueza Histórica que prevalece hasta nuestros días, que traen consigo infinitas enseñanzas, las cuales deben ser expuestas, para generar sentimientos de estima y efectos imperecederos para el segmento de la población joven del país y sobre todo para las futuras generaciones. Al respecto, es prioritario proyectar políticas educativas desde el nivel inicial, escolar básico y medio, como así también en el ámbito familiar, para instaurar la tradición de visitas a los museos, a fin de promover el acceso a los conocimientos y la utilización de los acervos étnicos para la concientización y formación educativa socio-ambiental.

Las acciones consuetudinarias realizadas como seres humanos de hábito, conocedores del clima y preocupados por su patrimonio natural, deben ser reflejadas en los museos, con un enfoque de revalorización de lo propio, de lo autóctono, de lo auténtico y de lo ancestral.

La cadena virtuosa de saberes y quehaceres hereditarios de los pueblos originarios necesitan ser difundidas a través de procesos de enseñanza-aprendizaje presididos por los museos, mediante la exhibición de archivos históricos, acervos étnicos, documentaciones, bibliográficas, infografías, relatos, iconografías, ilustraciones, representaciones escenográficas, plataformas digitales y documentales pertinentes, para el mayor conocimiento y relacionamiento con la ciudadanía.

Los momentos que vivimos precisan del quiebre de paradigmas que permitan la conexión, e interacción entre los Museos y las Bibliotecas, Archivos y Hemerotecas Nacionales, como así también con los Centros e Instituciones Antropológicas, de manera tal a consensuar y coordinar trabajos conjuntos, dentro de un marco de criterios museológicos, con miras a evidenciar y visibilizar la rica historia y conocimientos indígenas con respecto a la preservación del medio ambiente.

Palabras clave: Etnoterritorios, Etnodesarrollo, Comunidades Indígenas, Medio Ambiente, Acción Climática.

Introduction

Academic work is based on the feasibility of designing and developing a participatory, inclusive, and integrative ethnic territorial management model that would enable the ethnodevelopment of the Indigenous communities of Jesús and Trinidad. This model validates their ethnic richness through the strength of their organizational structures, traditional knowledge, and ancestral contributions, which, in turn, are interrelated with modern dynamics inherent to territorial development, in alignment with the principles of ethnodevelopment.

Likewise, the importance of this research lies in the establishment of an innovative approach to addressing the issues faced by the Indigenous communities of Jesús and Trinidad. This approach is framed within the innovation of converging knowledge from various social science disciplines, encompassing theories of Ethnodevelopment, Territorial Economic Development, and Financial Management. In this regard, the applied methodology allows for the visualization and use of flexible and dynamic tools that reflect modern development approaches through articulated and functional processes.

Similarly, the study enables the identification of the dimensions of development within which these Indigenous populations operate, where socio-cultural, economic-productive, environmental, political-institutional, and human-personal activities interact with one another, generating human dynamics both within and beyond the spatial environment in which they live.

The level of exploratory research is based on a qualitative analysis of the Indigenous communities of Jesús and Trinidad, using a non-probabilistic sample selected for convenience. The research methods applied in the study are bibliographic and documentary, which gain substantial value through fieldwork conducted via in situ visits to the Indigenous settlements—an effort that allowed for the collection of representative information at both descriptive and explanatory levels.

As previously stated, the multidimensional analysis (socio-cultural, economic-productive, environmental, political-institutional, and human-personal) carried out allows for the identification of findings and detailed information across all these areas. This situation leads to a comprehensive understanding of important aspects related to Indigenous inhabitants and the natural environment that has surrounded them throughout history.

From this analytical study, the harsh reality faced by this segment of the Paraguayan population becomes evident—characterized by a range of social, economic, environmental, political, and human issues in which they have remained stagnant over recent decades.

In this regard, the analysis made it possible to understand that the pressing problems are primarily rooted in their subsistence, particularly in matters related to land and the environment in which they live.

Therefore, having conducted a diagnosis of the aforementioned dimensions, it can be inferred that Indigenous peoples in Paraguay are immersed in habitat-related issues and are vulnerable to the effects of climate change.

Ethnodevelopment in Paraguay

The previous section helps to understand the scope of the study in terms of ethno development. Likewise, it is relevant to delve more deeply into the characteristics of ethno development in Paraguay.

Therefore, it is worth stating that ethnodevelopment is defined as the "process of social transformation supported by a people's social capacity to build their future, drawing on the lessons of their historical experience and the real and potential resources of their culture, according to a project defined by their own values and aspirations" (Batalla, 1982, as cited in Palenzuela, 2008).

Palenzuela (2008) further explains that ethnodevelopment therefore rejects the universal validity of the hegemonic model and seeks to reconcile access to better material living conditions with the strengthening of cultural identity. This alternative model requires, as a sine qua non condition, the cultural control of the process by the societies that decide to transform themselves, without this implying cultural alienation. The first of these premises is the achievement and recognition of the capacity for self-determination over their own destiny, which ethnic groups must attain in order to function as collective subjects of rights.

"The territory is part of the Indigenous universe, and the Indigenous person is an integral part of the territory; their process is indivisible. One cannot conceive of the territory without the Indigenous people, and an Indigenous person is necessarily tied to their territory; this consideration defines the key difference between

Indigenous and peasant identities, marking the use of territory as a fundamental axis of survival, of life itself—not merely as a lifestyle. The territory represents a divine ancestral origin, historically located and identified through their own origin stories, habitation, use, and existence. From this perspective, territory can never be subject to economic negotiation over its area or any part of it; it will not be sold and will never be considered territory if it is a purchased space—this is not an Indigenous practice. Therefore, Indigenous territories require a special administrative process in relation to the State and its functions." (Monje, 2014).

Monje (2014) continues by stating that the near-total lack of basic services such as health, education, food, and housing—due to the exclusion of these communities from municipal development plans under the argument that their territories receive their own economic resources—threatens the survival of these groups and turns their territories into zones of conflict, war, and private interests.

In this context, the current state of ethnodevelopment in the country is characterized by the presence of generic guidelines that allow for the promotion and visualization of directives for establishing a structural framework in which the principles and foundations of ethnodevelopment prevail.

"Paraguay cannot and must not do without its Indigenous peoples. On the contrary, it must create more cultural and territorial spaces to promote their presence in national society and to project a modern Paraguay based on multiethnicity and multiculturalism." (Zanardini J. & Biedermann W., 2006).

Zanardini J. & Biedermann W. (2000) state that in 1992, after extensive work in all the Indigenous communities of the country, a chapter on Indigenous Peoples was incorporated into the new National Constitution. This is Chapter V, consisting of six articles, and represents a major achievement in Indigenous rights at the continental level.

With a view to achieving these goals, Chapter V of the National Constitution defines the areas concerning Indigenous Peoples, detailing in its six articles the scope of their recognition and existence, the prevalence of their ethnic identity and appropriate habitat, as well as their rights to freely develop their organizational, political, social, economic, cultural, and religious systems, among others. Unfortunately, more than thirty years after the Constitution came into force, we find that these principles are far from being applied in the country.

The existence of these constitutional provisions for Indigenous peoples supports the basic and necessary conditions for the practice of ethno development in Paraguay. In this context, the Paraguayan Indigenous Institute (INDI), as the main entity responsible for the Indigenous sector, carries out its activities within strategic frameworks, prioritizing land and participation, aiming for a promising approach with a modest degree of ethnodevelopment. In this approach, the well-being of Indigenous peoples is considered a fundamental premise. However, the current situation is far from its effective implementation.

In this regard, INDI promotes rootedness through the implementation of the Support Program for Indigenous Peoples in Their Habitat, using participatory schemes in which the entire community makes decisions regarding the identification and approval of micro-projects.

It is important to note that micro-project requests are received by INDI from all Indigenous communities across the country, where prioritization and selection are carried out internally by various departments of the institution. These community micro-projects, with an emphasis on assistance, mainly involve the installation of water supply systems. However, this activity has limited impact due to the minimal budget allocated to it.

Based on the above considerations, there is a noticeable lack of concrete state policies that promote ethnodevelopment. The activities carried out within this framework are in an early stage, with deep-rooted and structural weaknesses related to the absence of a proper multidimensional diagnosis. Such a diagnosis should prioritize other aspects of the ethnodevelopment vision and uphold the ideas and intentions of Indigenous communities as the architects of their own future.

In other words, the current state of ethno development in Paraguay is characterized by a lack of scientific and/or anthropological processes that could support criteria based on the use of techniques, principles, ethnic knowledge, and methodologies more aligned with its foundation as a social science. This would allow the executive branch of government to provide more comprehensive and functional support, grounded in sustainable pillars based on the culture, identity, beliefs, customs, traditions, and native wealth of Indigenous peoples.

Having described the current situation of ethnodevelopment in the country, it is worth highlighting the intrinsic richness found in the ancestral wisdom and practices of Indigenous community members regarding sustainable development. These practices carry significant meaning in terms of the relationship between Indigenous community members and nature.

Dimensions of ethnodevelopment

As we have already mentioned, ethno development refers to the development of Indigenous populations in a way that respects and preserves their culture, identity, way of being, and lifestyle, with a shared language and within a defined territory. These fundamental premises determine their richness and life prospects.

For the purposes of this study, ethno development unfolds across territorial dimensions, which refer to the variety of aspects that encompass all the values and characteristics considered in development processes. In these processes, all sectors and spheres—socio-cultural, economic-productive, environmental, political-institutional, and human-personal—converge, interact, and influence one another within a given territory.

Territories are the geographic spaces where the Indigenous peoples of the analyzed communities originate, live, and carry out their activities. Over time and space, this generates situations that foster the synergy and interaction of economic-productive, political-institutional, environmental, socio-cultural, and human-personal activities, all of which are interrelated. Within these territorial dynamics, Indigenous communities carry out their daily tasks and actions freely, seeking well-being in accordance with their native culture and identity.

Ethnodevelopment: Scope and Relevance

In Paraguay, there is a widespread lack of knowledge about the Indigenous peoples or ethnic groups who have inhabited the national territory since time immemorial and who have survived for more than 500 years before the conquest. Through great effort, they have managed to preserve their incredible culture, identity, and traditional way of life, which makes them part of the universal heritage of humanity.

Given this broad context, it is important to delve into substantial aspects that strengthen tribal thought and belief, such as: "In the Mbya worldview, the land is not just a resource for production, but a space for social relationships, as well as a setting for religious life. In Mbya culture, non-material needs—linked to the symbolic realm that gives meaning to existence—are just as important as subsistence needs" (Zanardini J. & Biedermann W., 2006).

The lifestyle of the Indigenous peoples in these communities is based on a strong attachment to and empowerment over their territories. This allows for a communal coexistence in harmony with the resources of their habitat, in accordance with their origins and inherited beliefs, whose fundamental pillars are the preservation of their customs, practices, and traditions.

Their cultural richness, closely tied to their native language, is reflected in their way of life, their worldview, and their ancestral values and principles, centered on the importance of their origins, the environment, family, and community—values that have endured throughout history to the present day.

Their ancestral wisdom regarding nature includes important knowledge of botany and native medicinal plants (remedios yuyos), whose therapeutic properties are highly valued by both the Paraguayan and international populations.

The Mbya-Guaraní way of life sets the guidelines for their productive activities, where the land is the central and sacred axis upon which their existence is based and from which ethnodevelopment processes emerge.

The behavior of Indigenous peoples is guided by their culture, beliefs, customs, and traditions. Their ethnic heritage forms the foundation of native thought, which in turn promotes their lifestyle, human development, and the driving force behind their traditional actions.

Their strong religious convictions are rooted in the firm belief in Tupa (God), as the main creator who determines their existence on Earth, the purpose of their activities, their way of life, and the future of Indigenous peoples. Regarding their environment, community members experience a deep sense of love, well-being, and inner joy in their habitat, and they wish to continue living happily in their settlements.

Their earthly ancestry and constant concern for the cycles of nature (agriculture) lead to interpretations of the stars and knowledge of astrology, giving rise to fascinating understandings, beliefs, and historical narratives.

All these characteristics form a virtuous circle sustained by the Mbya-Guaraní deity and identity, their belief in inherited customs, and the preservation of their organizational systems and customary laws.

As mentioned earlier, land holds a sacred meaning for Indigenous communities, supported by the deep connection between the land and the people. This connection is the foundation for all ethnic activities. Their ancestry is rooted in the coexistence between Indigenous peoples, nature, and its preservation, inherited from their ancestors.

Their vital thinking for the conservation of virgin forests stems from their ancestral beliefs and is based on the need to carry out subsistence activities, care for native trees—used for wood as a primary input for crafting handmade products, as firewood for cooking, and for building community homes.

In other words, ethnodevelopment is oriented toward promoting and prioritizing the ancestral activities of Indigenous communities, such as maintaining their communal economy and social structure, with a multiethnic vision in harmony with nature—conceived as an integral part of life and culture. This enables them to continue strengthening their native capacities, skills, and talents, in accordance with their principles of self-determination and self-management, in pursuit of a dignified and fulfilling life.

Ethnodevelopment in climate action

Fundaments

Paraguay's cultural identity is largely rooted in the contributions of Indigenous peoples: their values, customs, the Guaraní language (one of the country's official languages), and their knowledge of agriculture and medicinal plants. Yerba mate, for instance, was already being cultivated and consumed as early as 1630 (as documented in the Annual Letters of the Jesuit Province of Paraguay). Today, mate, cocido, and tereré are widely consumed beverages.

This study has opened access to an extraordinary world—unknown to many, both locals and outsiders—silent, coexisting, and even invisible to the vast majority of Paraguay's population. The research has provided deep and heartfelt insights into the invaluable millennia-old heritage of the Indigenous peoples living in Paraguay.

To support the context that will be detailed as foundational, it is worth noting that the Paris Agreement, signed at the 2015 Climate Change Summit, states: "Parties recognize the importance of the knowledge of Indigenous peoples in addressing and responding to climate change."

Scientific research confirms that Indigenous peoples have inhabited Paraguay for thousands of years. They were the original owners of the land, natural resources, forests, and woodlands (A. Fogel P., 2023). For them, land and territory hold a meaning distinct from that of the general population—they are essential elements for historical continuity and the fullness of life, spirituality, and social, cultural, economic, religious, and political development, all tied to their worldview.

Moreover, Indigenous peoples are great environmental stewards. They preserve their lands and forests, thereby contributing to climate change mitigation (A. Fogel P., 2023). Their existence is grounded in real-life experiences, whose continuity over time validates their admirable wealth, with an unbreakable connection between past, present, and future—interpreting life through both individual and collective lenses, always in harmony with nature.

In the 1960s, the Aché people—of the Guaraní linguistic family—were forced to leave the forest due to being hunted, even with firearms, to be enslaved. Those who emerged from the forest were naked but in admirable physical condition, proving the viability of living well in the forest (photos by Marilin Rehnfeldt, CEADUC).

Regarding the environment, Indigenous peoples express a deep sense of belonging and vital connection to nature. Their existential relationship and profound respect for the land and natural heritage where they live are evident. Their environmentally friendly practices, passed down from generation to generation, reaffirm that their customs, traditions, and ancestral knowledge are the most suitable and beneficial paths for undertaking socio-environmental actions that help mitigate climate change.

The longevity of Indigenous peoples demonstrates the effectiveness of their ancestral practices and relationship with nature in achieving well-being with a sustainable vision—translated into a healthy life in harmony with Mother Earth.

Indigenous peoples possess innate characteristics that support their vital role in nature as key agents in climate action. Their green economy depends on natural resources and biodiversity, directly linked to their culture and beliefs. Consequently, their socio-economic activities inherently promote the conservation and preservation of their natural assets, ensuring sustenance and modest income for their families. This green economy, with a sustainable outlook, contributes to climate change mitigation through practices aimed at reducing emissions from deforestation and forest degradation.

The continued existence of Indigenous peoples proves they are essential agents in combating climate change, as their traditional knowledge, lifestyles, and practices contribute sustainably to environmental stewardship.

It is also crucial to highlight the intangible aspects that underpin the strength of Indigenous customs, beliefs, and behaviors toward nature and biodiversity, which they strive to protect for the children and future generations of their communities and the country.

"Ancestral rituals such as dance (jeroky ñembo'e), singing, celebrations, and themed festivals strengthen the bonds between Indigenous community members and nature, divine beings, and mythical stories. These rituals also serve as a means of transmitting and teaching cultural values, life norms, and historical memory from the elders to the younger members of the tribe" (Zanardini J. & Biedermann W., 2006).

"Tupa is the supreme god of the Guaraní, the deity who created light and the universe. He is the god of clouds, rain, hail, streams, rivers, seas, storms, and winds. Tupa had already planned this land and how the Indigenous peoples would inhabit it" (Zanardini J. & Biedermann W., 2006).

Furthermore, Indigenous thought and heritage are centered on Tekoporã, or "Good Living" or "Well-being," which is based on an eternal union with the land, territory, and community. This binary or ternary bond generates immense synergy for the development of their socio-cultural, economic-productive, environmental, political-institutional, and human-personal activities.

Tekoporã is a good way of being, a good state of life—it is both "living well" and "well-being." It is a state of mind where joy, happiness, and peace converge, where Indigenous community members live in balance and harmony with the forest, feeling love and fulfillment. This is achieved when there is enough food provided by the forest to keep them content, strong, and healthy.

To achieve Tekoporã, a Tekoha is needed—a physical space (territory, forest, fields, etc.) where Indigenous peoples live and fulfill their roles according to the will of Tupa.

The Inter-American Commission on Human Rights (2009) states: "The close relationship that Indigenous peoples maintain with the land must be recognized and understood as the fundamental basis of their cultures, spiritual life, integrity, and economic survival. For Indigenous communities, the relationship with the land is not merely a matter of possession and production but a material and spiritual element that they must fully enjoy to preserve their cultural legacy and pass it on to future generations."

It is well known that Indigenous peoples live within a specific habitat, making them habitual beings whose subsistence economy is tied to the surrounding ecosystem. Their economic activities primarily include agriculture (growing corn, peanuts, beans, cassava, and sweet potatoes), handicrafts (basket weaving), sustainable fishing, and small-scale poultry farming (raising chickens at the family level). They also gather fruits, mushrooms, roots, and plants for natural medicine.

The ancient knowledge and culture of Indigenous peoples, marked by their mystical fusion with nature, make them unique and unrepeatable human beings. This demonstrates their capacity to adapt to climate change, based on the long life history of these ethnic groups, confirming their great resilience in the face of adverse environmental conditions.

Likewise, the National Plan for Indigenous Peoples (PNPI, 2021) recognizes and includes Indigenous peoples in strategies to address climate change. Their agreement was formalized through signatures by the leaders of the Indigenous communities living in Paraguay.

Similarly, the National Climate Change Adaptation Plan (PNACC, 2022) states that a broad, cross-cutting, and multisectoral participatory process is needed—one that listens to the voices of all groups, especially those most vulnerable to climate change, such as Indigenous peoples—supporting the strengthening of their capacities.

In current terminology and designations, Indigenous peoples are considered ecological agents for the mitigation of greenhouse gas emissions and promoters of carbon sequestration. This is supported by recognition in modern Paraguayan legislation, where Indigenous communities play a prominent role. A clear example is Law No. 7190/2023 on Carbon Credits.

Ethnoideas

The current favorable context is supported by the fact that, very recently, the leaders of Indigenous communities unanimously expressed their desire to live on their lands and territories in accordance with their cultural identity—that is, while preserving natural resources. This was expressed during the consultations held prior to the drafting of the National Plan for Indigenous Peoples, which was approved by Executive Decree No. 5897/2021. However, it is important to emphasize that this plan is not being implemented due to a lack of allocated resources.

There is an urgent need for its enforcement, starting with the recovery, defense, and acquisition of lands and territories that have been encroached upon—especially due to the expansion of soybean farming and the negligence of the Public Prosecutor's Office.

The profound changes experienced in recent decades highlight the urgent need to analyze strategies to confront climate change. For Indigenous peoples, it is crucial to draw upon the wisdom of native communities for the use and care of natural resources.

Ethno-ideas are core concepts that shape their daily lives, grounded in the effectiveness of their practices, traditions, customs, beliefs, values, principles, and worldview, all of which strengthen the richness of their native identity.

The challenging situation we face today calls for the design and construction of new lines of action in which the true children of the forest play an essential role. In this context, the following factual points support the importance of ethnic activities:

- The collective memory of a people faithful to their origins brings with it knowledge and love for nature, clearly justifying their role as agents of change and environmental stewards.
- Supporting Indigenous peoples in achieving a dignified life and reclaiming their ancestral rights enables the free development of their activities and ancestral customs in favor of the environment.
- The worldview of native compatriots offers us the opportunity to understand a world different from our own—more authentic, genuine, natural, and pure—which we should embrace and learn from.
- Indigenous groups are a guarantee for the future, as evidenced by their continued existence, cognitive traditions, and tribal practices that remain alive today.
- The children of the forest possess deep natural wisdom, applicable and adaptable to the broader Paraguayan population across various aspects of human life.
- While modern production technologies cause significant deforestation of aquatic, terrestrial, and atmospheric resources, ancestral peoples stand as faithful and vigilant guardians of the environment, one of humanity's most precious assets.

- Their millennia-old history reflects the strength of their identity, competence, and the necessary skills to foster human relationships and peaceful coexistence with other populations in the country, aiming for a shared vision of resilience with nature.
- The continued presence of Indigenous communities on their territories is a key factor in retaining greenhouse gas emissions within forests, making them indispensable agents for promoting climate change mitigation and adaptation measures—something they have naturally and habitually practiced for centuries.
- Paraguay's Indigenous population is an inexhaustible source of ancestral wealth, based on principles of a proactive and sustainable green economy, aligned with international trends in biodiversity protection and conservation.

Conclusions and recommendations
Ethnodevelopment and museums

In this section, the aim is to express and outline certain topics that, in my view as a researcher of the millennia-old heritage of the original inhabitants and true owners of our lands, should be taken into account.

In terms of the contribution of ethnodevelopment in museums to climate action, it is relevant to outline and establish a general framework for action and focus from the perspective of ethnology, the science that studies the origins of Paraguayan Indigenous culture.

The ethnic groups that have inhabited our country long before the Spanish conquest represent a Living Culture and Historical Wealth that endures to this day. They carry with them infinite teachings that must be shared to inspire appreciation and leave a lasting impact—especially on the youth of our country and future generations. In this regard, it is a priority to promote educational policies from early childhood, primary, and secondary levels, as well as within families, to establish the tradition of visiting museums. This would foster access to knowledge and the use of ethnic heritage for socio-environmental awareness and education.

Ancestral culture should be understood as a Creative Culture, aligned with contemporary trends in other areas of thought, and as part of a sustainable vision that prioritizes socio-environmental aspects contributing to the protection of nature.

The customary actions of Indigenous peoples—as habitual beings, knowledgeable about the climate, and concerned with their natural heritage—should be reflected in museums with a focus on revaluing what is native, authentic, and ancestral.

Ethnodevelopment in museums should also be built on pillars or axes with a strong foundation in ethnology, whose knowledge is linked to the country's ethnic culture, and in the green economy, where subsistence is closely tied to environmental preservation and conservation.

The virtuous chain of ancestral knowledge and practices of Indigenous peoples must be disseminated through teaching and learning processes led by museums. This includes the exhibition of historical archives, ethnic collections, documents, bibliographies, infographics, photographs, recordings, stories, iconographies, illustrations, anthropological, archaeological, and historical research, newspapers,

magazines, theatrical representations, digital platforms, and relevant documentaries to enhance public understanding and engagement.

The times we live in demand a paradigm shift that enables connection and interaction between museums and national libraries, archives, newspaper libraries, and photo libraries, as well as with research centers and anthropological and ethnographic institutions. This would allow for the integration and coordination of joint efforts within a museological framework to highlight and make visible the rich history and Indigenous knowledge related to environmental preservation.

In this context, there are modern technologies, methodologies, and multimedia tools that allow for the creation and use of resources for museum information management, marketing, and communication. These tools can link the diverse content that supports the mission and function of the aforementioned institutions, showcasing the benefits and attributes of ethnodevelopment in climate action with a retrospective vision to disseminate, communicate, rediscover, and revitalize Indigenous heritage.

To this end, it is recommended to implement innovative and unique strategies in Paraguay, such as a Mobile Museum focused on Climate Action, prioritizing connections with educational institutions and public recreational spaces (e.g., riverfronts, plazas, parks). In other words, bringing the richness of museums closer to the people.

Ethnodevelopment in museums must also be built upon strong pillars or axes, such as ethnology, as previously mentioned, whose knowledge is closely linked to the country's ethnic culture, and the green economy, in which Indigenous subsistence economies are deeply connected to the preservation and conservation of their environment.

The virtuous chain of ancestral knowledge and practices of Indigenous peoples must be disseminated through teaching and learning processes led by museums. This can be achieved through the exhibition of historical archives, ethnic collections, documents, bibliographies, infographics, photographs, recordings, oral histories, iconographies, illustrations, anthropological, archaeological, and historical research, newspapers, magazines, theatrical representations, digital platforms, and relevant documentaries. These resources serve to deepen public understanding and foster stronger connections with society.

The times we live in demand a paradigm shift that enables connection and interaction between museums and national libraries, archives, newspaper libraries, and photo libraries, as well as with research centers and anthropological and ethnographic institutions. The goal is to integrate and coordinate joint efforts within a museological framework to highlight and make visible the rich history and Indigenous knowledge related to environmental preservation.

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Museums as allies of sustainability: the MIC in Quito, Ecuador

María Susana Robledo (Ecuador)[1]

Abstract

This document presents the sustainability approach of the Interactive Museum of Science (MIC) located in Quito, Ecuador. For this purpose, its Educational Model, exhibitions, and projects are addressed, highlighting that it is a space for dissemination and approach to science, where meaningful experiences and community outreach are generated.

These experiences are planned and executed based on the Educational Model 2021-2025, which contains its conceptual and pedagogical guidelines. From the problematizations that originate in the Anthropocene, as a conceptual framework it is proposed, in particular the disciplinary field of education for sustainable development (ESD), delimited by SDGs 4, 5, 11, 12, and 15, and complemented by the approaches of education in science, technology, engineering, art, and mathematics (STEM-STEAM), the development of 21st Century skills and the constructivist pedagogical foundation.

Based on these substantive approaches, some of the most significant experiences in the permanent and temporary exhibitions and educational projects of the MIC are presented.

Keywords: Anthropocene; sustainability; non-formal education; science museum, Quito, Ecuador.

[1] María Susana Robledo, Investigadora del Museo Interactivo de Ciencia (MIC), Fundación Museos de la Ciudad. E-mail: maria.robledo@fmcquito.gob.ec

Resumen

El propósito del documento es presentar el enfoque de sustentabilidad del Museo Interactivo de Ciencia (MIC) ubicado en Quito, Ecuador. Para ello se abordan su Modelo Educativo, exposiciones y proyectos, destacando que es un espacio de divulgación y aproximación a la ciencia, donde se generan experiencias significativas y de vinculación con la comunidad.

Estas experiencias se planifican y ejecutan en base al Modelo Educativo 2021-2025, el cual contiene sus lineamientos conceptuales y pedagógicos. Desde las problematizaciones que se originan en el Antropoceno, como marco conceptual se propone, en particular el campo disciplinar de la educación para el desarrollo sostenible (EDS), delimitado por los ODS 4, 5, 11, 12 y 15, y complementado por los enfoques de educación en ciencia, tecnología, ingeniería, arte y matemáticas (STEM-STEAM), el desarrollo de las habilidades del Siglo XXI y el fundamento pedagógico constructivista.

A partir de estos abordajes sustantivos, se presentan algunas de las experiencias más significativas en las exposiciones permanentes, temporales y los proyectos educativos del MIC.

Palabras clave: Antropoceno; sustentabilidad; educación no formal; museo de ciencia, Quito, Ecuador

MIC in Quito, Ecuador

The Interactive Science Museum (MIC) was inaugurated in 2008. It is located in the traditional working-class neighborhood of Chimbacalle, in the southern part of Quito, the capital of Ecuador, and occupies a repurposed space that was rescued from abandonment by the Municipality of Quito. The site was formerly the facilities of the textile and footwear factory "La Industrial" (Figure 1). The museum is part of the City Museums Foundation, which is a member of the Metropolitan Culture Network, under the Culture Secretariat of the Metropolitan District of Quito (DMQ).

The museum features six permanent and interactive exhibitions: Guaguas, Ludión, Excesivamente, Sala Quito, Sala Abierta Comunitaria, and Museo de Sitio. It also includes two green spaces: the Science Park and the Native Forest. In addition, it hosts temporary exhibitions and educational projects.

As the first interactive science museum in Ecuador, it is a space dedicated to building scientific culture and enabling the public to engage with science, with the goal of fostering sustainable and environmentally responsible communities.

Figure 1. View of MIC. Photo: Fundación Museos de la Ciudad

It is recognized as a meeting point between scientists, ancestral knowledge, and the public, within a context that values knowledge as a path to understanding and addressing current challenges related to the environment, humanity, and the universe.

The museum seeks to understand the social environment and its phenomena from a scientific perspective and to bring science closer to the public, with the aim of building sustainable communities through reflection on rights and responsibilities toward both the social and natural environment.

Renovation of the Management Plan

In 2021, the Educational Model began an update process, incorporating new thematic axes that highlight the need for an approach committed to the most urgent issues facing today's society.

As a result, the concept of sustainability was adopted as both a conceptual and action-oriented framework, approached from a critical, proactive, contextualized, and locally grounded perspective. This allows non-formal education to advocate for a sustainable future.

Within this framework, the 2021–2025 Educational Model establishes guidelines for decision-making regarding educational programming (permanent and temporary exhibitions, activations, among others), as well as tools for educational mediation and collaboration with civil society organizations, NGOs, public and private institutions, academia, and communities.

These decisions are grounded in the Secretariat of Culture and its Resolution A015 of July 6, 2016, which outlines the Cultural Rights of the City. Article 4, regarding culture and sustainable development, states:

"Culture and the environment are closely linked. Ecosystems and natural spaces are also bearers of culture, as they connect us to our history, practical knowledge, and identity—such as gastronomic heritage—and contribute aesthetic values like urban and rural landscapes. They also shape our ability to respond to change, such as resilience. The knowledge that inhabitants have of their ecosystems is the first wealth of their territories. The ongoing dialogue between cultural and environmental practices is essential for building a society committed to conservation and sustainable development."

In this way, the Interactive Science Museum (MIC) aligns with the Quito Culture Plan, enabling non-formal education to be approached from a situated perspective that contributes to the vision of a city focused on sustainable development.

Accordingly, the MIC is the first museum in Ecuador to develop science and technology outreach processes in an interactive way. Moving away from traditional perspectives, it aligns with critical museology, where, as Pérez-Orrego and Arango (2019) state, science is understood as a public and cultural good. Therefore, a museum context requires new, engaging narratives based on scientific content, active interaction, and the emotional and reflective experiences that visitors take away from the museum.

This perspective emphasizes emotional, social, and political connections, and focuses on the social dimension rather than on monolithic scientific disciplines, which is the traditional way of engaging with knowledge.

Thus, the MIC proposes two approaches that offer a comprehensive perspective on citizen science:

- Science Envelops Me: Refers to rediscovering wonder in the everyday and allows for exploration of the environment and its phenomena.
- Science for Sustainable Development: Involves connecting scientists with the public to show how science plays a key role in addressing humanity's current challenges.

Why it is necessary a sustainability approach?

The global scope of the current socio-environmental crisis requires a critical examination of current scientific foundations, recognizing their limitations in understanding contemporary human problems. This paradigm shift has led to reflections on the need for sustainable development, which involves considering the living conditions of both present and future generations, and creating knowledge and technologies that, in the future, can sustain the processes of life reproduction (Casas et al., 2017).

Complementarily, and with a focus on local processes, it is important to highlight that the Ecuadorian Constitution (2008) is a pioneer in recognizing nature as a subject of rights, establishing a new paradigm in environmental law and human responsibilities. Article 395 states:

Guarantee a sustainable development model that is environmentally balanced and respectful of cultural diversity, that conserves biodiversity and the natural regenerative capacity of ecosystems, and that ensures the satisfaction of the needs of present and future generations.

This implies a more ecocentric stance, shifting from an anthropocentric ethic to a biocentric ethic (Tamayo et al., 2021). Consequently, it opens up a future possibility through the recognition of Sumak Kawsay (full life or good living), as a pragmatic dimension that requires protective actions for both humans and nature (Barahona & Añazco, 2020).

According to Svampa (2019), this represents a "new political-environmental narrative" (p. 47), which, grounded in the defense of common goods, emerged in a context of debate about human responsibility as the central agent in the geological and climatic transformation of territories.

Anthropocene as a challenge for museums

The global debate on the consequences of human actions for the development of life on Earth centers around the hypothesis that we are living in the "age of humans": the Anthropocene (Crutzen, 2002, p. 23).

Over the past three centuries, the outcomes of the Western lifestyle have reached planetary levels, bringing us closer to a mass extinction. As a result, the global climate has altered its natural behavior, which had remained stable for millennia (Crutzen, 2002). In a context of deep civilizational and particularly socio-environmental crisis, the term Anthropocene—though still informal—refers to the global transformation of geological scale caused by human activity (Svampa, 2018).

Although the Anthropocene remains a debated scientific concept, the global changes observed in the profound transformation of the biosphere are undeniable. These include the rise in Earth's average temperature and changes in the composition and function of ecosystems—processes linked to unprecedented shifts since the last ice age (Zamora et al., 2015).

The current debate, supported by stratigraphic records showing that humans have become a geological force (Briones et al., 2019), invites deep reflection on human impact on the environment. Thus, the Anthropocene is not only a scientific discussion, but also a political and cultural one. It is important to distinguish between the geological concept and the cultural perception, which has a broader meaning and offers an opportunity to overcome the temporal, ontological, epistemological, and institutional separation between nature and culture that has prevailed since the 19th century (Trischler, 2017).

In addition to its historical and geographical dimensions, the ecological problems that define the Anthropocene have intergenerational and interspecies implications, threatening the planet's resilience (Peralta, 2022). In this context, Briones et al. (2019) argue that we must recognize the differentiated responsibilities that led to the "Great Acceleration." While this does not diminish the global-scale effects, it does imply the need to work with the most vulnerable populations, especially in relation to climate change.

Virtually all disciplines of modern science have something to contribute to the Anthropocene debate, which has moved beyond academia and is now discussed in the media and by the general public. Trischler (2017) states that, as a cultural concept, this is the most relevant aspect of the Anthropocene, as it allows us to overcome the classic nature-culture dichotomy and redefine the relationship between environment and society. The Anthropocene calls for a renegotiation of universal ethics, as it opens the door to improving established relationships and adopting a sustainable perspective (Trischler, 2017).

Following this reasoning, the debates emerging from the Anthropocene carry ethical, economic, legal, and political consequences, which must lead to collective decisions that are understood and applied politically (Svampa, 2019). In this sense, scientists and engineers face the overwhelming task of guiding society toward environmentally sustainable management during the Anthropocene era (Crutzen, 2002).

Education for sustainability (ESD)

The challenges of the Anthropocene have become a fundamental topic in various educational and teaching processes. Through interdisciplinary and reflective environmental education, current issues revolve around how we imagine the future across different areas of human activity, including communication, technology, work, production, and knowledge (Trischler, 2017). This calls for high-quality, transformative education with content that is key to developing sustainability competencies (Murga, 2021), aiming to shift citizens' attitudes toward sustainability—that is, fostering an environmental ethic (Segovia, 2017).

Gutiérrez (2019) refers to this shift as an ecosocial transformation, which will be "built by people who are ecosocially educated, trained in an eco-citizenship that allows them, by stepping out of their comfort zone, to lay the socio-political foundations of a new society that is more just and better connected with nature" (p. 99). To achieve this, and according to Sabaini and Moreira (2014), the educational field must incorporate strategies aimed at sustainable development, including integrative concepts.

Regarding museums, the document "Sustainable Development Goals for Museum Institutions" (Ministry of Culture of Colombia, 2021) highlights that museums are spaces that foster social and cultural dynamics within their territories.

In this sense, sustainability is a fundamental part of institutional management, reflected in the values and behaviors of museums toward society. These practices are articulated through internal actions, content, and the strengthening of social dynamics that contribute to responsible action, always seeking equity and cultural participation of communities.

Within the framework of the Anthropocene, climate change is the greatest challenge of our time. Therefore, education about the climate crisis requires understanding the role of science in advancing sustainable development—a task in which science museums play a key role in disseminating environmental knowledge (UNESCO, 2016).

Thus, there is a need for a better understanding of vulnerabilities from a multi-, inter-, and transdisciplinary perspective that integrates knowledge, skills, and values, fostering creativity, critical thinking, and innovation. This transformation must also create synergies between formal and non-formal education, promoting lifelong learning opportunities.

This means that for a science museum, adopting an Education for Sustainable Development (ESD) perspective involves the challenge of seeking approaches that address current issues through thematic axes and educational perspectives that ensure the objectives of each activity are clear and age-appropriate for the audience.

Approaches to ESD at the MIC

At the MIC, Education for Sustainable Development (ESD) is complemented by a series of ongoing approaches, including the Sustainable Development Goals (SDGs), the STEM-STEAM perspective (Science, Technology, Engineering, Arts, and Mathematics), which is linked to 21st-century skills, and is implemented through the pedagogical foundation offered by cognitive-constructivist learning theory.

Sustainable Development Goals

Strengthening civic processes and the development of societies begins with the recognition and appreciation of the environment and its interactions. During the review of thematic axes and the definition of goals, it was necessary to incorporate the reality of Quito, seeking a connection with the local habitat through the construction of a scientific culture that fosters a more critical and responsible citizenry—one that is aware of its territory and the phenomena occurring around it.

The inclusion of the Sustainable Development Goals (SDGs) in the management of the Interactive Science Museum (MIC) helps clarify the museum's message and facilitates alignment with national and international institutions. Accordingly, the selected SDGs are directly connected to the MIC's vision of implementing innovative non-formal education strategies related to science communication.

In this context, the MIC's thematic axes are developed through work with SDGs 4 and 5 in a cross-cutting manner, and SDGs 11, 12, and 15 thematically:

SDG 11 – Sustainable Cities and Communities

Aimed at reflecting on the cities of the future, especially the challenges facing Quito. The most relevant targets include:

- 11.7: Provide universal access to safe, inclusive, and accessible green and public spaces, particularly for women and children, older persons, and persons with disabilities.
- 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
- 11.6: Reduce the adverse per capita environmental impact of cities.

SDG 12 – Responsible Consumption and Production

Focused on reflecting on our current lifestyles and exploring responsible consumption alternatives. Selected targets include:

- 12.a: Support developing countries to strengthen their scientific and technological capacity to move toward more sustainable patterns of consumption and production, through education.
- 12.2: Achieve the sustainable management and efficient use of natural resources. SDG 15 – Life on Land

With an emphasis on valuing our natural surroundings. Key targets include:

- 15.4: Ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide essential benefits for sustainable development.
- 15.5: Take urgent and significant action to reduce the degradation of natural habitats and halt the loss of biodiversity.
- 15.9: Integrate ecosystem and biodiversity values into national and local planning, development processes, and poverty reduction strategies.

Cross-cutting SDGs integrated into all activities:

- SDG 4 – Quality Education: With a focus on science education and scientific culture.
- SDG 5 – Gender Equality: Aimed at reducing the gender gap in science and encouraging interest in STEM careers.

STEAM-STEM Educational Approach

The STEAM-STEM approach is an innovative, integrative dialogue of knowledge across science, technology, engineering, arts, and mathematics. Through rigorous and relevant experiences, it promotes systemic approaches to an increasingly complex reality, reflecting the identified needs of future labor markets.

In this approach, enriched learning environments are essential, as are divergent problems, challenges, or questions that relate to the Sustainable Development Goals (SDGs) and inspire the search for solutions through interdisciplinary collaboration.

21st-century skills

21st-century skills reflect the need to promote the development of special and transformative abilities in the citizens of tomorrow.

There is a wide range of analyses and perspectives on this topic; however, key skills include innovation and creativity, critical thinking, communication and collaboration, personal and social responsibility, digital literacy, and information management.

Constructivist pedagogy

Based on the ideas of Jean Piaget, the learning theory holds that knowledge is acquired through an internal and individual construction process, where new information is incorporated into pre-existing schemas. This approach emphasizes action, lived experience, and experimentation as essential conditions and guarantees for learning, which is always improvable and in constant interaction (Salas et al., 2020).

Within this pedagogical conceptual framework, the museum becomes a space for meaningful experiences, where the learning process of a concept, topic, or skill is limitless. There is always room for deeper understanding and for creating meaningful connections between prior experiences and new knowledge, through flexibility, sharing, and ongoing dialogue between the public and the exhibits.

At the MIC (Interactive Museum of Science), it is considered that all learning is related to its environment—that is, integrated with various types of experiences, both environmental and emotional.

The main conceptual network for designing pedagogical projects is framed within this approach, where learning is seen as a process of continuous dialogue. Educational content becomes a general reference point that, through experimentation, generates meaningful experiences.

Sustainability paradigm in the exhibitions and educational programs of the MIC

Permanent exhibitions

To address issues framed within the previously mentioned concepts, the opportunities offered by the Site Museum, the Quito Model, the Guaguas Room, and open spaces were taken into account, as these are places that allow for new approaches through educational scripts and activations.

Quito Room, Model

This serves as a starting point for reflecting on urban dynamics and challenges. It began with the temporary exhibition "What's Up with Quito?", and continued with experiences focused on the city's growth, its energy metabolism, and the dynamics of coexistence with the natural environment.

Site Museum

With more than 100 pieces from the former textile factory *La Industrial*, the Site Museum preserves part of Ecuador's industrial heritage and connects with current challenges of production and consumption from the perspective of technological revolution, the use of sustainable materials, and the urban transformations of the community (Figure 2).

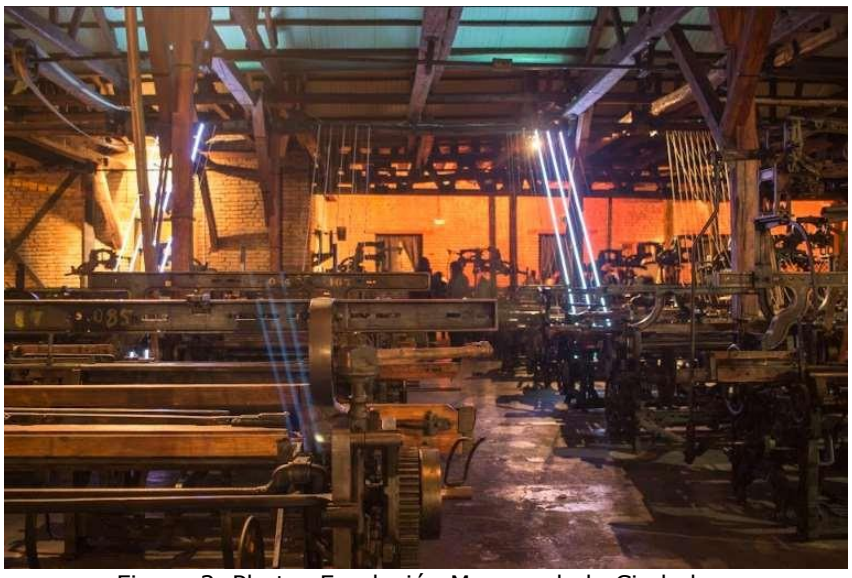

Figure 2. Photo: Fundación Museos de la Ciudad

Guaguas

A space for children between the ages of three and eight to play, explore, and discover local ecosystems, such as the páramo and the forest, along with their diverse plants and animals. Through various interactive museum resources, they find a place to learn about the relationship between human productive activities and the environment (Figure 3).

Figure 3. Photo: Fundación Museos de la Ciudad

Native Forest

The exhibition "Native Forests, a Little Piece of Andean Biodiversity" features native species. Through this exhibit, the aim is to raise awareness about the natural and cultural importance of Quito's biodiversity. A total of 33 native tree species have been planted—such as cedars, toctes, cholanes, yalomanes, coco cumbi, and Inca earrings—to encourage reflection on their cultural significance and to promote their appreciation, protection, and conservation.

Science Park

It is an open-air space for gathering, coexistence, and reflection. Its design replicates a microscopic landscape. Its sensory and artistic nature allows visitors to intuitively explore all its areas, whether by walking or climbing.

Temporary exhibitions

The MIC, in partnership with local and international institutions and organizations, hosts a variety of initiatives with exhibition periods lasting several months. Among the most notable are:

Tales that are not a tale

A traveling exhibition designed for children aged seven to twelve that aimed to raise awareness about the climate and environmental crisis, and to present alternative paths. It included interactive elements to facilitate the understanding of key concepts, as well as to promote a culture of adaptation and resilience (Figure 4).

Figure 4. Credits: Fundación Museos de la Ciudad

One Earth, soils, solutions

This addressed the implications, challenges, and solutions for sustainable soils. It was a joint exhibition by the French National Research Institute for Sustainable Development (IRD). It ran from July to October 2023.

Insects rescuing the planet

It was presented from June to September 2022. A temporary joint exhibition with the IRD, its aim was to raise awareness and educate the public about the various roles insects play in the functioning of ecosystems. Based on this, it sought to encourage dialogue and reflection on the current situation—both locally and globally—regarding this group of fauna, which faces various threats.

Women protagonists in Science

A joint initiative between the MIC, the Ecuadorian Network of Women Scientists (REMCI), and the Organization of Ibero-American States (OEI). This is a traveling exhibition that showcases the profiles and testimonies of over 100 Ecuadorian women scientists, highlighting their motivations and contributions to contemporary research.
The exhibition aims to contribute to Ecuador's sustainable development by promoting those involved in science, technology, and innovation. It also seeks to reduce the gender gap by encouraging the participation of women and girls in research and public decision-making spaces.
Since 2022, the exhibition has been touring the country. Its first stop was the city of Cuenca, where it remained from February to March 2022, receiving over 5,000 visitors at the Pumapungo Museum, the University of Cuenca, the Catholic University of Cuenca, and the Salesian Polytechnic University of Cuenca.
In Quito, it was requested by the Secretariat of Higher Education, Science, and Technology (SENESCYT), and became part of a project aimed at developing science, technology, innovation, and tech-based entrepreneurship skills for women, attracting approximately 1,000 visitors.
From November 2022 to February 2023, the exhibition was hosted at the Escuela Superior Politécnica del Litoral (ESPOL) as part of the project 'Who are the women leading science in Ecuador?', where it was visited by around 12,500 people.
The success of the exhibition is reflected in the 18,500 people who have visited it, learning firsthand about the contributions and impact of women in science (Figure 5).

Educational projects

These are interactive learning spaces designed to complement and deepen the themes of the Museum. Through formats that promote learning by doing, they aim to foster critical thinking and the development of new skills that help in understanding the environment.

Figure 5. Photo: Fundación Museos de la Ciudad

Mini curiosities

Educational project aimed at early childhood. It seeks to spark the curiosity of boys and girls through activities based on experimentation and interpretation of the environment around them, with the support of professionals from various fields of knowledge.

Urban "Bugtech"

Aimed at students and the general public, its goal is to develop experiential non-formal education activities focused on nature as the main subject and as a model of sustainability. It offers an opportunity to reconnect with a lifestyle that is environmentally responsible.

Among the main activities are:

"Ants: Small inhabitants of big cities", aimed at understanding the role and importance of ants in ecosystems.

"Native bees: Anonymous pollinators", focused on the role of stingless native bees.

"Let's illustrate a green city", used illustration as a medium to discuss the meaning of sustainable cities and the importance of green areas for urban quality of life.

"In the footsteps of the jaguar", held in the context of International Jaguar Day, with support from the Wildlife Conservation Society (WCS). It provided insight into the largest wild feline in the Americas and showcased conservation efforts by organizations and communities in Ecuador's Coast and Amazon regions.

"Socio-environmental impacts of waste management", conducted for the International Day for Biological Diversity, with support from WCS and the National Polytechnic School (EPN). In a science café format, it addressed waste management and its effects on ecosystems from environmental, socio-cultural, and political-economic perspectives.

"Coexistence: Challenges and opportunities to live in harmony with nature", also part of the International Day for Biological Diversity and supported by WCS. It explored how anthropocentric thinking has led to a disconnection from nature and biodiversity loss.

"Women in conservation: The invisible pillar of development", approached from a gender perspective, discussed the role of women in conservation and how their contributions have been overlooked and invalidated.

You have no idea

Scientific Outreach Project. Aimed at students and the general public, this project was implemented by creating a platform to bring scientific knowledge closer to people and make it more accessible. It showcases advances in research, development, and innovation on topics related to sustainability. Activities include science cafés and seminars with guest experts on specific topics such as climate change, sustainable energy, food systems, and food sovereignty.

Among the most notable activities are:

"From Waste to Resources: Bioconversion Using Insects" – This session offered firsthand insights into the achievements and progress made through the use of insects for waste bioconversion, a field that, despite its importance for achieving the Sustainable Development Goals (SDGs), remains largely unknown to the general public.

"In the Footsteps of Tapirs: The Gardeners of the Forest" – Held in celebration of Tapir Day, this event featured a specialist from the Quito Zoo's animal welfare team. It introduced participants to tapirs, a key species in Andean and Amazonian ecosystems, and addressed the threats they face and ongoing conservation efforts.

"From Train to Metro: How Does Quito Move?" – Supported by Metro de Quito, this activity aimed to reflect on changes in urban mobility and how different modes of transportation have transformed and impacted the city.

"Let's Play with the Yupana" – An educational activity that approached sustainability through ancestral knowledge. Participants learned to use the yupana, an Andean mathematical calculation tool that complements the quipus. After becoming familiar with the tool, they took part in a mini-tournament performing mathematical operations.

"Efficient Homes = Sustainable Energy" – Held on World Energy Efficiency Day with support from the National Climate Change Mitigation Plan (PLAN MICC). It aimed to raise awareness about the rational use of energy in households. Through experimentation, participating students explored, questioned, and identified potential energy solutions for their homes.

"Extreme Recycling Challenge" – Conducted on World Recycling Day with support from ConQuito (Economic Promotion Corporation). In a treasure hunt format, students faced a series of challenges to collect and properly sort as much waste as possible, gaining insight into and reflecting on the realities faced by grassroots recyclers.

From science to conscience

Aimed at university students and academics, this project offers a critical perspective on science and technology, addressing their social, economic, and environmental components in a holistic manner. With a critical approach, it takes the form of panel discussions featuring representatives from academia, the business sector, and civil society.

Among the most significant events are:

"A Critical Look at Science in Production Systems" – Held with the support of the Master's Program in Science and Technology Management at EPN. It featured a discussion panel that analyzed the progress of physics in Ecuador as a discipline that enables technological development and innovation, with applications that contribute to achieving the Sustainable Development Goals (SDGs).

"Biotechnology in Ecuador and the Use of Natural Resources" – Also supported by the Master's Program in Science and Technology Management at EPN, this session analyzed the development of biotechnology in Ecuador, its relationship with the use of natural resources, and its outlook in light of emerging trends and international frameworks.

"The Sustainability Paradigm" – This event fostered a debate on the dimensions of sustainability, reflecting on its progress and future prospects in a local context.

"Divergentes: Education and Culture Gathering" – A conference that brought together members of museums, cultural centers, educational institutions, NGOs, and organizations involved in formal, informal, and non-formal education. It focused on the idea of educational transformation to accelerate progress toward the SDGs, featuring dialogue tables and hands-on workshops.

"Sustainable Industrial Processes? That Is the Question" – An activity held with students from the Production Engineering program at EPN. It aimed to provide students with practical tools to develop solutions for reducing plastic use in industrial processes.

Science Clubs

Educational Project Focused on Children, Youth (Ages 9 to 15), and Adults This project introduces scientific content through exciting, fun, and thought-provoking activities. Through workshops and field trips, it promotes the development of skills, abilities, values, and attitudes essential for the 21st century.

Since early 2022, children, youth, and adults have been invited to join the "MIC Legions." The activities carried out include:

First gathering: "Ecological Challenge" – The Legions completed four activities distributed across different rooms of the MIC, all focused on biological diversity.

Second gathering: "Urban Anura Expedition Challenge" – Participants were tasked with creating a 3-minute video documenting nearby amphibian species.

Third gathering: "From Macro to Micro" – The Legions explored the ecological universe of frogs and their environments.

In the current year:

First gathering involved experimentation activities to build simple machines based on basic principles of motion and energy.

Second gathering: "Field Trip to Cayambe-Coca National Park" – Club members visited the park alongside the educational team from the Water Protection Fund (FONAG).

Third gathering: "Night Safari at the MIC" – The Legions became nighttime explorers, learning about biomimicry by observing, understanding, and seeking nature-inspired solutions to mobility challenges, using biological principles and various biomaterials.

Fourth gathering: "Water and Its Movement" – The goal was to discover the physical and chemical properties of water, along with its cycles and functions.

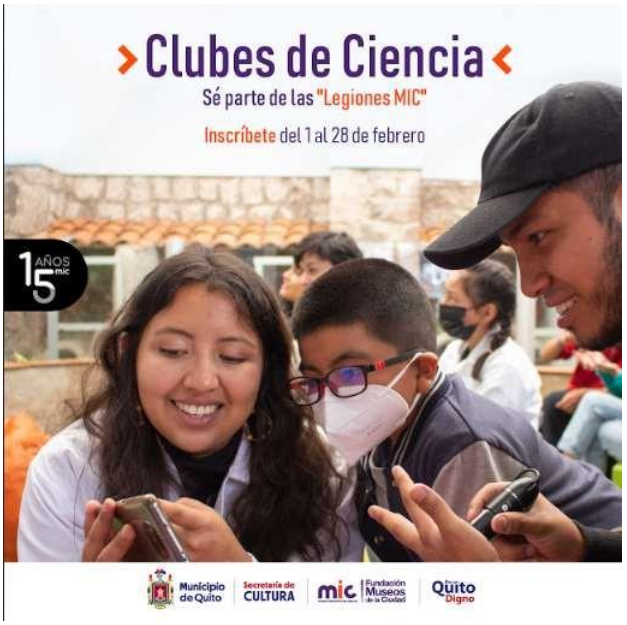

Figure 6. Credits: Fundación Museos de la Ciudad

Didáctikus

Educational project aimed at teachers, educators, and homeschooling families, through permanent spaces for mutual engagement and collaboration between the museum and the educational community. It is carried out through experiences, tools, and resources from non-formal education that enrich teaching and learning processes within the classroom. Knowledge exchange processes are carried out, the museum becomes a didactic resource, and this year the call was made by the Ministry of Education to teachers from nearby schools.

Girls in STEM

This is a project that fosters technological vocations in girls by highlighting the work of women scientists and the roles of women in these fields. It promotes practices that support gender equality in the scientific and technological spheres.

Through Project-Based Learning (PBL), the aim is for girls to view science and technology with fresh eyes, breaking down gender biases and stereotypes. The project encourages the development of scientific-technological skills, soft skills, and innovation capabilities, while also raising awareness about the situation of women in these fields.

Figure 7. Credits: Fundación Museos de la Ciudad

Community mediation

The Office of Public Space and Community Mediation promotes engagement and collaboration between museums and communities by encouraging decentralized management processes that support community agency and autonomy. These efforts are guided by conceptual and methodological frameworks such as collective memory and social struggles, diversity and the right to the city, urban agriculture and ecofeminism, and the importance of reweaving the social fabric and

strengthening economies of reciprocity.La Jefatura de Espacio Público y Mediación Comunitaria promueve la implicación y colaboración entre museos y comunidades suscitando procesos de gestión descentralizados que fomenten las agencias y autonomías comunitarias, en torno a ejes conceptuales y metodológicos como las memorias y luchas sociales, la diversidad y el derecho a la ciudad, la agricultura urbana y el ecofeminismo, la importancia de rearticular el tejido social y de fortalecer las economías de la reciprocidad.

MIC's Orchard, from the plot to the street

It is the living demonstration of the appropriation of a space that enables the catalyzation of social cohesion processes and community engagement, fostering socio-environmental awareness, gender equity, shared responsibility, the pursuit and transformation of production habits, and a more respectful relationship with the land. Additionally, it serves as an educational tool to combat desertification and the lack of urban gardens and green areas around the Chimbacalle neighborhood.

The project works through mingas (collective community work) to promote participatory organization for the care, maintenance, socialization, and replication of this experience within the community. The garden space allows for the hosting of workshops, campouts, gatherings, and specific activations based on the calendar. Since the beginning of the year, an average of 600 people have been involved, either directly or indirectly (Figure 8).

Figure 8. Credits: Fundación Museos de la Ciudad

Let's go to MIC's orchard!

This project seeks, through theoretical and practical experience, to develop in young people an awareness of the existing methods and alternatives in the food production and consumption process. It provides tools, skills, and motivation to explore a different development perspective—one that does not harm ecosystems and encourages reflection on agroindustry. At the same time, it aims to reconnect with a sense of belonging to the land, creating a space for dialogue, recreation, and the strengthening of personal bonds, respect for living beings and ecosystems, and responsibility for the environmental impact we generate.

Currently, workshops are being held with the participation of students (ages 16–18) from the neighboring school, Colegio 10 de Agosto. These include group dynamics, informal conversations, and symbolic representations of space appropriation throughout the planting-care-harvest-control process. The workshops conclude with a harvest that is shared in a pambamesa.

Circular medicinal orchard

Through an institutional partnership with the Embassy of Colombia, and as part of its project 'Cátedra Colombia: Power of Life', a medicinal garden was established at the MIC. Its organization involved Rosita Cabrera, a medicine woman who preserves the wisdom of the Andean worldview and is a leader of the ancestral community La Toglla, near Quito. This initiative is part of the necessary reconciliation between ancestral knowledge and scientific understanding.

The maintenance and installation of the garden break away from the conventional logic of creating a space based on a museographic and educational script. The relationship with the medicinal garden is shaped by the learning that comes from lived experience. The goal is to revalue ancestral medicine as part of cultural heritage (Figure 9).

Figure 9. Photo: Fundación Museos de la Ciudad

Conclusions

The MIC (Interactive Science Museum) is a place that seeks to keep human curiosity alive through experiences that transcend and encourage critical and scientific thinking, inviting citizens to discover, reflect on, and rethink everyday life through science.

It is a unique space in the city that encourages experiencing science from an everyday perspective, allowing each person to build their knowledge through dialogue and experimentation.

Through its 2021–2025 Educational Model, the MIC selects a toolbox that enables the planning of content aligned with the issues to be addressed. Every exhibition or educational program is linked to sustainable development and is implemented from the perspective of Education for Sustainable Development (ESD), within the framework of the Sustainable Development Goals (SDGs), and the STEM-STEAM education approach, aimed at developing 21st-century skills, and grounded in constructivist pedagogical principles.

In addition, it considers community engagement essential. Therefore, it develops collaborative projects with the residents of Chimbacalle. However, communities are not limited to geographic proximity; the MIC also works with identity-based communities, such as homeschooling families and the academic sector.

The narratives implemented emphasize the importance of addressing current issues, aiming to make each experience at the MIC unique. Thus, a visit to the museum—through play and interaction—invites visitors to awaken their imagination, reflect on everyday situations, and explore the world of science.

As a partner in sustainability, the MIC contributes educationally through ESD, applying various approaches that strengthen connections with the public while fostering an understanding of Ecuador as a living laboratory.

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Korea's encounter with the Anthropocene

Cheeyun Kwon (Korea)[1]

Abstract

'Anthropocene' is a term introduced by scientists Paul J. Crutzen and Eugene F. Stoemer in 2000 to designate the current geological epoch by emphasizing the pervasive imprint of mankind on geology and ecology. It alerts about the impact of human activity on the biosphere, hydrosphere, lithosphere, and atmosphere of the earth which forever changed the landscape of the natural environment. This paper introduces some major authors who have elaborated on the concept from the perspectives of sociology, philosophy, history, and art, and traces their introduction to the Korean academia and museum space. The fields of humanities, science, art, and museums alike have responded to this imperative global trend, becoming a lively topic in Korea. Finally, it offers guidelines for a sustainable museum and museum programmes that may be shared among the global audience.

Keywords: Anthropocene, climate action, museum exhibition, Korea, sustainable museum

[1] Cheeyun Kwon is currently Professor of Arts & Cultural Management at Hongik University in Seoul, Republic of Korea, and serves as a member of the Executive Board of ICTOP. She has previously held curatorial positions at the National Museum of Asian Art, Smithsonian Institute, and the Asian Art Museum of San Francisco. She has contributed to the Museums & Gender issue of Museum International (2020), and is author of Efficacious Underworld: The Evolution of Ten Kings Paintings in Medieval China and Korea (University of Hawaii Press, 2019). E-mail: cykwon@gmail.com

Resumen

"Antropoceno" es un término introducido por los científicos Paul J. Crutzen y Eugene F. Stoemer en 2000 para designar la época geológica actual, enfatizando la huella omnipresente de la humanidad en la geología y la ecología. Este término alerta sobre el impacto de la actividad humana en la biosfera, hidrosfera, litosfera y atmósfera de la tierra que cambió para siempre el paisaje del entorno natural. Este artículo presenta a algunos de los principales autores que han elaborado el concepto desde las perspectivas de la sociología, la filosofía, la historia y el arte, y traza su introducción en la academia y el espacio museístico coreano. Los campos de las humanidades, la ciencia, el arte y los museos por igual han respondido a esta imperativa tendencia global, convirtiéndose en un tema actual en Corea. Finalmente, ofrece pautas para un museo sostenible y programas museísticos que pueden compartirse entre la audiencia global.

Palabras clave: Antropoceno, acción climática, exposiciones en museos, Korea, museo sostenible

Introduction

'Anthropocene' is a term that scientists Paul J. Crutzen and Eugene F. Stoemer introduced in 2000 to designate the current geological epoch by emphasizing mankind's pervasive imprint on geology and ecology. It informs us about human activity's effects on the biosphere, hydrosphere, lithosphere, and atmosphere of the earth with a 'telluric force' that changes the natural environment's landscape forever. Since its formulation, the term has attracted the attention of scholars in all fields and ultimately garnered the cover of both Nature and The Economist magazines a decade later as an imperative global issue (Figs. 1-2). While these highlights have initiated the spread of the concept worldwide, it remains for the museum community to engage in translating this issue into specific actions that would mitigate climate change. This paper traces the introductory route of the term into Korean academia, and the ways in which it was manifested in Korean museums.

Figure 1. Nature, 473, 254, May 18, 2011 (image source: naturegraphics.tumblr.com)

(Figure 2. The Economist, May 28- June 3, 2011 (image source: www.economist.com)

The Introduction of 'Anthropocene' in Korea

Although the OECD, including the Korean government, had adopted policy guidelines such as 'green growth' as early as 2009, the formal appearance of the term 'Anthropocene' per se on the Korean academic platform traces to 2014, when Prasenjit Duara, a historian of China based in Singapore, spoke on the "Agenda of Asian Studies in the Anthropocene" at the Seoul National University Asia Center. At the time, he introduced the Korean audience to 'Anthropocene' as a 'new word', and suggested a paradigm shift from a model of 'national modernization' to that of 'sustainable modernity'.[2] He gave a more in-depth talk a year later on his book, The Crisis of Global Modernity—Asian Traditions and a Sustainable Future,[3] in which he argues that the present day is defined by the intersection of three global changes: the rise of non-western powers, the crisis of environmental sustainability, and the loss of the authority once found in religion or political ideologies. The world's physical salvation is becoming—and must become—the ultimate goal of our times, but this goal must transcend national sovereignty if it is to succeed. Duara suggests that a viable foundation for sustainability may be found in Asia's traditions, which offer different ways of understanding the relationship between the personal, ecological, and universal. These traditions must be understood through the ways they have circulated and converged with contemporary developments.[4]

The humanities sector responded to this call two years later by issuing a special issue on "The Anthropocene and Climate Change" in the Journal of the Humanities (2016), wherein three articles addressed global warming's social and cultural dimensions. The social crisis and communities' reactions to climate change (Lee 2016), the cultural concept of Anthropocene (Kim 2016), and the literary adaptations to the Anthropocene and climate change (Shin 2016) were addressed in this issue. Equally, the journal Literature and Environment (2016) included an article that discussed the Anthropocene in Charles Siebert's Wickerby: An Urban Pastoral (Kim 2016), which illuminated the new potential perspectives and enhancement of our environmental consciousness through the novel's characters.

Concurrent with these responses in the humanities, a Journal of the Geological Society of Korea article addressed the issue on the beginning point of the Anthropocene. It introduced the on-going debate about when the greatest human effects were inflicted on the earth, whether it was 6000 years ago with the beginnings of agriculture, the 1600s exchanges between the old and new continents, the industrial revolution in the eighteenth century, or the population explosion in the twentieth century (Kim, Nahm, and Lim 2016).

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[2] Prasenjit Duara (Singapore National University Asia Research Institute), *"The Agenda of Asian Studies in the Anthropocene*," Seoul National University Asia Center, March, 20-21, 2014. https://www.youtube.com/watch?v=WLu6QMfIyxc

[3] https://snuac.snu.ac.kr/?u_event=%ec%84%9c%ec%9a%b8%eb%8c%80-%ec%95%84%ec%8b%9c%ec%95%84%ec%97%b0%ea%b5%ac%ec%86%8c-%ed%8a%b9%eb%b3%84%ea%b0%95%ec%97%b0-prasenjit-duara-%ea%b5%90%ec%88%98

[4] Book description, Cambridge University Press. https://www.cambridge.org/us/universitypress/subjects/history/global-history/crisis-global-modernity-asian-traditions-and-sustainable-future

However, these beginning developments in academia were not sufficient to attract the public's attention for several more years, as evident in the Google search trends of 2019 that show that Korea was still more concerned with the Fourth Industrial Revolution than the Anthropocene (Pak 2019, p. 15). The Center of Anthropocene Studies, founded in 2018 by Professor Pak Beom-sun at the Korean Advanced Institute of Science and Technology,5 played an active role thereafter in building public awareness through open lectures, forums, and research activities. His interdisciplinary collaborative activities bore fruit in a conference that The Korean Association of Science and Technology Studies organized, as well as publications in the Journal of Science and Technology Studies (2019) in which the Anthropocene's various social and political dimensions were explored.[6]

In the same year, the journal Culture and Science (Fig. 3) dedicated a special issue to the Anthropocene, and introduced translated essays by prominent foreign scholars such as Dipesh Chakrabarty and Donna Haraway. Chakrabarty, Professor of history at the University of Chicago, is familiar to the museum community through his contribution to Museum International's special issue on Museum Definition (2019), in which he points to 'globalization' and 'Anthropocene' as two variant axes in which to situate today's museum and its impending role (Chakrabarty 2019a). Donna Haraway, a leading scholar of contemporary ecofeminism, proposed alternative terms to the human epoch, such as Capitalocene, Chtulucene, and Plantationcene that enriched the Anthropocene discourse further and reflected on the fundamental causes of today's plight (Haraway 2015).

A particularly illuminating perspective from the field of sociology is the theory of 'natural contract' that Michel Serres proposed in his book Le Contrat Naturel (1990) (Fig. 4), which argues that just as a social contract once brought order to human society, we must now take the earth into account to bring balance and a sustainable coexistence with the planet.[7] Bruno Latour, a French philosopher and sociologist, is another important contributor to the discourse on the Anthropocene through his prolific writings, many of which have been translated into Korean.[8] He offers views of an interdisciplinary and trans-disciplinary approach to science and scholarship, and lays the groundwork for a future collaboration among scientists, theologists, activists, and artists as we begin to adjust to the new climatic regime.

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[5] Center's website: https://anthropocenestudies.com/

[6] Papers presented include: '*How to Study the Anthropocene in Korea: A Case Study of the DMZ'* (Pak Beom-sun*); 'The Age of the Anthropocene: the Pandemic and the Green New Deal Eco-politics'* (Pak Beom-sun); 'A Number of Issues in Social Theory Raised by the Anthropocene' (Kim Hong-jung). Published in the *Journal of Science and Technology Studies* (2019) include: 'Social Theory in the Anthropocene: Catastrophe and Patiency' (Kim Hong-jung); 'Situating the Anthropocene: The Social Construction of the Pohang 'Triggered' Earthquake' (Kim Ki-heung), among others.

[7] Mentioned in Kim Hong-jung's recorded online lecture with SBS D Forum 2020, 'From Social Contract to Natural Contract': https://www.youtube.com/watch?v=7XU6ylVDNRY

[8] They include: *Science in Action: How to Follow Scientists and Engineers through Society* (1987); *Nous n'avons jamais été modernes (1991); Pandora's Hope: Essays on the Reality of Science Studies* (1999); *Cogitamus. Six lettres sur les humanités scientifiques* (2010); Graham Harman, *Bruno Latour: Reassembling the Political*, (2014); *Où atterrir. Comment s'orienter en politique* (2017) ; "Gaia 2.0", *Science* 361 (2018), 1066-1068; *Ou suis-je?*, (2021).

Figure 3. Culture and Science, vol. 97 (2019)

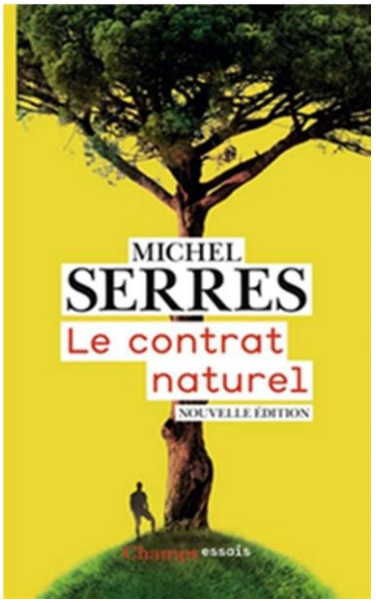


Figure 4

The field of art studies has seen several advanced degrees on the artistic response to the Anthropocene, some of which engaged Bruno Latour's theories on political ecology (Yun 2020; Lee 2021).

Several articles (Son 2020; Rhee 2021) have introduced the artworks by Maya Lin, Tomas Saraceno, Pierre Huygue, and Anika Yi, who translate the myriad dimensions of the human relationship to nature into a creative vision. A single monograph on the Art of the Anthropocene (2021) gives a comprehensive overview of the art that expresses ecological, physical, and life-related issues in the contemporary world (Chun 2021).

The Museum Sector

In the museum sector, the science and art museums have engaged in the climate change discourse most actively. In 2020, the National Science Museum opened an exhibition called 'Climate Change, Act Now', calling for immediate action in the advent of global warming (Fig. 5). At least eight other exhibitions followed on related themes throughout the national science museums around the country. The double-edged benefits and dangers of using plastic (Fig. 6), the carbon footprint and ways to reduce it, and the biosphere's past and present of Korea were addressed through traditional and contemporary artworks.[9] For example, Korea's biosphere was shown through works that depicted Korea's flora and fauna in traditional paintings, fine contemporary line drawings of rare local plants, and photographs of our endangered living creatures past and present.

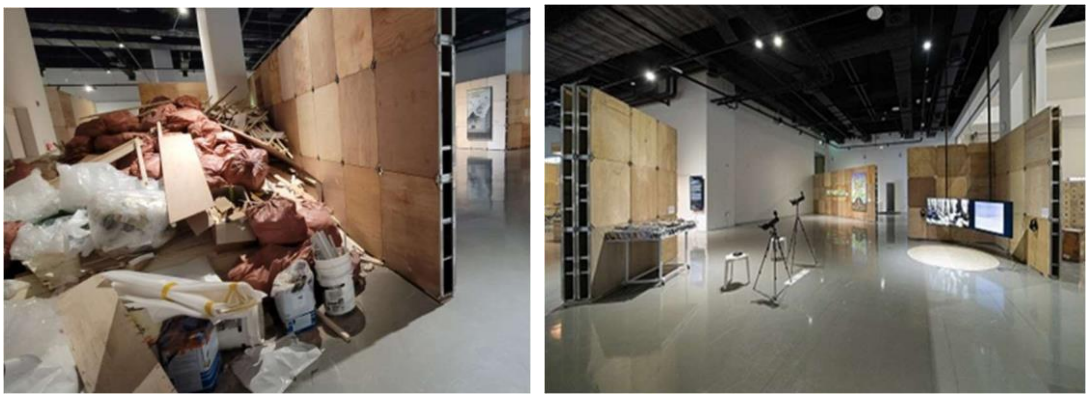
[9] Five national science museums in Korea have hosted exhibitions on climate change, whose online viewing is available at: https://www.science.go.kr/board?menuId=MENU00782andsiteId=

In the art museum sector, the private Ilmin Museum of Art was the first to host an art exhibition on the Anthropocene in 2019 in collaboration with Brazil. Entitled Dear Amazon, this exhibition exchanged artworks on the Anthropocene from the two countries that propelled a trans-national dialogue with a global outlook. In 2021, the Museum of Contemporary Art Busan made specific advances in recognizing the quantifiable measurements of the carbon footprint produced by an exhibition in an art museum. In the exhibition space of Sustainable Museum: Art and Environment, the sheer amount of trash that an exhibition produces was put at plain sight on display (Fig. 7), explicitly exposing our damaging habits and calling for the need to modify our practices. The exhibition also used reusable movable walls (Fig. 8) that offered alternative methods and made us think about ways to minimize our carbon footprint in our exhibition processes.

Another exhibition at Seoul Museum of Art highlighted the significant number of coniferous trees that are dying in our mountains because of climate change, and called attention to the 3.5% rule for climate action. The "3.5% rule" comes from Erica Chenoweth, a political scientist at Harvard, who argues that no government can resist that percentage of the population mobilizing against it. Her theory is based on research of 323 violent and non-violent protests that occurred worldwide between 1900 and 2006. She observed that in every case, when at least 3.5% of the population attended a mass gathering, they achieved their goals (Chenoweth and Stephan 2008).

Figure 5. National Science Museum (2020) (image source: www.science.go.kr)

Figure 6. National Science Museum (2021) (image source: www.science.go.kr)



Figures 7-8. Museum of Contemporary Art, Busan
(image source: https://www.busan.go.kr/moca/exhibition03/1505298)

These efforts in the museum field have culminated in the publication of a Manual for a Sustainable Museum by The Arts Council of Korea in May 2023, which was shared among museum specialists in Korea. This guideline proposes 19 practices for a sustainable future:

1- The duration of the exhibit should be at least 3 months and 2 weeks.
2- When planning an exhibit, design by minimizing the amount of materials to create displays.
3- When an exhibit site is organized, reuse furniture and supplies like showcases or temporary exhibition walls or recycle them as supplementary materials.
4- In international exhibits, whenever possible, perform installation remotely instead of hosting overseas artists and external curators.
5- Minimize the carbon footprint for moving and transportation.
6- Reduce the use of adhesive sheet.
7- Reduce the use of disposable materials in operating several art center events or programs.
8- Disassemble and sort the wastes from exhibits and donate to relevant organizations or institutions.
9- Deliver workshops and educational programs that raise environmental awareness.
10- Cooperate with public or private organizations to realize the eco-conscious mission and raise awareness in environment.
11- Collect used leaflets to recycle and reduce the number of prints.
12- Reduce the promotional printouts such as posters and invitation letters. Distribute them through the web.
13- When producing publications such as exhibition catalogs, replace them with online versions (web catalogs, etc.) and reduce the number of printed copies.
14- Reduce the production of banners.
15- Use LED lighting.
16- Reduce the energy usage rate for exhibit's presentation equipment.
17- Continuously maintain the wall to enable screening without installing separate temporary walls.

18- Save the use of water resources in public restrooms, etc.
19- Compile the list of materials currently in storage, and manage them efficiently by sharing whether each item can be recycled.

Finally, I suggest implementing museum programs that involve raising environmental awareness through tree-planting activities. A single tree is known to provide sufficient oxygen for 4 people annually, or 4 years for a person (Fig. 13). Therefore, if one lives 80 years, s/he should plant at least 20 trees to compensate for the oxygen consumed during his/her lifetime.

The spread of such quantifiable and tangible actions that one can carry out as a symbolic gesture to the earth, or plant in memory of others, can contribute to cleaning the air, combating deforestation, and saving wildlife to protect the biodiversity of the earth. So together with carbon-reducing efforts, such oxygen-increasing activities could contribute in mitigating the alarming state of global warming.

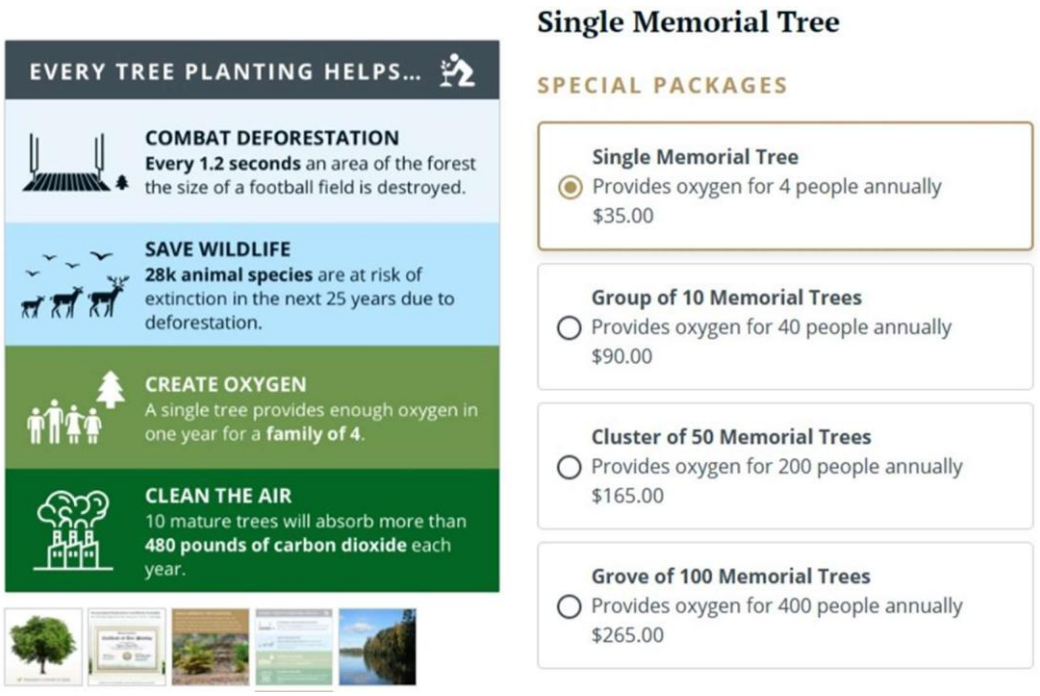


Figure 9. Legacy Memorial Tree Program (image source: sympathy.legacy.com)

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Training tourism experts to meet the challenge of sustainability

Rita Capurro (Italy)[1]

Abstract

Tourism Studies include disciplines ranging from the economical to the sociological fields and develop training courses to prepare experts in tourism design, management, and communication. Tourism has a relevant impact on museums, and it is evident that if the contemporary museology is focused on the local community, still too often museums are created and prompted to host the highest number of visitors. The target audience, when it comes to large numbers in museums, is tourists. This trend certainly leads to major problems from a social and environmental sustainability perspective. Hence, tourist experts are called to find new solutions to combine the needs of a sector that has clear economic objectives within the limitations and rules necessary to ensure the balance for sustainability. This paper analyses the training in tourism courses that are focused on museums and cultural tourism, to highlight which specific knowledges could be strengthened to foster the acquisition of skills for tourism planning and managements, based on the principles of sustainability. This analysis will be based upon confronting international trends and on the most recent theories on education in the field of tourism. In particular, we consider the case of the course in Tourism and Cultural Heritage in the MA course of Tourism Territory, and Local Development, University of Milan-Bicocca, Italy, and its characteristics in relation with the University's and course's strategies in response to current challenges of the Anthropocene.

Palabras clave: Tourism Studies, Cultural Tourism, Sustainability, Visitors Studies

[1] Rita Capurro, University of Milan-Bicocca. E-mail: rita.capurro@unimib.it

Resumen

Los estudios de turismo abarcan disciplinas que van desde el ámbito económico al sociológico y desarrollan cursos de formación para preparar expertos en los campos del diseño, la gestión y la comunicación del turismo. El turismo tiene un impacto relevante en los museos, y es evidente que si bien la museología contemporánea se centra en la comunidad local, todavía con demasiada frecuencia los museos se crean e impulsan para acoger al mayor número de visitantes. El público objetivo, cuando se trata de grandes números en los museos, son los turistas. No cabe duda de que esta tendencia acarrea importantes problemas desde el punto de vista de la sostenibilidad social y medioambiental. De ahí que los expertos en turismo estén llamados a encontrar nuevas soluciones para combinar las necesidades de un sector que tiene claros objetivos económicos dentro de las limitaciones y normas necesarias para garantizar el equilibrio en pro de la sostenibilidad. Este artículo analiza la formación en los cursos de turismo centrados en los museos y el turismo cultural, para destacar qué conocimientos específicos podrían reforzarse para fomentar la adquisición de competencias para la planificación y gestión del turismo, basadas en los principios de la sostenibilidad. Este análisis se basará en la confrontación de tendencias internacionales y en las teorías más recientes sobre la educación en el ámbito del turismo. En particular, se considera el caso del curso de Turismo y Patrimonio Cultural en el Máster de "Territorio Turístico, y Desarrollo Local", de la Universidad de Milán-Bicocca, Italia, y sus características en relación con las estrategias de la Universidad y del curso en respuesta a los retos actuales del Antropoceno.

Palabras clave: Estudios de Turismo, Turismo Cultural, Sostenibilidad, Estudios de Visitantes

Introduction

Tourism Studies include disciplines ranging from the economical to the sociological fields and develop training courses, at different levels, to prepare experts in the fields of tourism design, management, and communication. Disciplines for tourism have to do with the experience of a place and the infrastructure to allow it, with two main focuses: people (tourists and communities) and a place where to spend leisure time. In the field of cultural tourism (du Cros, McKercher, 2020; Vujicic, Kasim, et al., 2022) there are many aspects that put in relation tourism and museums, not only because museums have a relevant role in the cultural tourism, but also because problems related with tourism can also affect museums. In this piece of research, we will consider how the museum can be an effective paradigm to find new solutions for a sustainable cultural tourism and their reflection in training courses.

Sustainability, overtourism and the museum paradigm

The relevance of tourism in the global economy is an indisputable fact: indeed, the tourism generates almost 10 percent of global GDP (Pechlaner, Innerhofer, & Erschbamer, 2020, p. 3) and, as the data of the World Travel & Tourism Council (WTTC) report supports more than 270 million jobs (World Economic Forum, 2015).

Moreover, tourism is a constantly expanding phenomenon and a long-term forecast, by the United Nations World Tourism Organization, predicts that tourist arrivals will reach 1.8 billion by 2030 (UNWTO, 2011). At the same time, tourism can lead to many problems when it does not meet the criteria for sustainability (Pereira Roders, van Oers, 2011). A growing awareness of this leads to an assessment of what the challenges of the near future should be to reduce the damage that tourism can bring; for example, a recent EU document states that:

> "Sustainability constitutes one of the main challenges for tourism. As tourism includes transport to the destinations concerned, it leads to an increase in CO_2 emissions. Massive tourism may also lead to deterioration of natural resources, destruction of biodiversity, or noise pollution. In terms of spatial development, it may lead to the construction of large resorts that significantly alters the landscape.
> Global warming, just like massive tourism, may render certain tourist destinations less attractive, for instance, by causing fires or deforestation. In the long term, rising sea levels could be a threat to insular and coastal territories. Loss of snow due to rising temperatures may also lead to the decline of winter ski resorts." (Major challenges for EU tourism and policy responses, 2017)

Therefore, destination management must be based on a research program tailored to the size, complexity, and type of area and the context in which it is situated, and every destination has its own specific characteristics where the goal is to balance economy, environment, and society (McCool, 2021, p. 289).

Among the others, one of the most well-known consequences of an unbalanced tourism is the phenomenon of overtourism which makes popular vacation destinations, historic capitals, and cities, as well as other cultural and natural attraction, suffer increasingly from overload (Pechlaner, Innerhofer, & Erschbamer, 2020, p. 3).

Overtourism produces a negative environmental and social impact, but it cannot be emphasized enough that it results in a negative tourist experience too. Nobody enjoys overcrowded places, long queues, difficulties to find places to rest, high prices. When the destination is cultural, even the cultural experience is diminished by overtourism because it becomes more complicated to pause, contemplate, listen, read explanations.

The limit of tourism development is given by the carrying capacity of a destination "The maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic and socio-cultural environment and an unacceptable decrease in the quality of the visitors' satisfaction" (UNWTO, 1981).

Yet, still too often, the only parameter considered as an indicator of success for a tourist destination is the number of tourists. Museums seems to be far from these considerations, but they are one of the major attractions for cultural tourism (Vareiro, Bruno, & Sónia, 2021), moreover, it is a fact that every year rankings are made of the most visited museums in the world and an increase in visitors is considered an achieved goal. While this is objectively positive, as long as it allows for suitable visiting experiences, it often coincides with fatiguing and culturally unfulfilling experiences. Over-attendance and overtourism bring about the same consequences. The comparison with sustainability in a museum is useful to identify strategies and solutions that can be applied on a larger scale for cultural tourism.

New trends for tourism training

In the field of Tourism Studies, education and training are deeply interwoven and this happens because: "In tourism, the social and market context in which people work changes over time. Standards change, technology and economic climate influence change in the workplace; even the perceptions of client service expectations change. These changes relate to emerging skills and skill levels that impact the training needs of the workforce" (Mandor, 2000, p. 593).

The disciplines that characterize most courses on tourism are Economics, Geography, Sociology, Contemporary Languages, Law, Humanities, Communication, Marketing and Anthropology. The transversal skills that complete the training mainly concern markets, changes, technologies, client service expectations, efficiency, innovation, cross-occupational skills.

Various courses are designed to train professionals to different careers, ranging from hospitality to management of the tourism process, and the cultural tourism is one of the fields with a wide number of academic courses at different levels. Due to the need to adapt training to the demands of the present, more and more tourism courses focus on sustainability requirements, also in the light of local and international recommendations (e.g. UNWTO, 2008; Peeters, P., Gössling, S., Klijs, J. et al., 2018). In the field of cultural tourism, especially aspects related to social but also environmental sustainability are considered. Indeed, tourist experts are called to find new solutions to combine the needs of a sector that has clear economic objectives within the limitations and rules necessary to ensure the balance for sustainability. The training challenge, especially for the higher levels of education, is for increasing competencies to be able to read the complexity of the contemporary tourism scene. But it is even more challenging to train skills to find solutions to complex issues with an approach that considers in-depth knowledge of tourism dynamics, and which leads to choosing the most appropriate solutions for specific cases (McCool, 2021, p. 291). As Morris and Martin, (2009, p. 157) notes:

"These approaches are as much about 'problem finding' and 'problem exploring' as they are about problem solving. Our contention is that learners cannot deal with the wicked problems of sustainability without learning to think and act systemically".

Museum studies can prove to be a particularly significant paradigm for analysing sustainability issues in a cultural context and for testing solutions that can then be applied on a larger scale in a cultural tourism context. In particular, in museums as in cultural tourism, the consideration of the social impact and cultural quality of the experience is increasingly relevant. Reflections on these issues in the museum field has already reached a high level of awareness that will necessarily also have to invest the broader field of cultural tourism.

Focusing only on tourism university courses in Italy, there are several training offers that focus on tourism, cultural heritage, often with a specific focus on sustainability: University of Padua, MA course in Tourism, Cultural Heritage, Sustainability; University of Rome – Tor Vergata, MA course in Tourism Strategy, Cultural Heritage and Made in Italy; University of Turin, MA course in Cultural Heritage and Creativity for tourism and territorial development; University of Macerata, BA course in Cultural Heritage and Tourism and many others. In the curricula of these courses, the study of museums is included in different ways. The case of the MA course in Tourism, Territory and Local Development, University of Milan-Bicocca, will be explored below by analysing how, in a context of increasing attention to the issue of sustainability, the study of the museum is useful as a paradigm for developing skills in the field of cultural tourism with a perspective of sustainability.

"Tourism, Territory, and Local Development" at the University of Milan-Bicocca. A case study

The MA course in Tourism, Territory and Local Development is held in the University of Milan Bicocca, Department of Sociology and Social Research. The same Department provides a BA course in the field of Tourism Science and the Local Community.

The method and the objectives of the course Tourism, Territory and Local Development can be summarized in four main points:

1- Interdisciplinary skills and knowledge to give students the planning and decision-making abilities to face complex situations like the relationship between tourism and local development;

2- Interdisciplinary approach, including Geography, Sociology, Economics and Communications Science, confers the ability to analyse a geographical area and identify its strengths and weaknesses in terms of tourism;

3- Teaching up-to-date, polyvalent, practical skills through an active methodology, exercises useful in the working world, and lab work under the aid of representatives from the professional world;

4- Sensitizing students to problems emerging from the relationship between place and culture, to know how to use local specificity in tourism in a non-intrusive way that brings development for the local community and landscape.

The objective of balancing the training of tourism development specialists with a focus on sustainability means that the training course includes several cross-disciplinary themes: analysis of big data to better understand current trends, study of the transition towards sustainability, ways of tourism industry development with a view towards ecological transition, renewable energy and landscape impact, sustainability for local communities.

It is important to underline that the course's attention to sustainability aspects is part of a broader vision that involves the entire university. The challenges of the Anthropocene are in fact at the center of various research and training projects. Among all, at present, the most relevant for the involvement of various universities (University of Milan-Bicocca as project leader, Polytechnic of Milan, Bocconi University, University of Milan) and local institutions (Lombardy Region and Municipality of Milan) is the MUSA project - Multilayered Urban Sustainability Action. The project, financed by the PNRR (the national Recovery and Resilience Plan), sees the collaboration of twenty-four public and private entities and aims to transform the metropolitan area of Milan into an innovation ecosystem for sustainability and urban regeneration: from renewable energy to green mobility, from use of big data for health to sustainable finance, for a 360-degree inclusive society (https://musascarl.it/).

However, the university's focus on sustainability issues and the challenges of climate change is not a recent discovery. The most significant structure in this context is MaRHE - The Marine Research and High Education Centre on the island of Magoodhoo in the Maldives Archipelago, a research centre where researchers from the University can collaborate with Maldivian colleagues to study new solutions for sustainable development.

Since 2009, when the centre was established, lecturers, researchers and students have been able to spend short periods of mobility at the Maldivian outpost for study and research purposes. For tourism courses, the possibility of directly studying a fragile destination like that of the Maldives is an extraordinary opportunity to experiment with strategies for tourism sustainability.

These contextual elements highlight that there are training environments where sustainability is not simply a keyword used because it corresponds to a market request but rather it is a common thread that concerns objectives and strategies shared in different areas and levels of the university.

Returning to the specific case of the course in Tourism, Territory and Local Development, it should be noted that among the various classes, the one in Tourism and Cultural Heritage focuses on heritage-related tourism practices.

In this class, the museum plays a central role because all the elements that constitute the cornerstones of contemporary museology are used to understand what an ideal use of cultural heritage is, i.e. how this is done by guaranteeing the correct conditions for preserving cultural heritage and respecting the relationship of this heritage within a community of reference and its history.

The museum, in this context, is analysed as a tool for understanding how to deal with complexity from both a theoretical and practical point of view, through didactics focused on learning-by- doing, applied to complex cases. For example, for three years students carried out part of the course analysing the case of the Museo del Palio di Legnano, a museum in the process of being set up, which enhances a heritage linked to an annual event, the palio, where material heritage (costumes, documents, banners) and intangible heritage (ceremonial, competition, historical parade) are deeply intertwined. The students were able to develop project proposals to enhance this complex cultural heritage, in particular by focusing on the needs of the local community, which sees the palio as a strongly identifying cultural element, and external visitors and tourists. This experience revolving around a museum turns out to be useful for studying tourism offers concerning complex cultural destinations where the focus on the local community must be at the forefront.

Another element that offers useful comparisons for research on cultural tourism from a sustainability perspective is social research on museum audiences. Tools for analysing audiences, their needs, and difficulties in the proper enjoyment of museum heritage are applied to museum case studies but are also transferred to the analysis of broader tourism destinations.

Conclusions

Training in the tourism sciences today cannot ignore the awareness of the need to bring tourism closer to sustainability goals. Contemporary reflection on the museum has led to an in-depth consideration of how to build a balanced ecosystem that considers the different elements and actors of museum life. Keywords of the museum such as: community, collection care, participation, inclusion, education, responsibility, are reshaping the idea of the museum and its relevance. Notably, reflection on the responsibility of the museum encourages the application of good practices also from a sustainability perspective. For example, the problem of museum overcrowding is being reflected upon so that its impact is less harmful. Note the experience of the Louvre Museum, the most visited museum in the world, which since 2023 has implemented a policy of limiting visitor flows to improve the visitor experience but also the working conditions of its workers.

This reflection can be applied to a broader ecosystem such as tourism destinations. The deepening of museum studies in the field of tourism studies can help identify problems and find solutions.

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Expected competences of museum professionals in 2030

Darko Babić (Croatia)[1]

Abstract

The museum is a complex organism, with a responsibility to perform a diverse set of tasks and services to fulfil its societal roles. In the museum field, professional training is internal as well as external to the museum; it is an ongoing process and can be provided in-house and also by additional training courses managed by museum associations, agencies, consultants etc. Within ICOM, the International Committee for the Training of Personnel (ICTOP) aims to promote professional training, at all levels in all regions of the world. This development goes hand in hand with the promotion of good practices and the highest standards of the profession. According to ICTOP's booklet (Ruge) Museum Professions - A European Frame of Reference (2008) there are up to twenty specific positions in museums. Almost all of them require a specific educational background and specific professional training. Although this booklet concentrates on European museums, its findings are valid for museums worldwide, although some countries are less able to support posts in some areas. The paper will, in its prime part point toward the complexity of the museum as institution and its relation to the knowledge society, as well as understanding of the idea of heritage (as crucial). In the second part it will open a discussion about the importance of regional approach(es), mentioning the idea of heritage literacy (to mitigate diverse interests) as well as projecting some desirable competencies of museum workers in the future.

Keywords: wisdom, heritage literacy, social responsibility, competencies, permanent education.

[1] PhD in Museology. Chair of Museology and Associate Professor at the University of Zagreb (Croatia), ICOM Croatia CEO and Board Adviser to ICOM-ICTOP. Member of the editorial boards of "HER & MUS journal" (Ediciones Trea, Spain), "Museologica Brunensia" (Masaryk University, Czech Republic) and Croatian "Informatica Museologica". Editor of Routledge & ICOM's recently published book on museum leadership "International Perspectives on Museum Management". E-mail: babic.darkobabic@gmail.com

Resumen

El museo es un organismo complejo, con la responsabilidad de realizar un conjunto diverso de tareas y servicios para cumplir sus funciones sociales. En el ámbito museístico, la formación profesional es tanto interna como externa al museo. La formación profesional es un proceso continuo y puede impartirse internamente y también mediante cursos de formación adicionales gestionados por asociaciones de museos, agencias, consultores, etc. Dentro del ICOM, el Comité Internacional para la Formación de Personal (ICTOP) tiene como objetivo promover la formación profesional, a todos los niveles en todas las regiones del mundo. Este desarrollo va de la mano con la promoción de buenas prácticas y los más altos estándares de la profesión. Según el folleto del ICTOP Museum Professions - A European Frame of Reference (2008), existen hasta veinte puestos específicos en los museos. Casi todos ellos requieren una formación educativa específica y una formación profesional específica. Aunque este folleto se concentra en los museos europeos, sus conclusiones son válidas para museos de todo el mundo, aunque algunos países tienen menos capacidad para financiar publicaciones en algunas áreas. En su parte principal, el artículo señalará la complejidad del museo como institución y su relación con la sociedad del conocimiento, así como la comprensión de la idea de patrimonio (como algo crucial). En la segunda parte, se abrirá un debate sobre la importancia de los enfoques regionales, se mencionará la idea de la alfabetización patrimonial (para mitigar diversos intereses) y se proyectarán algunas competencias deseables de los trabajadores de los museos en el futuro.

Palabras clave: sabiduría, alfabetización patrimonial, responsabilidad social, competencias, educación permanente.

Introduction

Why a doctor is the doctor, why a lawyer is the lawyer, why an architect is the architect (and so on) and a museologist is not the museologist or at least a curator is not the curator although the last example significantly reduces the overall importance of diverse museum's tasks and jobs without which any museum could exist. But our main point here is, why are some professions easily recognised while others must combat to explain why their importance is relevant for society? Quite clearly, the doctor could save our life = that's highly important, the lawyer could save 'our case', be it financial or any other matter which still counts as a very or highly important issue in our life. Directly or indirectly architects do influence our quality of life, as well as many other "recognised" professions. But museologists are not in the same category since they, as it seems, only influence our social life, which is, correct us if we are wrong here, the main ingredient of what we are as individuals, as well as the society or societies, or indeed humans/civilisation. And the last is certainly important, for many reasons. And as far as we are discussing a museum as a complex organism with a responsibility to perform a diverse set of tasks and services to fulfil its societal roles, within the previous set of arguments.

Museum as médium

As far back as in 1964, when information and communication sciences were still in their infancy Marshall McLuhan, Canadian educator and philosopher and by many considered to be the father and leading prophet of the electronic age, foresaw the future by his famous sentence 'the medium is the message'. There are numerous, often even contradictory explanations of the 'real' meaning of this phrase. They often depend on the educational background, context as well as attitudes of interpreters. However, most of them generally focus on the idea that the source of the phrase stands for the idea that available, present media shape human activities, more so than what we are aware of. In other words, media themselves (i.e. medium) affect our society not necessarily by the content delivered through the medium but by the characteristics of the medium itself. My intention here is not to go into an analysis of the phrase and its meaning, or to debate about it, since, as mentioned previously it always depends of the context and the author. Here it is intentionally quoted to remind us and draw attention to, what I believe to be a misleading interpretation of the ultimate goal of the knowledge paradigm. In other words, if it is paraphrased on the basic level, we could say that 'knowledge is the message', which means that available human knowledge obviously shapes our activities and the society we live in. I assume no one will complain about that. However, there are at least two small obstacles. The first one concerns the quintessence of the definition of knowledge and whether it should be defined purely as the medium or perhaps as the level of its content. The second one is even trickier - knowledge as the medium shapes society, but according to the interpretation of M. McLuhan's definition, it does so not by the content delivered through, or as a part of it, but only by the fact that knowledge is the medium and has its own characteristics.

And there is a third level, for the museum probably the most important. If museums, no matter how we understand the aforementioned phrase, always do have a very important role, either by transmitting human knowledge (if it's done in an ethical way) or acting critically in a contemporary society addressing issues such as sustainable development, climate change, peace building, de-colonisation and many other relevant topics. In knowledge oriented theories, knowledge is usually defined as contextual information, or "experience or information which could be discussed as well as shared with others" (Afrić, Lasić-Lazić and Banek-Zorica, 2004, p. 35). Although it is comprised of data and information, knowledge entails the entire understanding of situations, relations, causal phenomena, theories and rules which form the fundamentals of any studied field or problem. Obviously, there are already three entities, actually three levels, mentioned here: data, information, and knowledge. If we try to define them more precisely we would say that data are 'signs' or 'forms' which carry some meanings and attempts to depict some perceptions, but which are not deliberately managed and organised. Data are a sort of information, which is arranged under conceptual order and later interpreted; in other words information is separated, filtered, and formulated data according to some predefined structure (Ibid 2004, p 36).

Data becomes information only with its existence in a defined interpretative context. The subset of separated, filtered, formatted and analysed information is knowledge - it is reified and verified information. Evidently every upper level is made from its underlying filling. In a more understandable diagram they would be represented as below:

Figure 1: Wisdom Pyramid
Pyramid chart = relationship of data, information, knowledge and wisdom (according to Afrić, Lasić-Lazić and Banek-Zorica, 2004, 37).

But there is also a fourth level. It should not be left out since it is extremely relevant. It is in fact so important and could lead us towards the true nature and right understanding of the term heritage - it is so to say a prerequisite for it. Today we have more and more data, more and more information and we could pretty easily collect more of it than ever before. The 'traditional' store and retrieval institutions (foremost archives, libraries and museums) multiplied in numbers in the last several decades and with super-fast development of information technology we have witnessed the emergence of their digital forms and observed the birth of the new ones. The forthcoming, or more precise already with us artificial intelligence is yet another level of it, maybe even a game changer although at this moment we cannot confirm it, nor say if it will be good or not so good for the museum sector. All of the previously mentioned means, analyse and process data and information much better, in more detail and more rapidly than ever before. Information technology is ensuring fantastic tools for collection, organisation, storage and retrieval of information. As a result, the amount of information, as well as the amount of knowledge is growing every day, practically endlessly.

So it sounds like our aim is achieved, the endless amount of knowledge and at disposal for all. Or maybe not? There is a serious problem and lots of us have actually experienced it many times so far. This fast development of possibilities for storage and retrieval transformed us without self-awareness to 'the jungle' of information where we unfortunately cannot see the wood for the trees anymore. And did we ever intend to have information and knowledge just because of themselves, or we always felt inferior since we did not have them because we need to use them in some appropriate, constructive way. That is exactly the point, which we somehow lost in our effusive tendency to reach a 'kind of' knowledge society. We lost the main aim, the mission of our own progress. And the aim is and supposed to be, more precise must be the use of information and knowledge through interpretation (c.f. Back, Cable and Knudson, 2018; Ablett and Kay Dyer, 2009; Tilkin, 2016; Merriman and Brochu, 2006) and communication since only in that way they are useful and meaningful. This brings us to the wisdom. The wisdom is at the top of the pyramid and could be defined as selected or carefully filtrated knowledge, actually as a sort of doubtlessly right and truthful knowledge which is always interconnected with right judgments regarding actions, which ensured the uttermost decisions making, behaviours and functioning (Afrić, Lasić-Lazić and Banek-Zorica, 2004).

Accordingly, wisdom inherently includes a capability for the use of knowledge for sharp-witted decision making in any (conflict, or not necessary conflict) situation. So it is a form of knowledge on the one hand and at the same time is an effective type of action in societal environment on the other. And that is exactly where heritage intends to be, at least as far as discussed and defined in this article. Its foundation is, without doubt, made of 'elements of heritage'. They are those pretty big amounts of tangible (objects, monuments, sites...) as well as intangible (custom, tradition, languages, music...) ingredients which are still predominately and frequently defined by professionals by the term 'heritage'.

This is probably a direct (or indirect) consequence of the development of sciences and classification from the end of the 19th and the beginning of the 20th century, but without today's essential needs and an important (by the way, widespread, but recognised only on a declarative level) holistic approach to the subject. These, as we call them here, 'elements of heritage' are selected and stored, but generally very rarely consumed (some never) within heritage institutions and heritage related actions. The great majority of our archives, libraries and museums are first and foremost barriers of that politics, which we could witness on a daily basis where eco-museums movement and social museology (c.f. Davis, 2023; Brown, Davis and Raposo, 2019; Davis, 2011; Santos dos, 2010) do stand-up as a different approach. Still elements stored, for example, in the darkness of museum depots (which are usually scientifically researched on some level or, as a minimum, chosen as potential carriers of information) could be placed at our scale no higher than the third level, at the level of knowledge.

The same applies to the still remembered but vanishing practices, techniques, traditions or the ways of living in general. They are all sort of knowledge in the form of our civilisation's collective memory. But the challenge with wisdom, so as with heritage too is that both exist beyond that level. Within this understanding they are not heritage at all but just elements of it with possibility of becoming heritage through their use. The last connotes the precondition which first includes a shift of values and then a change of the current paradigm. The knowledge paradigm has fulfilled its mission and we already entered some sort the phase of crisis, the time when a struggle for a dominant position takes place. Wisdom and the wisdom paradigm are knocking at the door (for some time already), but as in any other scientific revolution the old theories and their protagonists will not abandon their position without resistance. At least not before the new theory offers much better answers to emerging problems or more precisely, answers to more problems. It usually happens when a majority of research accept the methods and ideas of the new one (Kuhn, 2002). And we are, as society/ies indeed at the doorstep of this warmly wanted change, no matter it among advanced museology microcosms[2] started more than 50 years ago.

Heritage and heritage related theories are already here. The old, sometimes still active and sometimes still dominant paradigm based within separate scientific disciplines which firmly believe to form the heritage we need only the logic of the sum, or practice of interjection of elements to agglomerate called 'heritage' are over. The idea that heritage is just a set of elements researched, analysed and interpreted by specific scientific disciplines, without any own characteristics cannot exist anymore. Just as sociology is a science about society and not the sum of individual behaviours and actions which could be completely and entirely explained inside psychology, similarly the heritage is not identical merely with elements of which it consists and could not be defined only inside the subjects of scientific disciplines which do touch but do not explain 'an idea of heritage' (Harvey, 2008; Harvey, 2001).

Interplay of museums and heritage

No question we live in a global society where all is interconnected. Not only within the digital space and platforms (as social media) but in every other aspect of our life. A food we are buying in a local grocery store are not anymore local but often coming from 1.000 or 10.000 km away fields, and we are often not aware of it. Far distance locations (including museum and heritage sites) are more close to us than ever before. Is it good foremost, or is it bad mainly? The answers really depend on particular situations and the specific case, all of us will easily have arguments pros as well as cons which will not necessary fit arguments of our colleagues or any other member of our community, or societies in general.

[2] e.g. meeting in Santiago de Chile in 1972 about "The Importance and Development of Museums in the Contemporary World" / "La importancia y el desarrollo de los museos en el mundo contemporáneo", which resulted with the Declaration of the Round Table of Santiago.

However, the globalization process in the last twenty or indeed thirty years now have given us more question then answers. Less than thirty years ago, the prediction the twenty-first century would be marked by a new form of nationalism seemed strange (opposite to progressive, the Worlds united predictions), it was to say so a kind of frustration of the past. Not necessary the one in the direction and context of the nineteenth-century romanticism, especially not the twentieth-century European national socialism, which unfortunately still appears in its divergent forms today. But they are around us = be it in Europe, South America or North America, or any other part of the World. Putting aside here a completely new chapter in the development of human civilization marked by multicultural society is on the way.

What we witness is that identity/ies, individual and collective memory/ies contained within the heritage have acquired, or will soon acquire will create an exceptional meaning that we can confidently claim will fundamentally affect the quality of life and the overall future development of individuals, communities, nations and the whole of humanity. So not the elements of but actions and how we use it. Heritage institutions, but also all other various forms of care for natural and cultural heritage thereby acquire a new role and an exceptional responsibility, because it is precisely with them that the essences of "heritage elements" are stored, or they are so directly responsible for taking care of them and how they are used in the present and the future.

Museums, as institutions that preserve and interpret the material and the non-material evidences of the human race and human activities interconnected with their natural surrounding have a long history. While started in the ancient times only in the modern era (cca. 250 to 300+ years ago) they become public institutions gradually developing over time its social responsibilities which we today request and indeed expect from museums. A century and a half only, or indeed already, passed from the first written appearance of the word museology in 1869, at least as we know. From perspective of the past of the objects that could be seen as part of museums' exhibitions or in museums' storages, in archives and libraries as well across natural and cultural sites that we encounter in our various crossing over the planet Earth, and which witness of the development of human civilization = in this relation, one hundred and fifty years of museology seems irrelevant, in fact, negligible. At the same time exactly during this period our civilization went through great and to previous times incomparable intense and rapid changes that unambiguously determine and shape even our present day realities, beliefs, understandings and judgments always further benchmarked with new contemporaries'.

Even more this period is marked how and why we interpret values from the past in a specific form of (varied types) within the public museums. Defining the idea of museum is and always will be enormously tricky task. Museum, as particular demonstration of relations in between humans and (selected, from the past) remains could be diverse, to put it to extreme it could be anything and everything which represents this relation.

Anyhow, since we need to operate under something more tangible (i.e. definitions), museum could be defined as "A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing"[3] as by the ICOM (2022) adopted, by a great majority during its 27th General Conference in Prague (Czech Republic) in 2022. Though this definition today serves as a reference to the international community it naturally changed over time and it will certainly change in the future too. Since as part of this article we are more focused at the heritage relevance for development (i.e. "tangible and intangible heritage of humanity"; "community relevance"; "development opportunities") we may only applaud for changes the ICOM definition about the museum in 2022 has been done. By far the important step on defining the institution and its role in society (which we do welcome), but not necessary at the core of its research issues = on what is heritage, as the main ingredient of any museum related work.

A very simple and straightforward question exists here, do we have a clear understanding of what heritage is? While the history of heritage (at least modern understanding of heritage) would not necessary be considerably diverse from the history of museums it still needs to be carefully rechecked, taking into account on the one side heritage plays a significant part in the ICOM's museum definition and on the other by interest in and development of heritage studies (as counterpart of museum studies/museology) around the world (Babić, 2016). D. Harvey (2001, p. 321) would say that "heritage has always been with us and has always been produced by people according to their contemporary concerns and experiences", which is just partly less extreme then Laurajane Smith (2006, p. 11) statement that "there is, really, no such thing as heritage". P. Howard offers us a possible (missing) link here when saying heritage can be really anything what we want where the will is crucial since "things actually inherited do not become heritage until they are recognized as such. Identification is all" (Howard, 2003, p. 6). All this very well correspond with considerations from B. Graham, G. J. Ashworth and J. E. Tunbridge that "heritage can be visualized as a duality - a resource of economic and cultural capital", or in other words that heritage is actually "a commodity, moreover one that is simultaneously multisold in many segmented markets places" (Graham, Ashworth and Tunbridge, 2000, p. 22). Although used statements could impose more questions than answers about (idea, or definition of) heritage, including its creation and construction they do not need to frightens us, in fact quite a contrary. During the last decades we have witnessed expansion of the concept of heritage and parallel with it rise of interests for a comprehensive and multifaceted understanding of the meanings and the roles heritage have in our society/ies. Yet it could be noticed that still very often the heritage is presented as a self-explanatory category, in the sense it somehow possesses intrinsic and unquestionable values where the main concerns are connected with its use only.

[3] ICOM, https://icom.museum/en/resources/standards-guidelines/museum-definition/

In other words the main issue regarding heritage exists on the level of use, or more precisely high performed quality heritage management. While this is true, meaningful heritage management (which is day to day job in any museum) goes beyond practical side 'calculated' in only economic figures.

The last remains important too, but certainly not the most important. Contemporary understanding of the heritage management takes into account all relevant (i.e. object/site/region/country specific factors) be it social (foremost!) or economic, beside of course essential role of care. It indeed tends toward ensuring tangible (direct or indirect) benefits for local communities and by this toward development of the society in general. The latest is how we suppose to distinguish the heritage from mere collections of the objects from the past, in its inseparable dynamic role. Broader understanding of heritage, if correctly recognized, means that every aspect of local/regional past, present or projected future, any object, practice or other activity could and indeed must be a subject matter of a museum. National, regional or local, it does not make a huge difference.

Importance of regional approaches

If we want to describe it, we could say a region is a part of a larger entity (surface, space, body) that is different or separate from other parts. Geographical regions are areas broadly divided by its physical characteristics, human-impact characteristics and the interaction of humanity and the environment. While regions in fact could sometime correspond with jurisdiction areas as e.g. national borders or be defined by diverse acts they are, or certainly supposed to be, based foremost on specific natural and cultural (by humans shaped) features which make them distinctive. Thus on natural + cultural boundaries, not administrative since every region has its own not movable characteristics as its natural environment (as landforms, or climate) as well tangible and non-tangible (socio-cultural) elements created by people in the past (and the present). The term regional museum has indeed different implications in different settings/countries. Museums are sometimes called regional because they hold objects and collections of regional importance, while sometimes they are regional because they are regionally (administratively) funded, as opposed to state or municipal ones. The next category could include diverse ways of museum presentation and interpretation, i.e. museums which communicate the regional narratives via their permanent or temporary exhibitions. Last but not least on this list (by no means an exhaustive) museums are regional as they represent and support crucial issues relevant to territory and people who live within defined, natural + cultural boundaries. All these categories, in fact, usually overlap for obvious reasons. No matter is it a regional museum established and run by this or that aforesaid reason it will accomplish its raison d'être only if manage to serve real needs of "heritage community" (Faro Convention, 2005) it was established for, and to do this in accordance with demands of complex contemporaneity. Or in other words, as was said a long time ago addressing true forerunners of modern regional museums (i.e. eco-museums) they "must not be a kingdom of the dead, a cemetery. It is made for the living; it is to the living that it must belong, and they must feel at ease here.

The living are continually on the move, from yesterday to tomorrow, and the museum must help them to see the present in the mirror of the past, and the past in the mirror of the present. They will thus experience the intimate cohesion of past and present which begets the future. The crucial task of the Heimatmuseum[4] is to serve the people and the present, and if it fails in that task it becomes no more than a lifeless collection of objects." (Klersch, 1936, quoted in Davis 2011, p. 52).

While we are living in extremely globalised world we everyday (more and more) do recognising the planet Earth is our common the big home, but we actually do operate in the smaller ones. We are aware today any negative or positive incident at the opposite side of the Earth do influence us too, since all is connected (climate, catastrophes, economy, culture etc.) still not always, usually not often we could have direct influence on event far from our 'the smaller home'. Quite a long ago the phrase "think globally, act locally" become regular, asking for taking action in our own communities out of which not only we will profit in sense of better quality of life but entire human kind, and the Earth. In this interplay in between the global and the local, the regional indeed do have the uttermost importance as it equally touches both grounds. So the same in valid for museology, museum and/or heritage studies, regional museums and (foremost) professional development of today and future museum workers. "One size doesn't fit all", yet another everlasting phrase which perfectly fits here. The state of affairs, surroundings and needs for doing museum work perfectly in South-East Asia are not the same as those in the Western Europe, nor are those in Africa easily compared to North America, South America, Australia or the Middle East, or Eastern Europe vs. Western Europe and so on.

Any connection/contrast could be listed here, which is good because we are all similar but not the same. Iranians for example, are natural storytellers, an important competency for performing museum communication which Europeans are still learning, Japanese and some other (so called) the Far-East countries about intangible values of tangible could learn us a lot. As well in opposite direction. All mentioned leads to the one, generally speaking simple conclusion. In a hyper globalised World, confronting with a local challenges the regional approach is the most probable win-win solution. Where the region and so regional approach (or indeed approaches, since not necessary only one exists) is the only way to go forward, where region counts for natural + cultural characteristics foremost, not the administrative one. And where the needs are not, nor so desirable competencies will not be the same all around the World as far as we are speaking about museum work and the formal and the informal (permanent) museum related professional education.

[4] The text is referring to Heimatmuseum but indeed remains valid for any kind of museum, especially regional one. In its simplest sense the German word Heimat means home, homeland or hometown, although the equivalent English word fails to match to its full meaning since the term is not adequately conveyed by words home-land/town. Heimat embraces the earliest experiences of people (birth, infancy etc.), their language, collective identity and so forth, all based on the feeling of patriotism without nationalistic undertones. It is a sort of love and attachment to the home-place where regional characteristics play an important role. For more about Heimat see: Applegate, 1990.

Starting solution - heritage literacy?

If there is any term which could mitigate global vs. local differences with the intention to bring them closer, any which could connect care and curatorship with management and social well-being of local/regional community, or after all heritage care and curatorship and social well-being of local/regional communities which are real owners of the heritage, and museums it must be the literacy. The concept of literacy has always been, and always will be directly dependent on the existing information and communication settings which mark the civilizational stage of society's development. Literacy is therefore always a consequence, in other words the result of some meaningful action that responds to the challenges that current relations in society pose to us. Literacy implies a certain quality, in simpler terms the state of being literate. But how, how much, and at what level it depends above all on the context observed, really depends on the community to which it refers, and its natural, cultural, economic, political, ideological, historical and other relations which exist in it.

Literacy can basically be considered on at least two different levels. On the first, it implies the individual's ability to read and write (which is very European oriented, still today quite globally too). But on another level of observation the literacy means possessing abilities, skills and experiences of navigating the content of a written text, i.e. literature and the ability to write creatively, but at the same time possessing knowledge or competences in some others area of organising day-to-day life conditions. For the first definition we can claim without any doubt it stems from a Eurocentric cultural pattern, one in which a successful existence in society requires a focus on knowledge of language and mathematical-logical skills. For the second interpretation level of literacy, a methodologically different approach was taken. Here, it is clearly dependent on specific, necessary skills adapted to a specific and defined environment.

Literacy involves "a complex set of abilities to understand and use the dominant symbol systems of a culture for personal and community development at home and at work. The need and demand for these abilities vary in different contexts and societies. In a technological society, the concept is expanding to include digital media in addition to print alphabets and numbers. Individuals must be given learning opportunities to move along a continuum that includes reading, writing, and numeracy in print and digital environments and the critical understanding and decision-making abilities they need in their lives. However a culture defines it, literacy touches every aspect of individual and community life. It is an essential foundation for learning through life and must be valued as a human right" (Centre for Literacy of Quebec, 2024). At this level, the traditional understood of the literacy by population of the Amazon rainforest or the Inuit people acquires[5] a completely different dimension. The idea becomes more understandable if we take as the starting point the notion of illiteracy as a lack of knowledge, and related to that, a lack of understanding of belonging to a certain local/regional culture by dominant cultures.

[5] Many other examples could be stated

The study of literacy goes beyond the boundaries of an individual scientific discipline and requires a multidisciplinary approach, which in the last twenty or so years has, among other things, resulted in new studies on literacy and the emergence of various specialist literacies such as information, media, image, computer, health, digital and many others. Where museum, or more precise heritage literacy is still looking to find its own perspective no matter there are many reason to establish it, for years now.

Desirable competencies of museum professionals in or towards 2030: a conclusion

The World around us, which is still our World is changing 10x faster than it was in 1970's or 1980's. The eco-museums and ideas behind the social museology/museologies made the great contribution at specific time no matter some of proposed ideas (sadly) took significant time before they were fully implemented in regular museum practices. But that's life, which famous French historian F. Braudel do call "longue durée"[6], the history is always changing sometimes fast (by a revolution) and sometimes in the slower manner. The museums obviously below to the second category, which is not always the wrong option. And concerning the competencies of museum professionals in 2030. We do not have a crystal ball to see the future fully clear, but we do have accumulated experiences to predict:

- Regional will become more important than global or even local. So we must fit in it,
- Social relevance is/will become more important than objects,
- Management will serve more to social impacts, less to economic only,
- Museum staff will be more interdisciplinary educated, less toward one scientific discipline only,
-Soft skills (communication, project management, social media, project collaboration etc.) are now in the front, and very wanted,
- Interpretation skills (communication scale) are more and more desirable.

By far we didn't list all desirable skills and competencies of museum professionals in 2030, since it is not possible to predict them all counting where and how the museum sector (as well as the Humanity) will move in the following years or decades. As well as (on differences) in diverse regions of the World, as we argued before. Accordingly our only conclusion could be, there is always the way how we could unite and do our museum work as good as possible, and indeed even better. No matter of challenges. Where insisting on pre-requisite and even more on life-long, permanent relevant education is the most important system.

[6] Eng. the long term (history)

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Yerba Mate extractivism and its impact on indigenous territoriality in the Tacurú Pucú region.

Cristian Diosnel Benítez (Paraguay)[1]

Abstract

The objective of this work is to analyze the extractive impact of yerba mate in the Tacurú Pucú region within Indigenous territories, beginning with the earliest settlers, the colonial foundation in 1619, the subsequent Jesuit reduction evacuations in 1632–1633, and the legal disputes over the yerba mate fields during the colonial period. It also examines the consequences of the territorial unification of Indigenous communal settlements during the independence period, and the auction laws for Paraguay's yerba mate fields and forests (1883–1885), which, by the early 20th century, once again reshaped the territoriality of the Guaraní Indigenous peoples in the Tacurúpucú region. Extractivism is a concept that typically refers to economic activities based on the exploitation of natural common goods without any processing. Since 1886, the region became the second most important area for the concentration and port transit of yerba mate in eastern Paraguay.Yerba mate, or "Ka'a", is obtained from the tree Ilex paraguariensis. It resembles the orange tree but has a more delicate structure, reaching heights of up to 12 meters. It grows naturally across much of eastern Paraguay. Natividad de Nuestra Señora del Acaray was the first Jesuit reduction settlement in the region, founded by Jesuit priests Diego Boroa and Claudio Ruyer with the support of Chief Arerapa. It was repopulated in 1624 and evacuated in 1632, along with the reduction of Santa María del Yguazú.

Keywords: indigenous, extractivism, territoriality, yerbales

[1] Historian and collaborator at the Tacurú Pucú Historical Museum in Hernandarias. E-mail: yvagaty@gmail.com

Resumen

El objetivo del trabajo es analizar el impacto extractivo de la yerba mate en la región de Tacurú Pucú en los territorios indígenas, a partir de los primeros pobladores, la fundación colonial en 1619, la posterior evacuación reduccional en 1632-1633 y la disputa judicial por los yerbales de la región durante la colonia, las consecuencias de la unificación territorial de los poblados comunales indígenas durante el período independiente, y las leyes de subasta de los yerbales y bosques del Paraguay (1883- 1885) que a principios del siglo XX, reconfiguró nuevamente la territorialidad de los indígenas guaraníes en la región de Tacurúpucú. El extractivismo es un concepto que se suele referir a aquellas actividades económicas que se basan en la explotación de bienes comunes naturales sin ningún procesamiento. Desde 1886 la región fue la segunda área de mayor concentración y tránsito portuario de yerba mate en la región oriental del Paraguay. La yerba mate "Ka´a" se obtiene del árbol (*Ilex paraguayensis),* se parece al naranjo, aunque de estructura más delicada, llega a una altura de hasta 12 mts., crece wn forma natural en gran parte del Paraguay Oriental. Natividad de Nuestra Señora del Acaray, fue el primer poblado reduccional en la región, fundado por los padres Jesuitas Diego Boroa y Claudio Ruyer con el apoyo del Cacique Arerapa, repoblado en 1624 y evacuado en 1632, junto a la reducción de Santa María del Yguazú.

Palabras clave: indígena, extractivismo, territorialidad, yerbales.

Introduction

The extractivism of yerba mate and timber in the Tacurú Pucú region developed within the territories of Guaraní Indigenous communities, beginning with European colonization in the 17th century and intensifying with a greater concentration of Indigenous labor during the Jesuit missions. Contemporary accounts geographically located these groups under the name Paranáes, without anthropological or ethnic characterization (Fogel, 2002), also referring to them as Kaingángs or Cainguás, which would correspond to groups widely distributed in the region, belonging to the Jé and Tupí-Guaraní language families (Ambrosetti, 1894).

Until the expulsion of the Jesuits, yerba mate remained the region's main export product, continuing into the mid-20th century, primarily to the main markets of the Río de la Plata (Garavaglia, 2008). Following the fiscal auction of forests and yerba mate fields between 1883 and 1885, the Indigenous peoples who had lived in the region for centuries became part of the private yerba mate estates owned by the company La Industrial Sociedad Anónima (LIPSA).[2]

[2] It became the largest yerba mate corporation in the Oriental Region.

The hypothesis of this work suggests an impact on Indigenous territorial, social, and ecological mobility within the yerba mate–timber biogeography of the region where archaeological evidence of Guaraní and other Indigenous groups has been found.

Territoriality does not equate to "territory", but rather refers to practices and representations that aim at the recognition and appropriation of the spaces in which we move (Hoffman, 1997, cited by Tarrius, 2000), beginning with the first extractive cycle of European colonial expansion in the 17th century.

The analysis will be divided into four stages:

The first stage focuses on the resistance and evacuation of the Jesuit reduction settlement as a result of Portuguese invasions.

The second stage examines the commercial expansion of yerba mate and its social impact on Indigenous peoples in the region, which led to legal disputes over the exploitation of yerba mate fields in the former territories of the Jesuit mission Natividad de Nuestra Señora del Acaray—located in present-day Tacurú Pucú (Hernandarias) and Caremä (Itakyry).

The third stage analyzes the consequences of territorial loss following the abolition of communal Indigenous lands, which enabled the near-total concentration of land ownership in the hands of the state during the government of Carlos A. López in 1848. According to Branislava Súsnik, the suppression of the communal regime led to controversial episodes of violence and genocide against Indigenous peoples in the yerba mate regions of eastern Paraguay, including other communities in the Chaco (Súsnik, 2021).

The fourth stage addresses the appropriation of Indigenous yerba mate fields in the region after the approval of public land sale laws (1883–1885), when the forests of Tacurú Pucú became the property of the corporation La Industrial Paraguaya S.A. Founded in August 1886, it came to be known as "the emblematic company of slavery in the yerba mate fields" of Paraguay (Rivarola, 2010:71). 16.5% of the Eastern Region's strategic yerba mate fields and forests, located along major rivers, were privatized due to their potential for river transport of yerba mate and timber—sold at negligible prices (Kleinpenning, 2014).

First settlers in the yerba mate region of Tacurú Pucú

The first inhabitants of the Tacurú Pucú region are associated with Guaraní peoples, who, over the centuries, have followed highly variable paths in their migratory movements and settlement patterns. Yerba mate was part of the diet of these human groups, who continuously moved from the Amazon toward the southern areas of the Río de la Plata Basin through various migrations and temporary settlements. These included groups from the Je or Ge linguistic family, and especially the Guaraní peoples, who for centuries have led lives closely tied to the forests and to the consumption of yerba mate—known as "Ca'a" or "Cogöi"—long before the arrival of Europeans who crossed the Paraná, Acaray, and Monday rivers.

The Guaraní Indigenous people, belonging to the Tupí-Guaraní linguistic branch, originated in the southern Amazon and are also related to the Kaingáng, from the Jë linguistic family. Both groups are believed to have discovered the yerba mate tree growing naturally in the region approximately 2,000 to 3,000 years ago (Sarreal, 2022).

Archaeological data show that these Indigenous settlements were located in territories where the yerba mate plant grew naturally. Both the Guaraní and Kaingáng groups did not live in significant isolation but were instead part of interconnected networks (Noelli, 2019).

At the beginning of the conquest, the Guaraní were at the height of their geographic and demographic expansion. Information about yerba mate consumption among these Indigenous groups is provided by Father Ruiz de Montoya, who published a Spanish–Guaraní dictionary in 1639 and 1640. In it, yerba mate is referred to as Ca'a in Guaraní and Cogöi in Kaingáng. According to Dr. Julia Sarreal, the latter term does not follow Guaraní phonetic rules, suggesting its origin in the Jë linguistic family.

The term Cogöi (or congoña) disappeared entirely from Spanish colonial written sources but continued to be used in southern Brazil until the early 20th century, with notable regional variations in areas inhabited by Kaingáng groups (Noelli, 2019). This broad area of mobility in the eastern region has led researchers to associate archaeological findings with a wide network of migration and movement of pre-Guaraní and Guaraní peoples. Tacurú Pucú has been identified as a key point within this network, located in territories with natural yerba mate fields (Alfonso Monges & Lamenza, 2021), and later established as the Jesuit settlement "Natividad Nuestra Señora de la Virgen del Acaray" in 1619.

According to Silva Noelli (2004), the proto-inhabitants of the area were displaced and "Guaranized" as a result of Guaraní expansion, which had become an empire at its peak just before the arrival of Europeans: "Available data indicate that the Guaraní occupation process took place through a true war of conquest, which did not spare the populations of the conquered regions."

"Artifacts associated with these groups—collected, found by chance, or uncovered through systematic excavations—are mainly housed in the Andrés Barbero Ethnographic Museum, the Guido Boggiani Museum, the Itaipú Tierra Guaraní Museum, and the Yacyretá Binational Entity" (Alfonso Monges & Lamenza, 2021: 38).

During the colonial period (1542–1543), after Europeans became familiar with Paraguay's main tributaries, they identified Guaraní as the dominant language. Within this vast territorial network, they relied on Guaraní-speaking interpreters to gather information about Indigenous lands. According to interrogations written in Spanish by the conquistadors, several ethnonyms appear that reflect the presence of Indigenous voices in the search for the Sierras del Plata, involving figures such as Domingo Martínez de Irala and Álvar Núñez Cabeza de Vaca (Candela, 2014). In the early stages of Spanish expansion, written testimonies reveal the use of yerba mate among Indigenous peoples, its trade and exchange, and its significant incorporation into the consumption culture of Europeans who settled in this yerba mate biogeographic region of the Río de la Plata basin.

Archaeology and indigenous territoriality

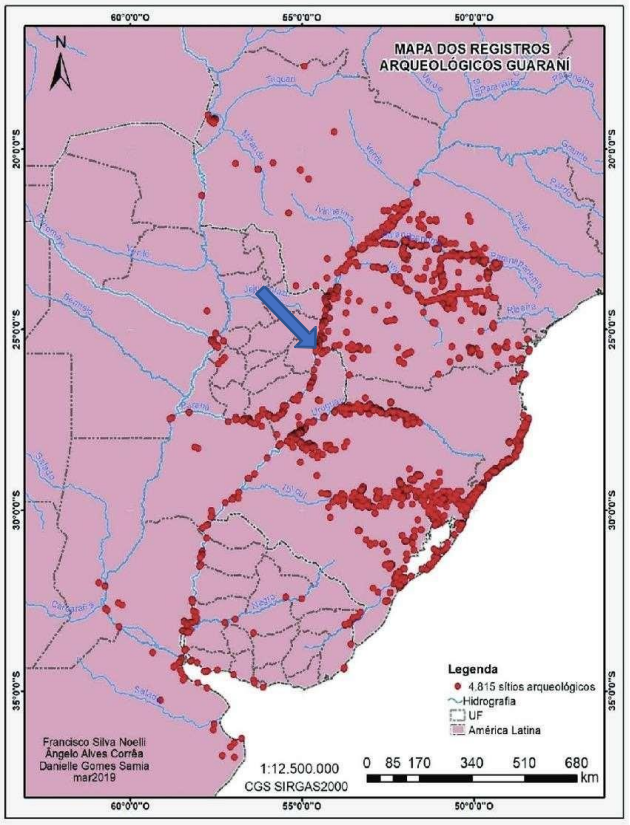


Figure 1. Image source: original map by (Noelli, 2019:33), the arrow (own creation) indicates the position of Tacurú Pucú within the chain of archaeological sites in the La Plata Basin.

Figure 2. The strategic location of Tacurú Pucú was part of the transit network for Guaraní yerba mate and timber along the main river, the Paraná, and its tributaries such as the Acaray and Monday rivers. These economic corridors were strategically configured following the arrival and expansion of Europeans along the major rivers that cross and form an extensive network of Indigenous territories.

Indigenous exploitation and colonial commerce

The consumption of yerba mate began in 1594. The earliest records are found in the reports of Jesuit Father Juan Romero, who, after his journey from Santiago del Estero to Asunción, described this new habit with prejudice. He wrote horrified in a letter: "they drink a water mixed with herb that they call from Paraguay" (Campos, 2019:35). In 1596, the procurator Alonso de Madrid reported on the widespread habit of consuming Ca'a or yerba: "...the vice and bad custom of drinking herb among Spaniards, their wives and children has spread so much that they surpass the Indians in it, and it is a vice that should be eradicated, if only for the honor that Spaniards ought to uphold" (Garavaglia, 2008).

Two years later, Governor Hernandarias ordered a prohibition on its consumption, under penalty of up to 15 days in jail, monetary fines, and the use of mitayos and yanaconas in 1598 for the "very harsh extraction of yerba mate and wood in indigenous territories." These measures were only confirmed in 1603. In 1617, he reported to the King on the enforcement of his ordinances, while also expressing concern about the exploitation of indigenous people in the yerba fields by the encomenderos.

With the arrival of the Jesuits in Paraguay in 1609, the missionaries began the task of reducing and catechizing the indigenous people during Hernandarias' government in Asunción. Ten years later, on the banks of the Paraná and Acaray rivers, two Jesuits founded "Natividad de Nuestra Señora del Acaray" (Urquiza & Lini, 2019:57). Fathers Claudio Ruyer and Diego de Boroa (Gamarra, 2020:86), after hardships in the early years, requested reinforcements in 1624 to stabilize the reduction due to resistance from the first contacts with the Guaraní indigenous people of the area.

After reinforcements and political alliances with chiefs and shamans, they gained the support of Chief Arerapa and stabilized the Jesuit reduction. However, due to fiscal crises in the Spanish Crown's revenue collection to support the frontier with military units, the settlement served more as a temporary frontier garrison against Portuguese harassment. By the end of 1632, the precarious conditions of the settlement made it structurally vulnerable. After the Bandeirante invasion, the Guayrá settlement, in panic among the neophytes, evacuated in large numbers in canoes downstream to the reduction of Natividad del Acaray (Gamarra, 2020).

After aiding the people of Guayrá, overpopulation became inevitable, and as a result, a demographic crisis erupted due to the influx of more indigenous people fleeing downstream. The reduction, lacking the necessary structure and resources to support so many natives, organized the burning of the entire yerba-producing village in early 1630 to migrate by canoe to the missions of Loreto and Corpus Christi: "...the neophytes of Acaray abandoned the village, setting it on fire before and after walking for entire days, they arrived at Itapúa and Corpus Christi, where they currently reside without hope of returning to their homeland" (Gamarra, 2020).

With the aim of connecting the river transport route through the arteries of the Acaray, Monday, and Yguazú rivers, the former relatives from the Natividad reduction engaged in territorial disputes over the yerba mate fields with their neighbors. It was only in the first three decades of the 17th century that yerba mate became the main export product of the newly formed Province of Paraguay. This was due to the region's weak livestock potential and its inability to compete with the Lusitanian markets, in addition to the consequent loss of power following the division of the Paraguayan province (Kleinpenning, 2011; Vázquez, 2023), which, according to the author, "had no choice but to choose yerba" (Garavaglia, 2008).

The opening of the yerba mate market to the main provinces of the Río de la Plata intensified the competition for indigenous labor to extract Paraguayan yerba mate. With a firm decision to monopolize the trade, Spanish colonial authorities began to trigger conflicts over indigenous yerba fields. In addition to the financial deficits and fiscal shortages experienced by the Crown, Spanish authorities decentralized revenue management and turned to taxing yerba mate consumption, a practice that continued uninterrupted despite constant complaints from missionaries about the exploitation of indigenous people in the yerba fields by Spaniards. These complaints were recorded as early as 1696 in the Audiencia of Charcas and the Council of the Indies in Spain, and the extraction of yerba mate continued to be one of the causes of demographic decline among the indigenous population. This territorial and demographic impact on the Guaraní people was reflected in the uprooting and violence experienced by indigenous families (Candela, 2018:116). Reports from colonial authorities of the time mainly mention the situation of indigenous men who worked as laborers in the yerba fields, most of them employed by Spaniards in encomiendas and rancheadas (forced labor expeditions): "It causes pity and compassion to enter most of these villages, and the people dying of hunger are mostly women, because the men are absent, often serving their encomenderos, and most of them involved in the harvesting, transport, and trade of the herb they call from Paraguay" (Telesca, 1998:30).

According to Ignacio Telesca, interim governor Baltasar García Ros continued to report to King Philip V in 1707 about the dire situation of the natives. In one letter, he stated: "It is a common complaint, and experience makes it evident, that the trade of this herb is reducing the number of Indians in the Province." "To obtain this herb, they travel two hundred leagues from their homes for a year, when done quickly, but usually it takes a year and a half, sometimes two years…" (Telesca, 1998:30). The temporality of male labor circulation across yerba mate territories, as described in the report, outlines a rhythm of mobility within an annual harvest agenda into the forests for yerba extraction. These networks largely defined population movements during the colonial period (Cartes, 2009; Baeza et al., 2018).

According to Kleinpenning (2011), a yerba mate plant regains vitality after a harvest with raído (manual stripping) and cutting in 1.5 to 2 years. Thus, the shrub is ready again for the next harvest (Kleinpenning, 2014:293). This defines a cycle of indigenous circulation under Spanish control. Space is the historical result of these mobilities and restructures group identities. These experiences are passed down over time and result in the memories of a route (Ramos, 2010:116). In this context, the routes gradually transformed into economic corridors for yerba mate as the Río de la Plata consumer market consolidated with the expansion of European trade in South America.

Conflict over indigenous *yerbales*

In 1774, part of a judicial file from the AGNA revealed a conflict over the yerba mate fields of Tacurú Pucú and Caremä between the Indigenous people of Loreto and the settlers of Villarrica. The caciques, who were relatives of the Acarayense Indigenous people (from a former and abandoned Jesuit reduction), convinced the colonial authorities to grant the right to exploit these rich yerba mate fields to the caciques who claimed kinship. The yerba mate fields along the Paraná River during this period formed a strategic route in the economy of the Río de la Plata. In the following decades, they shaped a flexible territorial space, with a sense of belonging tied to Indigenous mobility after the expulsion of the Jesuits in 1767. Baeza argues that "migrant groups extend their journey as far as it takes them, in a movement where there is physical absence from the place of origin, but not a detachment in symbolic and subjective terms" (Baeza et al., 2018).

In the following 1774 map, it is shown that the mission Indians, involved in a tripartite conflict—Loreto, Curuguaty, and Villarrica—remained very active in the trade and extraction of yerba mate, despite the historical silences between the 17th and 18th centuries (Serratti and Benítez, 2022). Thus, the physical absence of the main Indigenous leaders and migrants did not sever their deep-rooted connection to the territories they belonged to. The museum's reconfiguration efforts incorporated many of these colonial maps of the yerba mate fields in mid-2022, thanks largely to funding from the National Secretariat of Culture, as well as the collaboration of local researchers, historians, restorers, and museologists.

Figure 3. Source: AGNA (General Archive of the Nation of Argentina), Room XI 40-2-5, exhibited in the colonial history room of the Tacurú Pucú Museum and the Ca'aty Museum, Faculty of Philosophy, National University of the East of Paraguay, inaugurated in November 2023 as part of the Night of the Museums circuit.

The green colors denote the yerba mate fields present in the community, while the small houses represent the homes of the families. At the top, the names of the caciques (chiefs) who are plaintiffs and testify on behalf of their Acarayense relatives are shown. This dispute over the yerba mate fields once again legitimizes the territory in favor of the Indigenous people, and at the same time, highlights the importance of the place as a key port for the circulation of yerba during the colonial period following the expulsion of the Jesuits. It represents a re-signification of the identity of the Tacurú Pucú Museum community. The museum is directed by Leslie Villanueva and holds in its collection important heritage items related to the memory of yerba mate and timber workers from the region.

Indigenous territories during the independent period: 1811 – 1870

During the Francista independent period, the former reductions and Indigenous towns maintained their autonomy of governance, dedicating themselves to subsistence farming. Due to Paraguay's isolation, this political condition greatly benefited the villages, towns, and Indigenous communities. In 1817, following the blockade of navigation and the circulation of Paraguayan goods to the Río de la Plata market, yerba mate, as a source of state revenue, remained one of the pillars of the Paraguayan economy. In this process of building a nationalist state, after the establishment of the dictatorship of Dr. José Gaspar Rodríguez de Francia, the state, led by the Jacobin, expanded state-owned properties by nationalizing yerba mate fields, confiscating lands from the clergy, and imposing high taxes on lands owned by Spaniards and Creole elites—measures that significantly supported the policy aimed at achieving sovereignty and territorial unification.

The former Indigenous and enslaved towns under Spanish rule came under the guardianship of the new independent state. One of the main causes of independence lay in the high taxes levied at Río de la Plata ports on Paraguayan yerba mate (Cardozo, 2012), along with the fall of the Spanish monarchy and strong pressure from Buenos Aires to form a Confederation that would turn the country into an economic periphery of the Buenos Aires capital.

In this context, Indigenous territories, reductions, and Indigenous towns gradually became part of state property, especially in border regions where mechanisms for controlling the yerba mate trade operated through frontier garrisons (Cardozo, 2012). The natives turned to the production of yerba mate and timber extraction to supply the local market after Paraguayan products were blocked at key ports like Santa Fe in the Río de la Plata Basin. Interest in Indigenous territories began with the economic policies of Don Carlos A. López (López, 2012). After the death of Supreme Dictator José Gaspar Rodríguez de Francia, López's measures aimed to eliminate Indigenous towns by decree and to accumulate yerba mate fields and properties in favor of the state treasury in 1848 (Susnik, 2021).

In addition to dispossessing Indigenous peoples of their lands, this suppression brought with it a forced cultural Westernization. The births and names of new Indigenous citizens had to be recorded in documents, records, and files in Spanish. José Zanardini (1998) considers this decree "an iniquitous instrument of

assimilation of Indigenous peoples into national society and an attempt to erase Indigenous cultures, languages, and traditions" (Zanardini, 1998:35).

The museography of the Tacurú Pucú Museum in Hernandarias recovers much of these events to demonstrate the continuity of the process of territorial loss experienced by Indigenous peoples in the region. Among the regional development proposals was the construction of a penitentiary, a project that was never carried out. As a result, national infrastructure projects for road construction and border security were postponed due to the immense difficulties in accessing the region.

Territorial reconnaissance reports, following the Carimbatá–Tacurú Pucú exploration, once again recorded the presence of Cainguá and Guaraní Indigenous groups. In response to these incursions, the yerba mate fields and lands of Tacurú Pucú showed Indigenous hostility toward the emissaries, even attacking and injuring one of the members of the delegation sent by López. The report documented the geography of the river arteries and natural resources available in the Tacurú Pucú, Caremä, and Palomares region. The mapped area provides an important description of the strategic significance for the continued extraction of yerba mate and timber.

Privatization of forests and indigenous *yerbales*

Figure 4. El "Mensú" a slave in the yerba mate plantations. Image source: Museo Tacurú Pucú Paraguayan postwar section 1886-1908

At the end of the War of the Triple Alliance, Paraguay was left with approximately 140,000 inhabitants, according to estimates by some researchers. Others claim it was a demographic catastrophe that cost the lives of more than 90% of the Paraguayan population.

After the formation of a provisional government, the first decree issued prohibited the flight of labor from the former yerba mate plantations. In this context, Indigenous people formed a small and unstable group of laborers.

As a consequence of the debts incurred by the Paraguayan state in the following years to rebuild the country, Paraguay passed several privatization laws between 1883 and 1885, fully auctioning off the yerba mate plantations and lands that had previously been under state control. Tacurú Pucú was granted to Patricio Escobar & Co. as early as 1879.

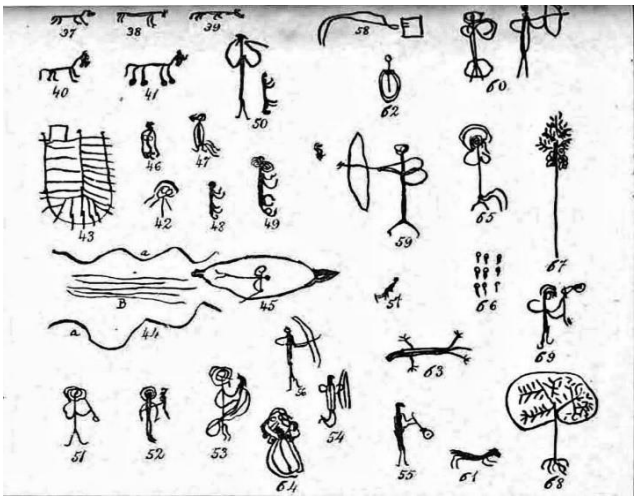
This, in turn, led to the emergence of large foreign landowning corporations that came to Paraguay buying properties at negligible prices. The extensive land sale propaganda in Europe was accompanied by an immigration law aimed at repopulating the country devastated by war.

With this policy of privatizing natural resources, forests and yerba mate plantations were incorporated into an extractivist model within the liberal economic framework of the time, with a single company acquiring through auction as much as 14.6% of the entire eastern region of Paraguay.

Figure 5. Properties of La Industrial Paraguaya (1915) Image source: (Kleinpenning, 2014)

From this period onward, the exploitation of timber and yerba mate in Indigenous territories led to a large-scale territorial and social fragmentation. This began with the renewed use of Avá Guaraní labor by the company (Zanardini, 2018), in competition with another extractive corporation, Matte Larangeira, which employed the Cainguá Guaraní because they were considered "harmless mensúes [indentured laborers] in the yerba mate fields of the eastern region" (Rivarola, 2010).

During the first decade of yerba mate extraction, the explorer Juan B. Ambrosetti, on his third expedition to the Tacurú Pucú territory in 1896, collected significant ceramic pieces, textiles, and other objects from the Guaraní, Cainguá, and Kaingáng yerba mate–harvesting Indigenous peoples. These collections were all sent to the Museo de La Plata in Argentina, where the archive is still housed today (Ambrosetti, 1894).



Figur. 6. Image Source: (Ambrosetti, 1894:30), "The natural Cainguá ecosystem in Tacurú Pucú in the drawings of indio Pedro"

The publication of the travels of the Argentine ethnographer made it possible to learn about the lives of the Indigenous people of Tacurú Pucú and provided a critical analysis of the territorial impact on Indigenous villages where the LIPSA company's yerba mate camps operated: "they work hard for this purpose, and it is needless to say that the Indigenous people, in general, are exploited by the yerba mate harvesters, who for any reason demand arrobas and arrobas of yerba" (Ambrosetti, 1895:724).

The extraction of yerba mate and timber in Alto Paraná during the mentioned periods marked the beginning of the historical deforestation of the Alto Paraná Atlantic Forest. According to Kleinpenning, until the end of the 20th century, harvesting occurred exclusively in natural yerba mate groves. Despite state efforts to prevent overexploitation (Kleinpenning, 2014:315), the plant's regeneration cycles were not respected, leading to the gradual disappearance of these groves from the region, leaving only traces in the memories of local mensú (laborers) and Indigenous people.

This work concludes by recovering these historical silences through the museum's narrative about these extractive actions and their impact on the lives of the Indigenous people who once inhabited the territory. The extraction of the tree's leaves and branches was not only for Indigenous consumption but also for many ceremonial practices. These allowed for a trance-like state to contact spirits (Sarreal, 2022). One such ceremony is the Ka'a Sä (bundles of yerba), a Mbyá Guaraní ritual in which the yerba offering was made by the village men. These bundles were hung on the walls of the sanctuary called Opy, from the

Guaraní Óga meaning house, and py (feet, base, foundation). After a spiritual preparation, the Tamöi or shaman would burn the bundle of yerba, using the smoke as a vehicle for trance. It is a practice of spiritual revitalization with transcendent meaning. According to the Jaryi Sara, it allows entry into the ambá (the place where the spirits of the ancestors dwell) (Susnik, 2012).

These ceremonies related to yerba mate have been recovered to raise awareness among museum visitors about the importance of Indigenous spirituality, considered the foundation of Guaraní spirituality through its yvyra (wood), as a message between the divine and the earth (Benítez, 2022). The historical and geographical dissemination of the Indigenous yerba mate territory of Tacurú Pucú during the periods addressed redefines the value of yerba mate as cultural heritage in the historical memory of the inhabitants. It highlights the Indigenous protagonism in territories from which they were constantly expelled, altering the mobility of communities in a yerba mate ecosystem that gradually disappeared, opening a new space for discussion about the impact of timber extraction in the following decades in the region.

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Silent Fall: Unveiling Hidden Voices in Environmental Justice Art Through Hope

Ayelet Danielle Aldouby[1] and Dominique Paul (Canada)[2]

Abstract

Amidst environmental turmoil, "Silent Fall," the environmental justice exhibit, emerges to illuminate societal introspection amid ecological chaos. Inspired by Rachel Carson's "Silent Spring" (1962), the exhibit by artist Dominique Paul poignantly captures humanity's reluctance to confront environmental devastation, transcending pop culture imagery to reflect our contested ecological history. Paul's artistry intertwines socio-economic awareness with visual narratives, bridging societal gaps. The multidisciplinary collages present surreal hybrids cautioning against socio-economic collapses and species disappearance. Through socially engaged art, viewers are encouraged to incorporate their personal experiences within the exhibition space and online. As visitors become participants, they can use visual learning activities to reflect on their role in the ecosystem. This reflective learning is facilitated through the educational program "Song for the Birds," inspired by bell hooks' pedagogy of hope. The nurturing of empathy and critical thinking is intertwined with personal-local-global environmentalism, advocating for planetary healing. Thus, participants engage in social-emotional learning cultivated through spoken-word and visual learning activities, fostering connections with endangered species and cultivating agency. "Silent Fall" and its accompanying educational program transcend convention, fostering dialogue, perspective-taking, and collective action. It inspires hope, nurturing stewardship in exhibition spaces for climate justice. As an artistic lighthouse, it guides us toward reclaiming our role as guardians in a fragile ecosystem.

Keywords: environmental justice exhibit, biodiversity, education, hope

[1] Ayelet Danielle Aldouby (Ed.D.) is a social practice curator and a professor of Community Art at Columbia University's Teachers College. Aldouby is also a scholar of Ethics of Care in Creative practices, Address: 102 Walnut Street, Washington Township, NJ, 07676 USA E-mail: daa2109@tc.columbia.edu

[2] Dominique Paul, PhD, visual and performance artist**,** and lecturer, UQAC (Université du Québec à Chicoutimi, Canada) Address: 1087 Fréchette street, Longueuil, Québec, Canada, J4J 1G9. Website: www.dominiquepaul.net. Email: dominique@dominiquepaul.net

Resumen

En medio de la agitación medioambiental, "Silent Fall", la exposición sobre justicia medioambiental, surge para iluminar la introspección social en medio del caos ecológico. Inspirada en "Silent Spring" de Rachel Carson (1962), la exposición de la artista Dominique Paul capta conmovedoramente la reticencia de la humanidad a enfrentarse a la devastación medioambiental, trascendiendo las imágenes de la cultura pop para reflejar nuestra controvertida historia ecológica. El arte de Paul entrelaza la conciencia socioeconómica con la narrativa visual, salvando las distancias sociales. Los collages multidisciplinares presentan híbridos surrealistas que advierten contra el colapso socioeconómico y la desaparición de especies. A través del arte socialmente comprometido, se anima al espectador a incorporar sus experiencias personal dentro del espacio expositivo y de manera virtual. Los participantes pueden utilizar las actividades de aprendizaje visual para reflexionar sobre su papel en el ecosistema, fomentar los vínculos con las especies amenazadas, e impulsar el cambio. El programa educativo de la exposición, "Song for the Birds", está inspirado en la pedagogía de la esperanza de Bell Hooks, la cual facilita el aprendizaje socioemocional. El fomento de la empatía y el pensamiento crítico se entrelaza con el ecologismo personal, local y global, abogando por la sanación del planeta. Los visitantes participan en actividades de aprendizaje oral y visual que fomentan los vínculos con las especies amenazadas y estimulan el cambio. "Silent Fall" y el programa educativo que la acompaña trascienden las convenciones y fomentan el diálogo, la toma de perspectiva y la acción colectiva. Inspira esperanza y fomenta la creación de espacios expositivos en pro de la justicia climática. Como faro artístico, nos guía para reclamar nuestro papel de guardianes de un ecosistema frágil.

Palabras clave: exposición sobre justicia ambiental, biodiversidad, educación, esperanza.

The current climate of environmental tumult demands urgent attention and action toward disrupting the systemic injustices and ecological adversity that aid air, land, and water pollution. These environmental disparities challenge communities to reimagine their lifestyles and empower future generations to seize agency. Within this turbulent landscape emerges the exhibit "Silent Fall," a testament to artist Dominique Paul's creativity, sparking awareness and fostering innovative artistic engagement amidst environmental calamities. Inspired by Rachel Carson's seminal work, "Silent Spring" (1962), the exhibit's title, "Silent Fall," poignantly encapsulates the profound impact of human silence amidst ongoing environmental devastation. This dual metaphor transcends seasonal imagery, reflecting humanity's reluctance to confront ecological peril and its contested history. "Silent Fall" is a pivotal synthesis of Paul's environmental concerns, beckoning collective introspection.

The multidisciplinary collage interpretations of societal injustices create surreal hybrids cautioning against socio-economic collapses, impacting migrations and leading to species' disappearance.

(Images 01 & 02) Paul, D. (2023). Insects of Surinam 36: Silent Fall [laser-cut digital print and acrylic, 230 x 165 x 4.4 cm]. Silent Fall exhibition, Hall, Art Museum of the Americas/OAS, Washington D.C., United States. Photo credit: Rafa Cruz.

"Silent Fall" embodies Paul's artistry, intertwining socio-economic awareness with visual narratives, bridging the human-animal-machine chasm. The exhibit galleries offer an immersive journey—from insect metamorphosis in prints to the expansive canopies of the Americas—fostering an educational hub and showcasing film documentation of Paul's artistic performances. Viewers are immersed in socially engaged art throughout the galleries, entwining artistic subtlety with the personal experiences of participants and species. Curiously, Paul's artistic odyssey aims to cultivate empathy that inspires action. Upon tracing her creative practice, Paul reflects:

"Being an artist entrenched in the fabric of daily life, I exist beyond the confines of the 'elite,' grappling with the divergence between our consumption habits and their impact on the environment. In my creative pursuit, I am inspired by statistics on social justice issues, and scientific data catalyzes the creation of all my work[3]. A pivotal moment arose a decade ago with a NASA-funded study (Motesharrei et al., 2014) unveiling the interconnectedness between increasing social inequalities and the rampant depletion of natural resources. This research forewarned a potential civilizational collapse due to chronic resource depletion, climate change, and escalating inequality. I found that this warning underscored a profound disconnect between societal segments, stressing the urgency for empathy-driven action"

[3] Except "Insects of Surinam"

(Image 03) Paul, D. (2023). Silent Fall exhibition, Gallery 1, Insects of Surinam 34, 23 & Damoiseaux [digital prints, most laser-cut, largest 198 x 147 cm]. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz.

Paul's journey commenced with Merian's (1705) "Insects of Surinam" flora and fauna series of botanical plates (Schmidt-Loske, K., 2009), a profound inspiration that led her to explore diverse sources, reimagining her depictions of wildlife and vegetation through a contemporary lens. These reinterpretations serve as a contemplation of the notion of metamorphosis within our current landscape. In tandem, Donna Haraway's (1985) "A Manifesto for Cyborgs" echoes her creative process, erasing boundaries between animals, humans, and technology, fostering an interconnected continuum.

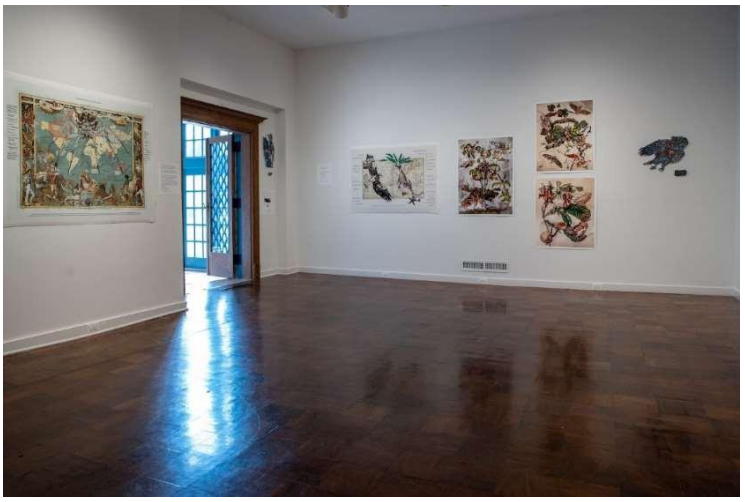
(Image 04) Paul, D. (2023). Silent Fall exhibition, Gallery 1, Insects of Surinam 27, 28, 9, 25, 3 & in Vitro [digital prints, largest 167 x 121 cm and animation. Vimeo. https://vimeo.com/214528062]. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz

Merian's botanical illustrations sparked Paul's inspiration as she grappled with the issue of the increasing objectification of the male physique in recent decades. She found herself intrigued by the considerable amount of time and effort dedicated to perfecting the aesthetics of the body, diverting attention from pressing societal concerns. The images Paul created feature few depictions of women and are contrasted with male body parts, symbolizing efforts to question societal conventions. The depictions of masculinity embody conventional dominance, leading to contemplation on our rapport with the natural world. Consequently, this ongoing series moves beyond pure visual appeal, aiming to cultivate empathetic bonds with our surroundings. The series evolved from gentle-looking hybrids to vast collages dominating an entire vegetable, printed on a large scale to suggest a tree. Each collage is illuminated with custom lighting to evoke a canopy and is then photographed to maintain the illusion.

(Image 05) Paul, D. (2023). Silent Fall exhibition, Gallery 2, Damoiseaux [laser-cut digital print & acrylic, largest 170 x 96 cm]. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz.

(Image 06) Paul, D. (2023). Silent Fall exhibition, Gallery 2, Insects of Surinam 35 & Damoiseaux [laser-cut digital print & acrylic, largest 142 x 165 x 4,4 cm]. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz.

Paul's preoccupation with the endangered species is part of her ongoing artistic journey, which aims to foster deeper connections and a heightened sense of responsibility towards ecological surroundings by inviting viewers to engage emotionally with the work. She asks the visitors to begin their own journey through the expansive entry hall with "Insects of Surinam 36: Silent Fall" (2023), which portrays the exodus of the elite escaping Earth. Transitioning into gallery 1, the vibrant "Insects of Surinam" series resonates across the space with ambient insect sounds, accompanied by the Damoiseaux installation (2020-2021), situated adjacent to the tree collages, highlighting endangered bird species.

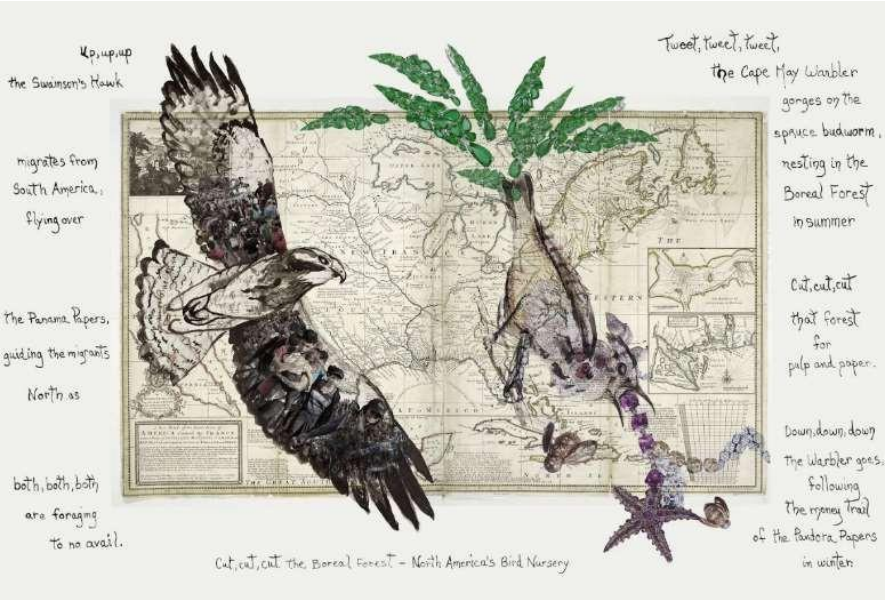


(Image 07) Paul, D. (2023). Silent Fall exhibition, Gallery 2, Maps & Insects of Surinam 21, 29, 32 & Damoiseaux [digital prints, one laser-cut]. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz

As Paul reflects on her process of creating these birds, she states, *"Creating each bird through my intimate drawing process stirred my empathy, mirrored in the human-bird hybrid collages, uncovering our accountability for the drastic decline in bird populations. The artwork illuminates the profound effects of industrial agriculture and logging on bird habitats"*

(Image 08) Paul, D. (2020). Bald Eagle, Haliaethus leucophalus, Pygargue à tête blanche. Process for Damoiseaux series: A drawing and a collage are photographed and merged digitally [laser-cut archival digital print & acrylic]. Silent Fall exhibition, Gallery 2, AMA/OAS, Washington, D.C

Paul's response to this impact is visual and conveyed through poetry. In her piece "Cut, cut, cut the Boreal Forest – North America's Bird Nursery"s (2022), she parallels migration patterns with the movement of tax evasion capital, highlighting the relentless deforestation. The artwork depicts the Swainson Hawk, an endangered specie, providing shelter to migrants beneath its wings as it heads north. At the same time, tax evasion capital relocates south, referencing the Panama and Pandora Papers. Hence, tracing the migration routes of endangered species mirrors the path of migrants from Central America to California. Paul's exploration visually entwines colonial maps with geopolitical concerns, echoing the movement of birds, humans, and capital across the Americas. In the margin, Paul wrote these lines from left to right:



(Image 09) Paul, D. (2022). Cut, cut, cut the Boreal Forest – North America's Bird Nursery [archival digital print]. Silent Fall exhibition, Gallery 2, AMA/OAS, Washington, D.C.

"Up, up, up

the Swainson's Hawk

migrates from South America,

flying over

the Panama Papers,

guiding the migrants

North as

both, both, both

are foraging

to no avail.

Tweet, tweet, tweet,

the Cape May Warbler

gorges on the

spruce budworm,

nesting in the

Boreal Forest

in summer

Cut, cut, cut

that forest

for

pulp and paper

Down, down, down

the Warbler goes,

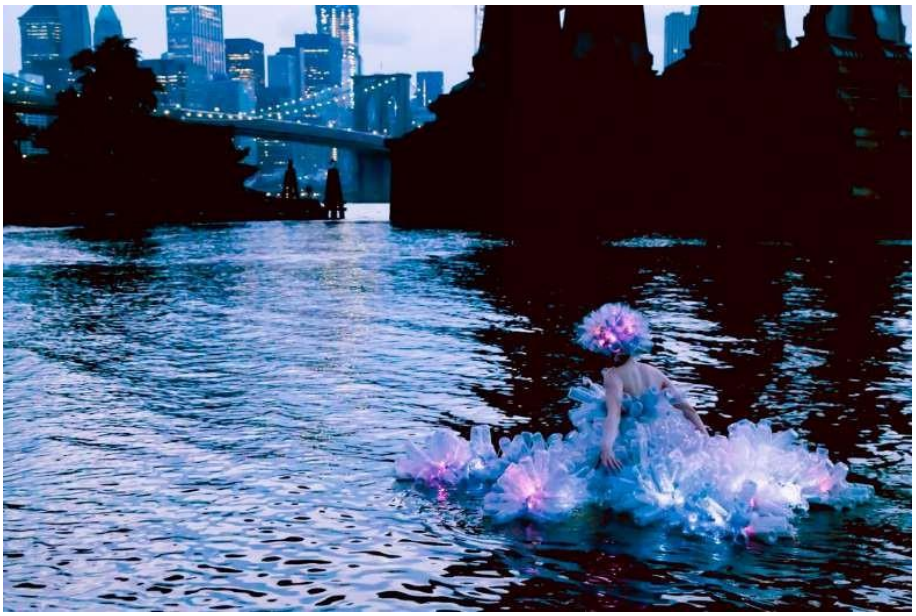
following

the money trail

of the Pandora Papers

in winter." (Paul, 2022)

(Image 10) Paul, D. (2023). Silent Fall exhibition, Gallery 3, Migrations of the Arthropods (2012) [Vimeo. https://vimeo.com/84306738]. AMA/OAS, Washington, D.C.



(Image 11) Paul, D. (2012). Migrations of the Arthropods DUMBO [photography, 101,6 x 152,4 cm]. Silent Fall exhibition, Gallery 3, AMA/OAS, Washington, D.C.

In gallery 3, Paul extends the exploration of her spoken word poems through performance art engagements, fostering awareness and cultivating emotional connections to additional social justice issues.

(Image 12) Paul, D. (2015). Animal Population Decline, South Bronx, New York [photography, 67,7 x 101,6 cm]. Silent Fall exhibition, Gallery 3, AMA/OAS, Washington, D.C.

Paul reflects on how visitors experience the final gallery,

"Visitors step into the urban realm of my performance practice, which aims to amplify the voices of marginalized species. This trajectory originated from my initial camera performances in "Migrations of the Arthropods" (2012). The imagery and footage depict me floating in New York's East River, adorned in a 'dress' crafted from repurposed plastic bottles[4] . This project integrated meaning-making and environmental injustice statistical data into my artistic structures. Another work, "Animal Population Decline" (2015), showcases statistics from the World Wildlife Fund revealing a drastic loss of 84% of land vertebrate animals in South America over the last 40 years (up to 2013). This figure has since soared to 94%. The artwork incorporates 100 stuffed animal toys: the body comprises 84, while the remaining 16 are arranged on the headdress, symbolizing the survivors. Leveraging stuffed animals in my work aims to cultivate empathy by tapping into their relatable and expressive nature, fostering a connection that resonates deeply with audiences"

Pontbriand (2023, p. 30) further delves into Paul's use of performance art as a means to foster empathy, drawing a connection between the concept of 'in-common' and Paul's creation. She elaborates on how the "Animal Population Decline" (2015) — a dress formed by an amalgamation of stuffed toys—symbolizes a collective organism, merging all Earth's animals into one, reintroducing animals in

[4] "Migrations of the Arthropods" https://vimeo.com/84306738

decline into an urban setting. This visually striking performance in the South Bronx embodies a satirical yet vivid commentary on the escalating inequality within a heavily urbanized environment.

(Image 13) Paul, D. (2023). Animal Population Decline [performance at educational workshop launch, singer Juno Brown]. Silent Fall exhibition, Gallery 2. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz.

The use of Paul's performance art to raise global awareness of climate justice was also amplified during a 2023 performance at the International Women's Day Special Session of the Permanent Council of the Organization of the American States. Paul engaged five performers to wear her art dress-like structures and sing about the issues at stake to the audience of the ambassadors of the countries of the Americas. In elaborating on her performers, Paul adds,

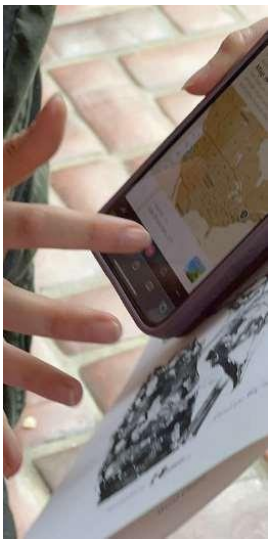
"The pillar of my social practice art involves performance art and collaborating with others to evoke empathy and raise awareness among participants and viewers. This engagement featured two Indigenous women from North America: one from the Eastern band Tsalagi and Haudenosanee people, and the other representing the Navajo, the Hopi, and Laguna Pueblo people. We aimed to shed light on the disproportionate impacts of low wages, food insecurity, and climate change, particularly affecting women around the Americas and the world."

(Image 14) Paul, D. (2023). Red | Rojo | Rouge | Vermelho [performance video]. Youtube. https://youtu.be/mbSfHQpXvRE?si=lx_E0W5EuCRuPi3K. International Women's Day Special Session of the Permanent Council of the Organization of American States, Washington D.C.

Paul is keen on amplifying the often-overlooked voices through her artistic endeavors by intertwining the varied narratives of visitors in her performance art. Consequently, the educational program "Song for the Birds" (Aldouby & Mewes, 2023) seeks to support Paul's invitation for visitors' contributions by actively encouraging individuals to share their personal experiences and engage in social-emotional learning. This approach transforms visitors into active participants, nurturing a more inclusive atmosphere within the exhibit.

(Image 15) Paul, D. (2023). Silent Fall exhibition, Gallery 2, educational workshop launch, AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz

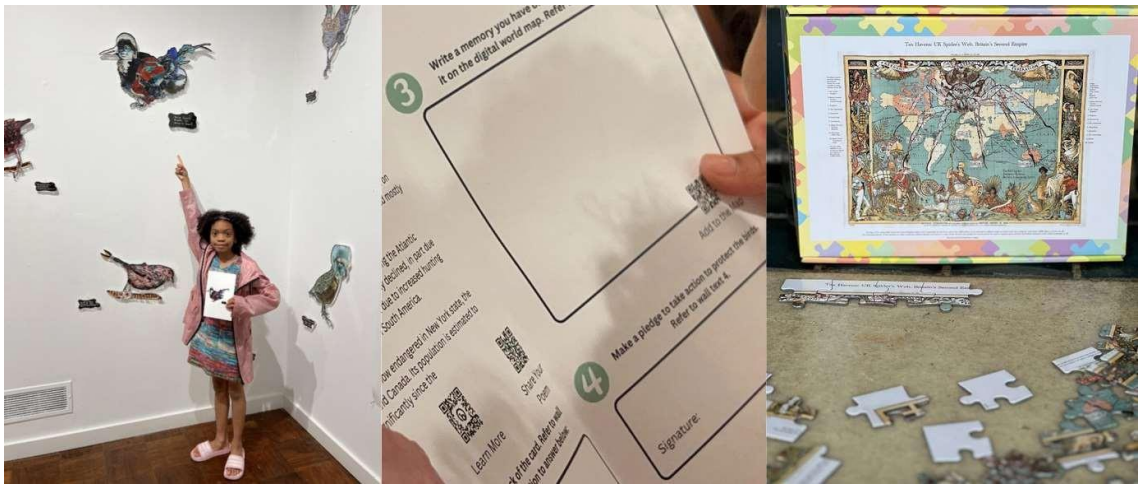
(Image 16) Paul, D. (2023). Silent Fall exhibition, Gallery 1, Talk to Me [interactive sound installation]. Educational workshop launch. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz



(Image 17) Aldouby, A.D., & Mewes, R. (2023). Map of Memories. Educational workshop launch. Paul D. Silent Fall exhibition, AMA/OAS, Washington, D.C.

The educational program "Song for the Birds" (Aldouby & Mewes, 2023) forges connections with endangered species, exploring biodiversity decline through various activities that establish the framework for multiage entry points. The first encounter with the species is "Meeting the Birds," where participants form their initial connection with one of the endangered birds in the exhibit. This encounter leads to the activity of "Fostering Empathy" using Spoken Word and written poetry, which is prevalent in Paul's work.

In this activity, participants analyze the artist's utilization of poetry to cultivate empathy and generate blackout poems using existing texts about their birds. Additional activities aim to enhance critical thinking through "Drawing Connections," – where participants can use aesthetic methodologies from color to form to build a sense of connection to the bird. In the activity "Map of Memories," - Visitors are invited on a personal journey of their memory of a bird and asked to share it on a collective map. This activity adds a fresh perspective to Paul's utilization of colonial maps, drawing connections between shifting bird migration patterns and human displacement. Finally, echoing the exhibit's title, "Sitting With Silence" magnifies the metaphor of a world without birdsong by leading participants through a visualized journey of a world without birds. Collectively, these initiatives encourage visitors to commit to a "Pledge to the Birds," fostering individual or collective actions dedicated to preserving and surviving specific bird species.



(Image 18) Aldouby, A.D., & Mewes, R. (2023). Educational workshop launch. Paul D. Silent Fall exhibition, AMA/OAS, Washington, D.C

"Song for the Birds" immerses participants in Paul's methods, nurturing empathy and responsibility toward nature while prompting them to action. In addition, the interactive installation like "Talk-to-Me" (Paul, 2023) seeks to humanize the endangered species through sound, aiming to foster deeper sensory connections. The educational program was inspired by renowned author bell hooks (2018), who intricately weaves local and global environmentalism with the profound concepts of land and home. Her call for heightened consciousness and actionable steps toward sustainability extends far beyond her native Kentucky, delving deep into humanity's relationship with nature and advocating for urgent healing of our planet. "Song for the Birds" echoes bell's pedagogy of hope (2003) to create inclusive, dialogical, and participatory learning environments utilizing social-emotional learning.

The program centers on hope to foster learners' resilience, courage, and a sense of possibility. Like hooks, "Song for the Birds" recognizes societal challenges and disparities, empowering individuals to actively participate in generating positive change through art. This highlights the transformative power of empathy within an arts-focused curriculum. Thus, the exhibit and its program "Song for the Birds" aim to extend beyond the museum walls, hoping to inspire other spaces to incorporate environmental justice exhibits.

(Image 19) Paul, D. (2023). Silent Fall exhibition, Gallery 2. Aldouby, A.D., & Mewes, R. (2023). Educational workshop launch. AMA/OAS, Washington, D.C. Photo credit: Rafa Cruz.

"Silent Fall" transcends a conventional showcase; it stands as a stark reminder of an imperiled reality. It invites visitors to imagine the shaping of an ecological future intertwined with intersectionality. Through intersubjective learning, the educational program highlights the power of knowledge acquisition in a collaborative and interactive nature. Simultaneously, it centers hope and care, fostering a space for reflection, dialogue, empathy, and collective action. At its core, "Silent Fall" inspires collaborative engagement as compassionate stewardship, entrusting exhibition spaces to become brave Spaces for climate justice. Nurturing hope in a swiftly vanishing world, it is an artistic lighthouse guiding us toward reclaiming our role as guardians in an increasingly fragile ecosystem.

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Free entry: museums in action in Chilean television

Nicolás Rojas Inostroza (Chile)[1]

Abstract

This article presents the experience of "Entrada liberada", the first program about museums in the history of Chilean television. The project included visiting more than 50 museums in the regions of Coquimbo, Valparaíso, Metropolitana, Libertador General Bernardo O'Higgins, Maule, Ñuble and Biobío. The first season is made up of 12 chapters, each lasting around 1 hour. The space has been broadcast by NTV, the cultural channel of National Television of Chile, and TV Chile, the international public television, through which the program reaches 25 countries in the world. This brief dissemination article will give an account of the general situation of museums in Chile, it will address the gap in communication that museums (many of them free) have with the public, their most notable educational programs linked to climate action, in addition to sharing the experience of carrying out the program, considering the possibility that it can be replicated in other countries around the world.

Keywords: museums, Chile, television.

[1] Journalist from the University of Chile and holder of a master's degree in World Heritage and Cultural Projects for Development from the University of Barcelona and the University of Turin. He has written for the *Artes y Letras* weekly section of *El Mercurio*, and was the host of the programs *Ojo en Tinta* on Canal 13C and *Entrada Liberada* on NTV, the cultural channel of TVN. He is co-founder of the digital project *Ojo en Tinta*, for which he was named one of Chile's 100 young leaders by *Revista Sábado* and Universidad Adolfo Ibáñez (2014). Between 2017 and 2018, he served as Head of Outreach and Communications at the Violeta Parra Museum. He has worked as a cultural consultant for UNESCO and currently directs the Chasqui School. E-mail: nicolasrojasinostroza@gmail.com

Resumen

Este artículo presenta la experiencia de "Entrada liberada", el primer programa sobre museos de la historia de la televisión chilena. El proyecto contempló visitar más de 50 museos de las regiones de Coquimbo, Valparaíso, Metropolitana, del Libertador General Bernardo O'Higgins, del Maule, de Ñuble y del Biobío. La primera temporada está compuesta por 12 capítulos de alrededor de 1 hora de duración, cada uno. El espacio ha sido emitido por NTV, el canal cultural de Televisión Nacional de Chile, y TV Chile, la señal internacional de la televisión pública, a través de la cual el programa llega a 25 países del mundo. Este breve artículo de divulgación dará cuenta de la situación general de los museos en Chile, abordará la brecha en comunicación que poseen los museos (muchos de ellos gratuitos) con el público, sus programas educativos más destacados vinculados a la acción climática, además de compartir la experiencia de realización del programa, considerando la posibilidad de que pueda ser replicado en otros países del mundo.

Palabras clave: museos, Chile, televisión.

Museums in Chile

Although the first cultural institution in Chile's history was the National Library (1813), it didn't take many years for the country to establish its National Museum (1830). Later, the National Museum of Fine Arts (1880) and the National Historical Museum (1911) were created. It wasn't until 1929, with the formation of the Directorate of Libraries, Archives, and Museums (DIBAM), that the administration of state museums was unified. These institutions are now part of the National Service for Cultural Heritage under the Ministry of Cultures, Arts, and Heritage.

Another significant milestone occurred in 1972, during the government of the Unidad Popular, with the "Round Table on the Development and Role of Museums in the Contemporary World," held in Santiago, Chile. The resolutions and recommendations from this event to UNESCO shifted the orientation of museum spaces. Museums began to be seen as agents of education and change within the communities they serve, aligning with a broader Latin American perspective. This event marked the beginning of a museological approach that continues to this day.

The study "Situation of Museums in Chile. 2019 Diagnosis" [2] draws on data from the "2017 National Survey of Cultural Participation" [3], which states that "20.5% of the population reported having visited a museum in the past 12 months, equivalent to 2,572,388 people. It is worth noting that this projection only includes individuals over the age of 15 and has not changed significantly since 2005."

[2] https://www.registromuseoschile.cl/663/articles-98493_archivo_01.pdf

[3] https://www.cultura.gob.cl/publicaciones/enpc-2017/

The rate of museum attendance in Chile over the past year (20.5%) stands out in Latin America compared to countries like Argentina (11%) or Colombia (12.3%). However, it is significantly lower when compared to countries such as England (52.5%), Spain (33.2%), or France (30%). Museum visitors represent around 20% of the country's population and are concentrated in municipalities that have museums (22.5%). Attendance is nearly evenly split between men and women. The age groups most represented are young people aged 15 to 29 (27.1%) and adults aged 30 to 44 (24.2%).

It is also important to note that in municipalities with museums, 22.5% of residents attended, compared to only 12.7% in areas without such cultural infrastructure. Additionally, 36.3% of people who visited a museum during childhood also did so in the past year, compared to just 12.7% of those who did not visit museums in their early years. The number of museums registered in the Chilean Museum Registry has grown significantly—from 127 in 1980 to 135 in 1997, reaching 403 in 2023.

Currently, the State, through the National Service for Cultural Heritage, manages three national museums and more than 20 regional museums across the country. It is important to highlight the free admission policy for public museum networks, implemented in 2015. However, a significant communication issue has been identified: "The fact that nearly half of the museums do not charge admission (especially those under public administration) helps reduce economic barriers, but it is still not enough to bridge the participation gap across different educational and socioeconomic levels," states the study on the state of museums conducted by the Observatory of Cultural Policies (OPC).

There are also free museums that are not part of the National Heritage Service network. These are typically managed by municipalities or nonprofit private foundations that receive direct funding from the Ministry of Cultures, Arts, and Heritage. As of 2023, according to the Chilean Museum Registry[4], there is a high geographic concentration of museums: Metropolitan Region (26%), Valparaíso (16%), Biobío (7%); Tarapacá (3%), Atacama (2%), Arica and Parinacota (1%).

A communication problem

The study "Situation of Museums in Chile. 2019 Diagnosis", conducted by the Observatory of Cultural Policies, states that "museum visitors tend to have incomplete (38.6%) or complete (39.4%) university education. The majority (61.6%) belong to the two wealthiest socioeconomic groups, specifically quintile 4 (23.8%) and quintile 5 (37.8%). We have museums—half of them free—that continue to be visited primarily by people with higher education and income levels. At the same time, people across the country have shown great interest in participating in Heritage Day, held on the last weekend of May, with over 1.2 million attendees in its 2023 edition[5]. It's curious to see long lines to visit, for free, institutions that are open every weekend of the year. The public is interested in heritage, but there are very few spaces for its promotion in the media."

[4] https://registromuseoschile.cl/

[5] https://www.patrimoniocultural.gob.cl/noticias/ministerio-de-las-culturas-celebra-ultima-jornada-del-dia-de-los- patrimonios-con-gran

In this context, together with filmmaker Patricio Alfaro Astorga, we presented the project "Entrada Liberada" to NTV, the cultural channel of Chile's National Television. Television, the most widespread medium, thus becomes the best window for museums to reach a diverse audience. Moreover, in our proposal, it is essential that the museum is presented within a regional heritage context and that the experience of visiting it is relaxed, enjoyable, and infused with humor. For us, the museum is a space of happiness and a viable outing for people who may have never visited one.

"The most beautiful thing the program has done is to take something considered niche—like museums or cultural television—and bring it to everyday people. The best reward is when the host is greeted on the street. That means we're reaching the audience we want: people who often don't realize they might enjoy more cultural content. It's very gratifying for us as creators," says Patricio Alfaro Astorga, the program's director, about the process.

In its new definition, ICOM (2022) describes a museum as "a non-profit, permanent institution in the service of society that researches, collects, conserves, interprets, and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. With community participation, museums operate and communicate ethically and professionally, offering varied experiences for education, enjoyment, reflection, and knowledge sharing." This spirit inspires the Entrada Liberada team to explore museums and their collections.

Learning from the territories

On Wednesday, November 15, 2023, a short compilation video showcasing examples of climate action leadership by some museums in Chile was presented at ITAIPU. The audiovisual recording is available on YouTube under the title *"Entrada Liberada: Museums for Climate Action on Chilean Television"*[6]. On this occasion, the actions carried out by the following institutions were presented:

- Museum of Memory of UPASOL (Vicuña)
- Gabriela Mistral's House of the Palm Trees (La Serena)
- Museum of Solidarity Salvador Allende (Santiago)
- Biopark of the Historical and Natural History Museum (San Antonio)
- Museum of Natural History (Valparaíso)
- Historical Museum and Lota Park (Lota)
- Park of the Pedro del Río Zañartu Museum (Hualpén)

[6] https://www.youtube.com/watch?v=5Y_juH9geT4&t=4s&ab_channel=Nicol%C3%A1sRojasInostroza

What did we learn from this experience?

- That, unfortunately, we are a centralized country. There are very interesting experiences in the regions that are practically unknown in the capital.
- That it is very important to open more spaces to showcase, both nationally and internationally, the work carried out by the more than 400 registered museums in the country.
- That taking time is key. Each museum visit involved at least four hours of filming, which were edited into an average of 10 minutes per episode. It was also essential to hold a prior coordination meeting with each museum via video call to get to know each other and prepare the shoot together.
- That these opportunities help build networks and connect museums from different geographic areas through the program, creating potential synergies.
- That partnerships are very important. We are grateful for the funding and editorial support from NTV, as well as the support of the Chilean Committee of Museums (ICOM Chile) and the National Subdirectorate of Museums of the Ministry of Cultures, Arts, and Heritage.
- That audience reception is always a mystery. The program has been very well received by a wide range of people, especially children.
- That television strategy must always be accompanied by digital content. Each filming day was a great opportunity to capture material that we shared with the audience through the Instagram account @entradaliberadatv.
- That museums are excellent cultural ambassadors for the country. Through their work, they can showcase Chile's diversity to the world. Museums also contribute to tourism and the creative economy for sustainable development.
- That both the State, the private sector, and civil society should provide more resources to support Chile's museum sector, which holds enormous potential.

All episodes of Entrada Liberada are available on the YouTube channel of NTV Chile. The presentation ended with a question that we now echo: What would a television program about museums in your country look like? Let's make it a reality!

Museo del Títere y el Payaso | Puppet and Clown Museum Photo: Sebastián Cuevas

Museo Nacional de Historia Natural | National Museum of Natural History
Photo: Sebastián Cuevas

Museo Universitario del Grabado | University Museum of Engraving
Photo: Sebastián Cuevas

Museo de la Solidaridad Salvador Allende | Salvador Allende Solidarity Museum Museo de la Solidaridad
Photo: Sebastián Cuevas

WORDS OF BURÇAK MADRAN
CHAIR OF ICOM ICMAH

The International Committee for Museums and Collections of Archaeology and History (ICMAH) is one of the oldest committees of ICOM. Georges-Henri Rivière, first president of ICOM from 1948 to 1963, created this committee with the two disciplines demonstrating the history of disappeared societies and cultures and finding evidence in the continuities. However, we still believe that museums and the collections of history and archaeology create the openings for the present and even perspectives of future. This means continuous actualization and a big legacy that makes us work alongside the new trends in museology and museography. ICMAH is composed of around 1300 individual and 110 institutional members from over 94 countries. Our working groups on sport museums, on corporate museums and industrial heritage attract passionate professionals from all over the world. We are happy and proud to welcome less represented thematic museums in our ICOM family.

We have important concerns! We believe that we are better together than alone. We complement each other, we learn, we teach, we compare, we analyze and we perceive the whole. We try to reach young professionals, especially in countries in which museum practices are less developed and mostly depend on the passionate work of museum professionals. We try to make them sustainable and strong members of ICOM community. We are curious, and we care about the climate change that affects our entire world and of course our museums. We are curious because we are coming from different regions, and we do not know much what concerns the other. We really care because conscious common action for museums cannot wait for tomorrow.

We are also proud to be part of this mega-conference with four international committees, each with their own views and missions: ICMAH, the oldest and experienced one, INTERCOM our manager with all organizational and programming talents, ICTOP our trainer that cares about our professional development and MPR the indispensable window and promoter of our work that makes us visible. This togetherness was only possible thanks to our host, the ICOM National Committee of Paraguay. This is, no doubt, one of the most significant regions of the world affected by climate change, and I am including all South America. Not only the brilliant presentations from all over the continent enlightened us about the effects of changing climate conditions, their effects on collections, on sites, on living species, on nature and on human society but our own observations during our visits make our theme concretely visible. When it comes to climate change, there are no "us", "them", "others", "locals", "nations", "indigenous"… The whole humanity is affected by these changes. The participants of this conference are somehow aware of the chaos and catastrophic potential of climate change in the museum and around its urban and natural environments. They also know that a museum alone cannot fight this and try to involve the communities that they serve. We listened to many good examples.

The situation in the heart of South America deserves to be put in evidence for all the museum community and inspire us to discover similarities between other dramatically affected regions in different conditions. The awareness of climate change and its effects on museums is sufficiently developed in between museum professionals. However, we have all the same problems. We don't have enough personnel and workforce. We don't have enough budget and financial resources to do what it's needed. We try to ensure, at least the minimum conditions for our collections, for our museum buildings, for our communities, but will it be durable? The situation is much more serious than what we can do with individual efforts and conditions. As ICMAH, we are proud of the work presented here by everyone and look forward to continue collaborating with our fellow IC's to develop further strategies on how we can take climate action from our museums. All of us, working together.

Record of dugout canoes from the central basin of the La Plata River in Paraguayan museums

Mirtha Alfonso Monges (Paraguay)[1], Christophe Delaere (Bélgica)[2]

Abstract

This article focuses on the study of dugout canoes and pre-Hispanic navigation in Paraguay, considering the vast hydrographic potential provided by the country's two main rivers, the Paraná and the Paraguay, in addition to numerous tributaries, rivers and streams that run throughout the territory. The registration and photogrammetric survey of four monoxyl canoes was carried out; one that is part of the collection of the Dr. Andrés Barbero Ethnographic Museum, another one housed in the Cultural Center of the Republic - El Cabildo, both in Asunción, and a third in the Cabildo Museum located in the city of Pilar. To this record is added one more specimen located in the city of Hernandarias in the Museum of ITAIPU Tierra Guaraní. This work seeks to initiate the analysis and study of these elements, taking into account their context of origin, their uses, their materiality and their cultural role, in addition to the environmental characteristics of the site of origin and the fluvial environments to which they are associated. The goal is to contribute to a better understanding of the navigation systems of the central basin of the La Plata River and to consider the disappearance of practices, worldviews and cultural traits associated with traditional nautical practices in Paraguay.

Key-words: dugout canoes, inland water archaeology, nautical practices, Plata river basin

[1] MUSEO de ITAIPU Tierra Guaraní. alfonsomirtha@gmail.com ; 0009-0002-9735-3808 (ORCID)
2 Université libre de Bruxelles (ULB). delaerechristophe@gmail.com ; 0000-0002-6468-7847 (ORCID)

Resumen

Este artículo se enfoca en el estudio de las canoas monóxilas y la navegación prehispánica de Paraguay, considerando el vasto potencial hidrográfico proporcionado por los dos principales ríos del país, el Paraná y el Paraguay, además de numerosos afluentes, ríos y arroyos que recorren todo el territorio. Se realizó el registro y el relevamiento fotogramétrico de cuatro canoas monóxilas; una que forma parte del acervo del Museo Etnográfico Dr. Andrés Barbero, otra que se encuentra alojada en el del Centro Cultural de la República - El Cabildo, ambos en Asunción, y una tercera en el Museo Cabildo ubicado en la ciudad de Pilar. A este registro se suma un ejemplar más localizado en la ciudad de Hernandarias en el Museo de ITAIPU Tierra Guaraní. Este trabajo busca iniciar el análisis y estudio de estos elementos, teniendo en cuenta su contexto de origen, sus usos, su materialidad y su rol cultural, además de las características ambientales del sitio de procedencia y los entornos fluviales a los cuales se encuentran asociado. La finalidad es contribuir a una mejor comprensión sobre los sistemas de navegación prehispánica de la cuenca central del Río de la Plata y reflexionar sobre la desaparición de prácticas, cosmovisiones y rasgos culturales asociados a las prácticas náuticas tradicionales en Paraguay.

Palabras clave: canoas monóxilas, arqueología de aguas internas, practices náuticas, Cuenca del Río de la Plata

"When you arrive in Paraguay, the
earth will open with its
veins of eternal rivers,
and the northern wind will
ignite your skin"
Peña Gill 2012: 5

Introduction

Dugout canoes are the main material expressions of pre-Hispanic navigation in Paraguay. In this regard, considering the vast hydrographic potential provided by the country's two main rivers—the Paraná and the Paraguay—as well as numerous tributaries, rivers, and streams that traverse the entire territory, these vessels played a crucial role in the daily lives of the inhabitants of this part of the world. Proximity to waterways not only created favorable conditions for human life but also facilitated mobility and cultural exchange for centuries (Contreras Roqué et al., 2020). The management of life along these waterways, taking into account features such as navigability and the presence of ichthyofaunal species, led to significant material production by the communities of this region, aimed at sustainably utilizing these resources.

Until the 16th century, in Paraguay, all long-distance travel was primarily conducted via waterways using canoes, whether for transporting goods or people. However, nautical practices have been significantly altered by the adoption of maritime technologies foreign to local and regional traditions, such as keelboats and mechanically propelled vessels, beginning with the introduction of steamships (Figure 1). Although nautical activities are still used at local and regional levels, it is now observed that, with few exceptions, monoxylous canoes are no longer used in Paraguay's rivers; colloquially[3], they are referred to as "cachiveo" or "cachibeo."

In this context, this article proposes an approach based on archaeological and ethnographic analysis through the documentation and study of four dugout canoes exhibited in museums in Paraguay. This study aims to contribute to a better understanding of pre-Hispanic navigation systems in the central basin of the Río de la Plata. Additionally, it seeks to delve into how river navigation practices are represented in local museums, while also reflecting on their disappearance along with the worldviews and cultural traits associated with traditional nautical practices in Paraguay.

Hydrographic network and nautical routes

Velázquez (1973) proposes that Paraguayan history—across its economic, social, cultural, and political dimensions—cannot be seriously addressed without considering navigation and its connection to the Río de la Plata Basin. This is not only as a factor that interconnects the region hydrographically (Figure 2), but also within a geopolitical and sociocultural framework; Paraguay is the only country that lies entirely within the basin. The basin spans a total of five countries: Argentina, Brazil, Bolivia, Paraguay, and Uruguay, encompassing a variety of ecosystems such as the Atlantic Forest, the Cerrado, the Gran Chaco, the Esteros (wetlands), the Pantanal, the Grasslands, and the Paraná Delta (CIC, 2017).

The Río de la Plata Basin is the fifth-largest hydrographic basin in the world, covering approximately 3,200,000 km². Its main tributaries include the Paraguay, Paraná, Pilcomayo, Bermejo, Uruguay, Iguazú, and de la Plata rivers (Andino, 2018). The current territory of Paraguay is part of four of the seven sub-basins that make up this basin: to the northeast, the Upper Paraguay sub-basin, which includes the Pantanal and Gran Chaco ecosystems; to the southwest, the Lower Paraguay sub-basin; to the south, the Lower Paraná sub-basin; and to the northeast, the Upper Paraná sub-basin, which includes much of the Atlantic Forest of Alto Paraná (CIC, 2017).

[3] The term "colloquial" is used to describe expressions, linguistic turns, or aspects of language that are used informally or familiarly within a local context.

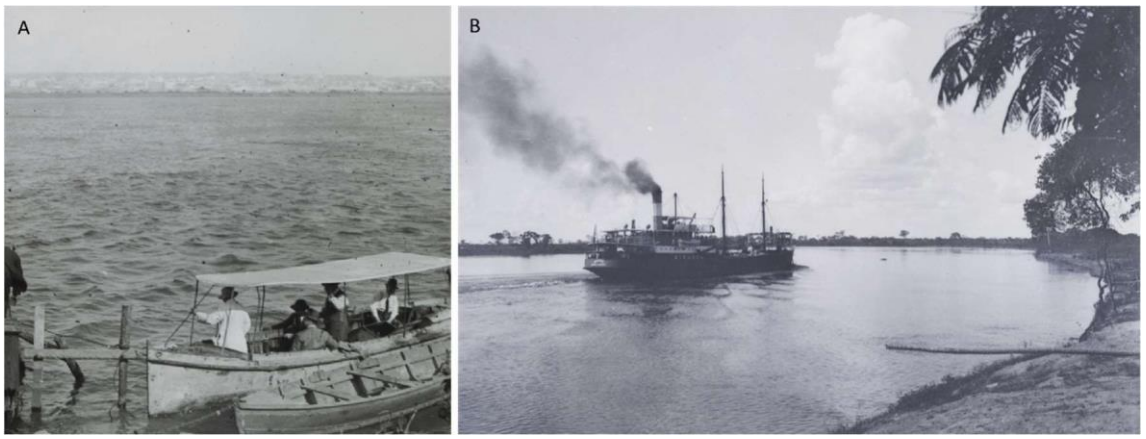

Figure 1: **A/** Anonymous photograph depicting small keelboats dated between 1900 and 1924, titled *"Paraguay – Asunción – View from the Other Side of the River"*, preserved at the Musée du Quai Branly – Jacques Chirac (MQB), Paris, with inventory number **PV0065357**. **B/** Steamship *"Miranda"*, photograph by Robert de Wavrin taken in 1924 in Paraguay, preserved at the Royal Museums of Art and History, Brussels.

Paraguay is geopolitically divided into two regions, with the Paraguay River serving as the natural divider between them. To the north lies the Western Region, or Chaco, bounded by the Paraguay River to the east and the Pilcomayo River to the west, sharing borders with Argentina, Brazil, and Bolivia. In the Eastern Region, the Paraguay and Paraná rivers act as natural borders with Argentina and Brazil. The predominant ecosystem in this region is the Upper Paraná Atlantic Forest (BAAPA), whose main remnants are currently found in the southeast along the banks of the Paraná River. Due to the construction of hydroelectric dams between the 1970s and 1990s along its course, this river has been partially transformed into a reservoir, resulting in changes to the natural landscape—especially with the disappearance of the Guairá and Apipé Falls (Matteucci et al., 2004).

Waterways and nautical routes are fundamental for conducting archaeological studies in Paraguay. Systematic research carried out in the area so far has taken into account the close relationship of pre-Hispanic populations with rivers, streams, wetland systems, waterfalls, and other environments (Lamenza et al., 2019; Alfonso Monges & Lamenza, 2021).

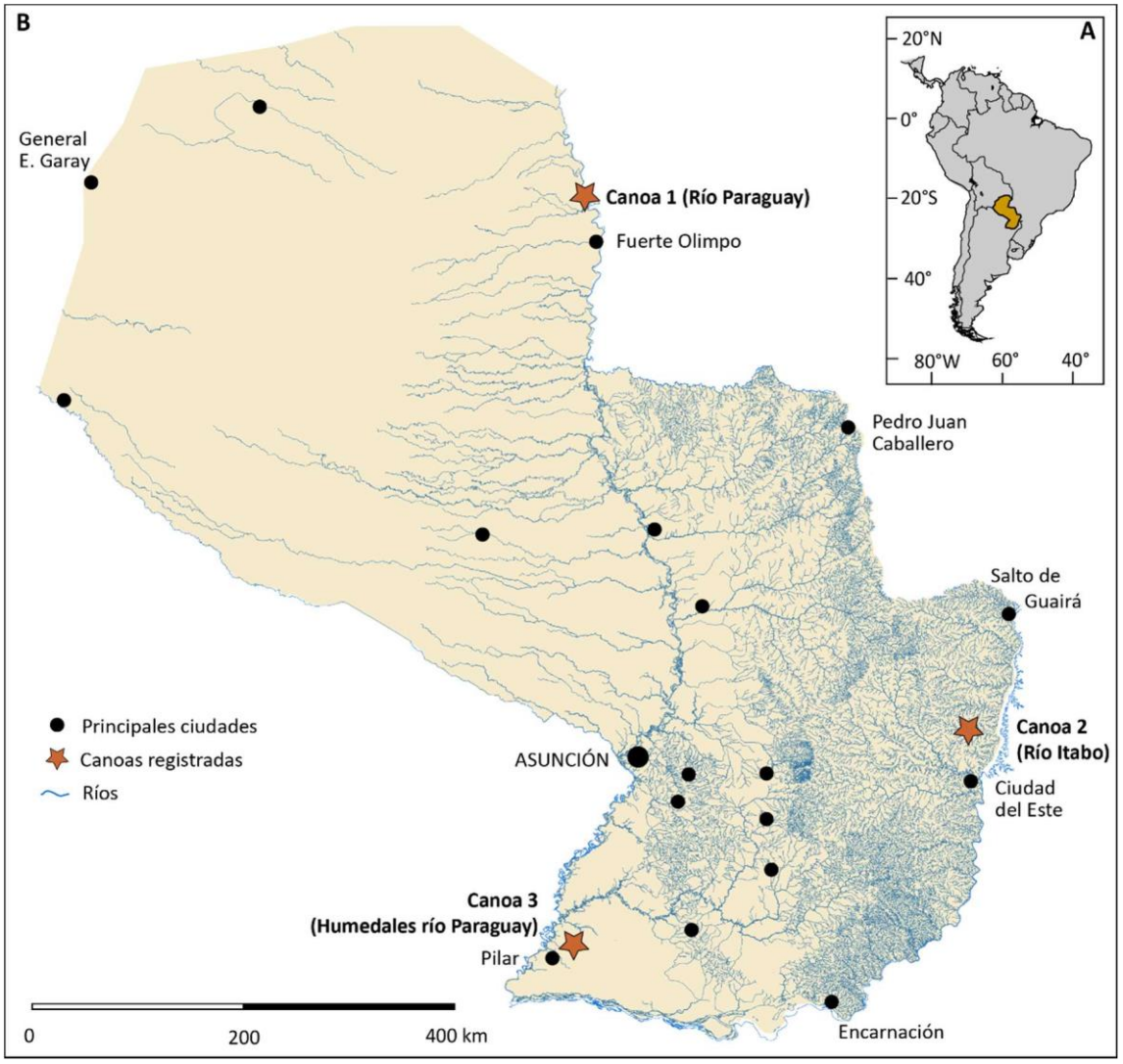

Figure 2: A/ Location of Paraguay in South America.
B/ General map of Paraguay showing the location of the main Paraguayan cities and the origin sites of three of the four recorded canoes, in relation to the country's hydrographic network. The current territory of Paraguay is part of four of the seven sub-basins that make up the Río de la Plata Basin. Hydrographic map credit: Ministry of Environment and Sustainable Development of Paraguay (MADES).

Archaeological evidence and Paraguayan ethnic groups

At the archaeological level, evidence has been found in Paraguay of the presence of hunter-gatherer groups (Pallestrini & Perasso, 1986; Morais & Perasso, 1984; Pallestrini & Perasso, 1989; Alfonso Monges, 2018), with the production of lithic materials and bone tools, in some cases also associated with rock art (Lasheras et al., 2011), as well as ceramic-producing societies with characteristics linked to the Pantanal-Chaco archaeological entity (Lamenza et al., 2015), and Guaraní groups (Noelli, 2004; Bonomo et al., 2015).

The presence of Ge groups, although documented at the ethnohistorical level at least until the early decades of the 20th century in the Alto Paraná area, still lacks conclusive archaeological evidence (Alfonso Monges & Lamenza, 2021).

Archaeological evidence helps us understand the evolution of current ethnic groups, especially regarding Indigenous cultures and the cultural changes brought about by the Conquest. Currently, 19 ethnic groups are officially recognized in Paraguay, belonging to five linguistic families: Tupí-Guaraní, Enxet-Maskoy, Mataguayo, Zamuco, and Guaicurú (DGEEC, 2002). The Guaicurú family included the Payaguá, skilled navigators of the Paraguay River, who are frequently mentioned in 19th- and 20th-century sources (Schmidt, 1949; Alves de Arruda, 2018). They built dugout canoes of various sizes, preferably using timbó wood (*Enterolobium contortisiliquum*), a large tree with a straight trunk reaching over 30 meters in height and 1.6 meters in diameter (Aldazabal & Agueda Castro, 2000:191). The use of timbó wood for boatbuilding has continued for at least six centuries (Bonomo & Ramos, 2021:21). According to Susnik (1976), "the life of the Payaguá was the canoe," which served not only a practical role as a means of transport but also played a part in funerary rituals, carrying the deceased to their final resting place. In cases of separation, the canoe became the property of the woman and her children to ensure the family's survival. The Conquest and the influence of colonial society brought a drastic change to the canoeists' way of life.

Among the Guaraní groups, especially along the Paraná River, canoes were essential for transportation and fishing, and in some cases were repurposed for ceremonial use. The raw materials varied depending on the size and purpose, with records of cedar (*Cedrela fissilis*), yvyra pytã (*Peltophorum dubium*), and in some cases the aforementioned timbó (Ambrosetti, 1894). Juan Bautista Ambrosetti, in his travels to the Alto Paraná region in the late 19th century, described the use of canoes both on the main course of the Paraná and its tributaries, among both Guaraní and Ge groups, in stark contrast to the steamships (Figure 1, B) that navigated the river at the time, and the so-called "jangadas"—rafts made of logs floated downriver to sawmills (Ambrosetti, 1894; Ambrosetti, 2008).

Prehispanic navigation in Paraguay

The study of pre-Hispanic navigation in Paraguay is still in its early stages, which is paradoxical considering the great importance attributed to waterways. A review of historical sources reveals accounts of intense mobility along the Río de la Plata at the beginning of the colonial period, using various resources and types of vessels, including monoxylous canoes (Saccone, 2020a). Among primary sources, colonial-era documents and the annual letters of Jesuit missionaries provide firsthand information.

Another source of information on pre-Hispanic navigation in Paraguay comes from travel reports from the 18th to 20th centuries, mostly written by foreign explorers. Many of these include graphic material and some 20th-century photographs (Figure 3), as well as ethnographic or archaeological objects—among them canoes, paddles, and fishing gear preserved in Paraguayan museums. These three sources are complemented by ethnographic studies conducted in the first and second halves of the 20th century, particularly those by Max Schmidt and Branislava Susnik.

The introduction of new types of vessels from the 16th century onward brought substantial changes to nautical practices and the material culture associated with water in South America. Rafael Eladio Velázquez (1973) illustrates that between the 16th and 18th centuries, navigation and river routes were already being transformed to meet new needs, with the use of two types of vessels for trade: boats and rafts (Velázquez, 1973:56). Nevertheless, in many cases, ancestral practices persisted—at least to some extent—at the local level until the mid-20th century (Delaere, 2019; 2020; Delaere et al., 2023). As a result, narratives, archives, and early 20th-century photographs become even more valuable for expanding our knowledge of canoes and traditional or pre-contact navigation in general.

Susnik informs us, for example, that "to make canoes, the Payaguá used the wood of the timbó tree, taking advantage of the eastern bank of the Paraguay River for this purpose. Periodically, groups of Payaguá men would settle in the timbó groves and dedicate themselves to canoe-making, using nothing more than their stone axes and fire to help shape the monoxylous canoes. The canoes were between 3 and 7 meters long and about 70 centimeters wide, with very pointed bows and sterns. Large war canoes could carry 6 to 9 rowers, and as excellent canoe-warriors, they also knew how to use the canoes as 'shields' […]. The simple canoes used by the Payaguá for river fishing were smaller; the paddles were lance-shaped, and the handles were often artistically carved" (Susnik, 1976:65).

Figure 3: **A/** Postcard from the first half of the 20th century titled *"Paraguay. Indians"*, preserved at the Musée du Quai Branly – Jacques Chirac (MQB), Paris, with inventory number **PP0153500**. **B/** Photograph by Robert de Wavrin taken in 1924 in Paraguay, preserved at the MQB with inventory number **PP0153509**. **C/** Photograph by Claude Lévi-Strauss taken in 1935–1936 in the Alto Paraná department, preserved at the MQB with inventory number **PP0000419**.

In general terms, early chronicles from the 16th to 18th centuries and more recent ethnographic observations from the 19th and 20th centuries seem to agree on the existence of two types of canoes in Paraguay: large canoes "for war and racing," and small canoes "for fishing and transport" (Aldazabal & Agueda Castro, 2000:186). Additionally, there were rafts constructed by joining two large canoes with crossbars and a platform of interwoven reeds on top (Bonomo & Ramos, 2021:14). Ethnographic dugout canoes, no older than the last five centuries, are fairly common, while older specimens are rare (Saccone, 2020b:49). To date, the oldest dated specimen comes from Brazil and dates back to the 13th–14th centuries CE (Table 2, Bonomo & Ramos, 2021; Ríos et al., 2015). Although 16th-century European chronicles (e.g., Lopes de Sousa [1531] 1861, 48) mention that populations in the Río de la Plata basin had canoes up to 24 meters long, none of the recorded specimens to date exceed 10 meters in length, and most range between 4 and 8 meters (Table 2, Bonomo & Ramos, 2021).

While navigation and fishing are the most frequently mentioned uses of monoxylous canoes in the Río de la Plata, ethnographic sources from Paraguay confirm not only that the number of canoes per group was high, but also that their role within the community could be more complex and even central. Indeed, beyond the two primary functions mentioned, Susnik (1976) also refers to warfare, racing—potentially of initiatory or ritual nature—and funerary practices. For the Payaguá in particular, canoes were an integral part of their identity: each family unit owned its own canoe, and marriages were accompanied by the contribution of a new fishing canoe. Moreover, the vessels played other essential roles, such as in intra- or intergroup conflicts and during funerary ceremonies: "When a Payaguá died, his body was placed in a yô'ork, a canoe, and taken for burial on one of the islands of the Paraguay River, which served as permanent Payaguá cemeteries" (Susnik, 1976:65). Burying the deceased in a canoe not only illustrates the importance of this object within the community but also suggests that it played a fundamental role in the cosmogony and beliefs of these populations. Susnik adds: "A large canoe, filled with wild animal skins, cotton-woven blankets, wild rice from Alto Paraguay, and other trade goods, also symbolized 'Peace' […]" (1976:65).

Regarding races, the author informs us that: "canoe races were organized as inter-clan Payaguá competitions—mace fights—where the victors claimed ownership of the defeated group's entire stock of canoes." At this stage of research, we will not delve into the level of tension between groups or the degree of conflict in the region over the past centuries. However, it appears that canoes may have played a role in adolescent initiation rites or in "ritual wars" meant to reenact myths or resolve/decide conflicts and/or alliances in a relatively peaceful manner. Nevertheless, it is true that canoes and paddles were useful and used as weapons during warfare. Paul Coudun informs us that these populations "handled their sharpened paddles like spears, which could become deadly weapons in skilled hands" (Coudun, 1945:29), and Susnik notes that the "canoe-warriors knew how to use the canoes as 'shields' as well" (Susnik, 1976:65).

According to Susnik (1976), the arrival of European settlers reduced these populations' ability to build and maintain enough canoes, gradually contributing to the loss of mobility, practices, and ultimately, identities—especially for the Payaguá canoe culture, known for its nautical tradition.

Dugout canoes in Paraguay

A dugout canoe is, by definition, a vessel made from a single piece of wood, regardless of its shape, dimensions, or manufacturing techniques. The use of canoes is a universal phenomenon, as dugout canoes are found in nearly every part of the world.

Although several dugout canoes have been documented in the Río de la Plata basin or neighboring hydrographic basins—particularly in Brazil (e.g., Souza & Lins, 2016), Argentina (e.g., Bonomo & Soledad Ramos, 2021), and Uruguay (e.g., Saccone, 2022)—there are still no formal records of the specimens currently located in Paraguayan territory.

At the current stage of research, we can identify at least five dugout canoes in Paraguay that are preserved in museums or cultural centers: one that is part of the collection of the Dr. Andrés Barbero Ethnographic Museum (canoe 1), another housed at the Cultural Center of the Republic – El Cabildo (canoe 4), both in Asunción, and a third at the Cabildo Museum in the city of Pilar (canoe 3). This record is complemented by another specimen located in the city of Hernandarias at the ITAIPU Tierra Guaraní Museum (canoe 2), and one more at the Municipal Museum of Villarrica Maestro Fermín López (canoe 5). This article focuses on the documentation and study of the first four canoes (Table 1).

	Provenance	Year of adquisition	Context	Size (m)	Conservation location
Canoe 1	Dpto. de Alto Paraguay	1934	Etnografic	3.4 x 0.57	Museo Etnográfico Dr. Andrés Barbero
Canoe 2	Dpto. de Alto Paraná	1979	Arcaheological	4.48 x 0.39	Museo de Itaipú Tierra Guaraní
Canoe 3	Dpto. de Ñeembucu	2020	Archaeological / Etnografic	3.1 x 0.61	Museo Cabildo de Pilar
Canoe 4	Dpto. de Alto Paraguay	No data	Etnografic	5.75 x 0.65	Centro Cultural de la República - El Cabildo

Table 1: Short table of 4 canoes preserved in Paraguay

Canoe 1 is housed at the Dr. Andrés Barbero Ethnographic Museum in Asunción and was donated by Mrs. M.F. Casatti in 1934 (Figure 4, A). Its inventory number is E-329/330 (Record No. 138). It is a dugout canoe made of timbó wood (*Enterolobium contortisiliquum*), measuring 3.4 meters in length and 0.57 meters in width. The inventory record notes that this canoe, also referred to as a "cachibeo", was found and acquired from a Yshir Chamacoco group in the Alto Paraguay Department, but it is believed to have originally been made by the Payaguá, as "its typology

corresponds to that of canoes made by the Payaguá, a canoeing group from the colonial era, now extinct."

The canoe comes from communities located along the Paraguay River, although its exact origin is not specified. It is accompanied by a 2.66-meter-long paddle.

An iron nail is horizontally embedded in the bow of the vessel, and a bench seat has been carved into the wood at the stern. The bottom is deteriorated and patched on the outside with iron plates, indicating a repair. Suspended above the canoe is a traditional fishing net, and surrounding it are other implements such as harpoons and paddles. The bench at the stern is carved directly from the tree trunk.

Canoe 2 is located at the Itaipú Museum – Land of the Guaraní, in the city of Hernandarias. It was discovered in 1979, covered in sediment on the banks of the Itabó River in the Alto Paraná Department, during flora and fauna studies conducted prior to the construction of the Itaipú Dam. This specimen, like the next one, has an archaeological origin. It is a dugout canoe made of wood, measuring 4.48 meters in length and 0.39 meters in width. Carving marks are still visible on the interior walls and bottom of the vessel. One of the edges shows damage from cuts made with an axe after its discovery. The extremely narrow width of the canoe suggests that it was navigated while standing.

In the museum, the canoe is displayed in a themed diorama dedicated to Guaraní fishing, although the Itabó River area was also part of the territory of groups from the Ge linguistic family—specifically the Ingaín, as referred to in period literature, though some texts also refer to them as Guayaná (Bertoni, 1920; Noelli & Souza, 2017).

Figura 4: Orthonormal photogrammetry of: A/ Canoe No. 1 (*Dr. Andrés Barbero Ethnographic Museum*) and B/ Canoe No. 3 (*Cabildo Museum of Pilar*). They measure 3.4 m and 3.1 m in length, respectively.

Canoe 3 is located at the Cabildo Museum of Pilar, in the Ñeembucú Department. It was donated by the Antola family in 2018, having been found in the town of Tacuaras, in the same department, submerged under a meter of water in a small lagoon on the family's property, less than 15 km from the Paraguay River. It is important to note that this region is known for its abundance of wetlands. This is a dugout canoe made of wood, measuring 3.1 meters in length and 0.61 meters in width. The canoe is very sturdy and features an iron ring on the bow (Figure 4, B). The interior base of the canoe shows longitudinal and oblique incisions. According to museum staff, these incisions help reduce slipperiness, as the people who operate these canoes do so standing, using a long wooden pole that nearly touches the bottom as a paddle. The shape of the canoe follows the natural form of the tree trunk from which it was carved, and the bow and stern are not aligned on the same axis. In Ñeembucú, this type of vessel is still used today by locals to navigate the wetlands.

Canoe 4 is currently housed at the Cultural Center of the Republic – El Cabildo, on loan for exhibition as part of the ethnographic collection of the Guido Boggiani Ethnographic and Archaeological Museum, specifically the "Chamakoko" collection. It is a dugout canoe with an almost elliptical shape, flat bottom, and raised bow and stern. This canoe comes from communities located on the right bank of the Paraguay River in the Alto Paraguay Department, although its exact place of origin is unknown. It is accompanied by a wooden paddle. The canoe is made of wood and measures 5.75 meters in length and 0.65 meters in width. Among all the canoes recorded so far, it is the largest. It is notable for having two wooden benches carved directly from the tree trunk—one at the bow and one at the stern. In a display case next to the canoe, other navigation-related items can be seen, such as paddles of various sizes. At the time of documentation, the museum was closed to the public due to renovations. The objects on display in the room did not have individual labels, but there was a general infographic about the collection. Regarding the canoe, the same information sheet mentions the types of wood used to make such vessels and specifies that the paddles are made from the wood of the tree known as Achyro or trébol in Spanish (*Amburana cearensis*).

Discussion

For the first time—beyond a few rare ethnohistorical records, old photographs, and to a lesser extent bibliographic sources—concrete data is now available on monoxylous canoes in Paraguay. First, it is observed that the four canoes studied are very different from one another, which aligns with observations made in neighboring countries within the Río de la Plata basin, particularly in Uruguay (Saccone, 2022: 8).

It appears that there is no predefined model for canoes; beyond the cultural codes related to technique, their construction is influenced by available wood, tools, intended use, and environment—from rivers to shallow wetlands. Secondly, we observe that all four specimens are made from a single piece of wood, hollowed from a single trunk; no additional parts have been added, unlike an example from Uruguay where the trunk was hollowed at the ends and completed with V-shaped planks (Saccone, 2022).

The main difference in the local corpus lies primarily in their dimensions. There are at least two types of canoes: (i) small canoes, for one to three people (canoes 1 and 3, Figure 5), and (ii) larger canoes, capable of carrying six to eight people (canoes 2 and 4, Figure 5), as also illustrated in the photographs in Figure 3.

This distinction may already indicate two different types of use, especially since the two examples from the Alto Paraguay Department—canoes 1 and 4—belong to the first and second categories respectively, ruling out any regional particularism. However, only canoes 1 and 4 have benches, carved directly from the tree trunk: one bench at the rear for canoe 1, and two benches for canoe 4, one at the front and one at the rear. The canoes with benches in our corpus differ in size, indicating that the presence of a bench is not determined by the size of the vessel. Yet the fact that both come from the same region could suggest a potential regional particularity.

The position of the paddlers—standing or seated—is documented in the region. The canoes from the Paraná area, in both the Ñeembucú (canoe 3) and Alto Paraná (canoe 2) examples, are noted for using heavier woods and being narrower, likely because they were operated by a person standing.

Figure 5: Orthonormal photo of all 4 canoes, viewed from above

For the first time—beyond a few rare ethnohistorical records, old photographs, and to a lesser extent bibliographic sources—concrete data is now available on dugout canoes in Paraguay. Firstly, it is observed that the four canoes studied are very different from one another, which aligns with observations made in neighboring countries within the Río de la Plata basin, particularly in Uruguay (Saccone, 2022: 8).

It appears that there is no predefined model for canoes; beyond the cultural codes related to technique, their construction is influenced by the available wood, tools, intended use, and environment—from rivers to shallow wetlands. Secondly, all four specimens are made from a single piece of wood, hollowed from a single trunk; no additional parts have been added, unlike an example from Uruguay where the trunk was hollowed at the ends and completed with V-shaped planks (Saccone, 2022). The main difference in the local corpus lies in their dimensions. There are at least two types of canoes: (i) small canoes for one to three people (canoes 1 and 3, Figure 5), and (ii) larger canoes that can carry more people, such as six to eight (canoes 2 and 4, Figure 5), as also illustrated in the photographs in Figure 3.

This distinction may already indicate two different types of use, especially since the two examples from the Alto Paraguay Department—canoes 1 and 4—belong to the first and second categories respectively, ruling out any regional particularism. However, only canoes 1 and 4 have benches, carved directly from the tree trunk: one bench at the rear for canoe 1, and two benches for canoe 4, one at the front and one at the rear. The canoes with benches differ in size, indicating that the presence of a bench is not determined by the size of the vessel. Yet the fact that both come from the same region could suggest a potential regional particularity.

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Except for canoe number 2, which comes from an archaeological context, and possibly canoe 3, the canoes illustrated in this document are primarily of ethnographic origin and are not likely to be very old, although they are of Indigenous origin and manufacture. However, the presence of a nail in canoe number 1 and the iron ring on the bow of canoe 3 should not be exclusion criteria, as the oldest canoe found in Uruguay contains iron elements related to later repairs and is, in fact, the oldest dated canoe in Uruguay: 253 ± 20 BP (1645–1799 AD) (Saccone, 2022: 7, 10).

Of the museums visited, only canoes 1 and 4 had specific records and some contextual information regarding the exhibited canoes and their place of origin. Only general information was provided about their use, with no reference to their environmental or cultural context. The information related to manufacturing, uses, meaning, and other aspects included in this article was obtained through research from various sources and conversations with museum staff, who in most cases possess more data than what is presented to the public.

Photogrammetric surveys were carried out for all four canoes, and videos were later sent to museum staff for educational use.

Archeo-xylological studies are still pending to definitively determine the type of wood, as well as studies on the nautical characteristics of the canoes, the types of tools used in their construction, and AMS dating of the canoes. This would allow for the creation of a timeline associated with their manufacture and use. In this way, comparative studies could also be conducted with canoes found in other countries of the Río de la Plata Basin that have already been documented and published—

specifically in Argentina (Bonomo & Ramos, 2021), Uruguay (Saccone, 2022), and Brazil (Souza & Morais, 2016).

Conclusion

The archaeological and ethnographic analysis of monoxylous canoes in Paraguay has provided an initial glimpse into the region's nautical practices and their material culture. Although these vessels have been relegated to a more secondary role in daily life today, they remain fundamental witnesses to a time when river navigation was central to the communal life of the inhabitants of the central Río de la Plata basin.

It is important to remember that coexistence with an environment—and its natural and cultural components, which in Western culture are often perceived as separate—is, for Indigenous communities, deeply interconnected. As such, the use of flora and fauna as raw materials to create utilitarian objects also carries religious meaning within their worldview. This is why the extractivism of wood and forest resources, along with the introduction of mechanized agriculture, represented a drastic loss not only environmentally but also symbolically (Keller, 2010).

In some regions of the country, both in Indigenous and rural communities, the making and use of cachiveos (dugout canoes) remains a tradition, though it is declining due to the disappearance of certain tree species used as raw material. Consequently, traditional know-how is being lost with each passing generation. For this reason, archaeological or ethnographic canoes displayed in museums can partially recover this knowledge through contextual presentation—not only by analyzing their material characteristics but also by exploring their social, cultural, and religious significance.

The analysis of dugout canoes in the central Río de la Plata basin still lacks cultural contextualization. Navigation and fishing are relatively evident activities, especially in riverine environments, but other aspects—such as funerary practices or canoe races—remain poorly documented. Although archaeological data in this region is still quite fragmented, ethnohistorical sources and, to some extent, oral traditions—especially through myths—could provide insight into the role that canoes played in ancient local communities and the cultural contexts in which they were produced and used.

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Impact of climate change in the world important Neanderthal site in Krapina (Croatia)

Jurica Sabol (Croatia)[1]

Abstract

The famous paleolithic site Hušnjakovo in Krapina (Croatia), where the richest fossil collection of Neanderthal man in the world had been found, is the first paleontological monument of nature in Croatia. Next to the locality itself, the Museum of Evolution was opened more than five decades ago, and in 2010 the new permanent exhibition of Krapina Neanderthal Museum. Up to 100,000 visitors from all over the world visit the Hušnjakovo Museum and Site every year, which speaks of the exceptional importance of Neanderthal fossil remains found there. Due to the influence of climate change, the area has been under constant threat for the past seven years due to rockfalls and treefalls. According to the data of the State Hydrometeorological Institute, there has been a significant increase in the annual amount of precipitation, frequent changes in the regime of warm and cold currents, as well as the impact of global warming that has been observed. Therefore, it is extremely important to point out how climate change affects natural heritage, but also natural habitats. Given that we cannot reverse climate change, but can adapt to it, it is very important to take all safety measures to preserve protected natural areas so that these localities remain in such a state for future generations.

Keywords: Paleolithic, Neanderthal, museum, Climate change, Natural Heritage

[1] Director. Museums of the Croatian Zagorje. E-mail: jurica.sabol@mhz.hr

Resumen

El famoso yacimiento paleolítico Hušnjakovo en Krapina, donde se encontró la colección de fósiles del hombre de Neandertal más rica del mundo, es el primer monumento paleontológico de la naturaleza en Croacia. Junto a la propia localidad, hace más de cinco décadas se inauguró el Museo de la Evolución, y en 2010 la nueva exposición permanente del Museo de los Neandertales de Krapina. Hasta 100.000 visitantes de todo el mundo visitan cada año el Museo y Sitio de Hušnjakovo, lo que habla de la excepcional importancia de encontrar restos fósiles de neandertales. Debido a la influencia de los cambios en las condiciones climáticas, el espacio natural se encuentra desde hace siete años bajo constante amenaza por desprendimientos de rocas y caída de árboles. Según datos del Instituto Hidrometeorológico Estatal, se ha producido un aumento significativo en la cantidad anual de precipitaciones, cambios frecuentes en el régimen de las corrientes cálidas y frías y también se ha observado el impacto del calentamiento global. Por ello, es sumamente importante señalar cómo el cambio climático afecta al patrimonio natural, pero también a los hábitats naturales. Dado que no podemos cambiar el cambio climático, pero sí adaptarnos a él, es muy importante tomar todas las medidas de seguridad para proteger las áreas naturales protegidas para que estas localidades sigan preservadas para las generaciones futuras.

Palabras clave: Paleolítico, neandertal, museo, cambio climático, patrimonio natural

The prehistoric site Hušnjakovo in Krapina is the richest fossil site of Neanderthal man in the world and has been protected since 1961 as the first paleontological monument of nature in Croatia. Thanks to the monumental discovery of the great Croatian scientist, geologist and paleontologist, Dragutin Gorjanović-Kramberger, Krapina left a permanent mark on the world scientific map. In a systematic research that lasted for six years (1899 - 1905) at Hušnjakovo site, in the yellow deposits consisting of Miocene sandstones, Gorjanović-Kramberger collected about 900 pieces of fossil remains of Neanderthals, about 1,200 pieces of stone tools and about 2,500 remains of animal bones whose age is estimated at about 125,000 years (Radovćić, 1988). The collection of the Krapina diluvium is rich in numerous animal fossil remains. Among the most numerous are the fossil remains of large mammals such as the cave bear, warm-season (forest) rhinoceros, steppe bison, giant deer, proboscids, red deer, elk, etc. Numerous fossil remains of animals such as gray wolf, leopard, lynx, hyena and many others were found (Miracle, 2007).

Fossil remains of Krapina Neanderthals collected on Hušnjakovo hill in Krapina are preserved today in the Croatian Museum of Natural History in Zagreb. Precisely because of the abundance of the remains, it is the largest and richest collection of Neanderthals in the world. The sub-collection "Homo neanderthalensis" contains 959 items, including the most numerous remains of fossil teeth - 281 fossil teeth. The sub-collection contains about three hundred different skull and jaw parts and about 400 bones of other body parts. In addition to the known skulls (Krapina 1, 2, 3, 4, 5), the bones of the skull are represented by frontal, parietal and occipital bones and a rich collection of auditory ossicles or ear bones. There are upper and lower jaws in larger numbers. The sub-collection contains 61 vertebrae, 56 ribs, 22 shoulder blades, 15 clavicles, 21 humerus, 30 forearm bones and 58 hand bones. Pelvic bones, femur, fibula and lower leg, as well as the heel and foot bones can also be found. The surface of the Neanderthal bones is well preserved, but most of the findings are very fragile and fragmented. Although not a single complete skeleton has been identified in the collection itself, it contains various parts of skeletons of both sexes, aged from 2 to 27 years, and based on the analysis of their teeth, it has been scientifically proven that between 75 and 82 people lived in Krapina. The variability and abundance of the Krapina Diluvium Collection is an inexhaustible source for understanding the life and culture of the Neanderthals.

At the end of the 1960s, the revitalization of the Hušnjakovo locality began, which included the arrangement of paths, the installation of fences, and the installation of the first reconstructions of Neanderthals and Pleistocene animals. However, the yellow Miocene sandstone that makes up the entire site was already very unfavorable for landscaping and accepting numerous visitors. The terrain is additionally reforested with coniferous tree species, moss is planted, and the parts of the sandstone that are prone to landslides are being additionally reinforced with wooden trellises. Sandstone is a type of sedimentary rock that is very susceptible to atmospheric influences and can cause serious problems due to heavy rainfall and strong winds.

According to the Köppen climate classification, the Krapina-Zagorje County belongs to the continental climate with the designation Cfwbx, which means a warm-moderately rainy climate. The temperature of the coldest month ranges between -3 °C and 18 °C, while summers with the monthly temperature of the warmest month are below 22 °C. Precipitation is mostly uniformly distributed throughout the year, and the cold part of the year is considered the driest. The maximum amount of precipitation that appears at the beginning of the warm part of the year is joined by the maximum in late autumn (IPCC, 2022).

Today, human influence on the climate system is clear, and climate change has a wide-ranging impact on people and nature. There is irrefutable scientific evidence of global warming: the atmosphere and oceans have warmed, the amounts of snow and ice have decreased, and sea levels have risen. It is evident that climate change is ongoing and it is not possible to completely stop it, but it is necessary to act onit. Along with global warming, climate change is also characterized by the frequency of extreme events, such as floods and droughts.

The most well-known indicator of climate change or global warming is the increase in annual air temperature. It is assumed that the warming that manifests itself through an increase in the average annual air temperature is a consequence of changes in the frequency of temperature extremes, i.e. changes in temperature indices. It is to be expected that warming manifests itself through an increase in the number of days for "warm temperature indices" and a decrease in days of "cold temperature indices". During the recent 50-year period (1961-2010), air temperature trends (mean, mean minimum and mean maximum) show warming throughout Croatia. Annual air temperature trends are positive and significant, and the changes are greater in the continental part of the country than on the coast and in the Dalmatian interior.

The observed warming is also reflected in all indices of temperature extremes by positive trends in warm temperature indices (warm days and nights and duration of warm periods) and by negative trends in cold temperature indices (cold days and cold nights and length of cold periods). At the meteorological station Krapina in the period 1994 - 2020, a trend of increasing average annual air temperature can be observed, with positive and negative deviations from the average, as well as an increase in the number of hot days. According to the analysis of DHMZ in the period 1981-2000. The highest number of days with hail was recorded in two areas; around the Slovenian border, Ivanščica and Medvednica, and another smaller area around the village of Pila in the municipality of Stubičke Toplice. At the meteorological station Krapina, the average annual number of days with solid precipitation is 6.3 days. Hail usually comes with stormy and sometimes hurricane-like winds, which contributes to greater damage to property, agricultural and forestry assets, construction facilities, the economy, but also to cultural and natural heritage.

According to the results of climate modeling, in the next 50 years in the entire area of NW Croatia, the following scenario can be expected: an increase in the average annual air temperature up to 1.1 °C - 1.2 °C, an increase in temperature extremes is expected, i.e. an increase in hot days by 7 -10 days a year and an increase in days with warm nights by 4-6 days a year compared to today. For the minimum temperature, the largest projected increase in the period 2011 – 2040 is over 1.5 °C in winter in northwestern Croatia. In the future climate period, an increase in the average annual air temperature is expected: up to 1.9 °C - 2.5 °C, and by 2070, an increase in hot days by 10-15 days per year and an increase in days with warm nights by 6-8 days per year.

According to current projections, an increase in annual precipitation of up to 5% is expected by 2040, which should not have a significant impact on the total annual precipitation. In northwestern Croatia, the signal of change is in the direction of a smaller increase in annual precipitation. By 2070, a further decrease in the average annual precipitation (up to about 5%) is expected, which will spread over almost the entire country, except for the northernmost and westernmost regions.

The consequences of the above-mentioned and evident changes in temperature and amount of precipitation did not bypass the Hušnjakovo prehistoric site in Krapina either. In May 2018, heavy rains and strong winds caused a state of emergency at the prehistoric site. The wind uprooted the trees, and the sandstone, soaked in large amounts of water, collapsed onto the access paths used by visitors during the tour of the Museum of Neanderthals in Krapina. Such an apocalyptic situation continues in the following years, especially in spring or early autumn. For this reason, it is evident that climate changes, especially changes in temperature and increase in precipitation, have a great impact on protected natural areas, and geo-hazards arise as a result. Therefore, it is necessary, first of all, to prepare geodetic works, engineering-geological, as well as construction procedures on the ground in order to proceed with the safety rehabilitation of the locality as soon as possible. In this way, a protected natural area would ensure the safety of visitors, but also the preservation of natural heritage for future generations. Precisely because of the world significance and importance of the locality Hušnjakovo in Krapina, the museum continues, for 52 years now, to contribute, not only to publicity, but also to the preservation of natural heritage of world importance.

Thus, in February 2010, in the immediate vicinity of the Hušnjakovo site, a new permanent exhibition of the Museum of Krapina Neanderthals was opened, which operates as one of the five organizational units (specialized museums) of the Museums of Croatian Zagorje. Due to its attractive display and unique architecture, the Krapina Museum tells a prehistoric story in a modern and contemporary way with the help of modern technologies and due to the large number of visitors, it is one of the most visited museums, not only in Croatia, but also beyond. Special attention is focused on children and young people, and occasional and seasonal educational programs are organized throughout the year, while the number of participants is increasing every year.

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Cultural events and sustainability: a link between past and contemporary issues, case study on the Grand Egyptian Museum and cosmopolitan museums

Niveen Algharbawy (Egypt)[1]

Abstract

This study aims to highlight the importance of cultural events attached to exhibitions that connect archaeological objects with contemporary issues and link them with sustainable development goals and climate action. This topic will be completely challenging. Management of such events in a fully organised way will be subject to discussion. National and international examples will be presented to reach a high-quality standard for such participation. Additionally, I will integrate archaeological objects and compare them with up-to-date issues to enhance the social understanding of a specific theme.

Keywords: Culture, Event, Sustainability, Social Science, Museum.

[1] Archaeologist and Marketing Specialist, Grand Egyptian Museum, Giza, Egypt. E-mail: niveenalgharbawy@gmail.com.

Resumen

Este estudio tiene como objetivo resaltar la importancia de los eventos culturales vinculados a exposiciones que conectan los objetos arqueológicos con las cuestiones contemporáneas y los vinculan con los Objetivos de Desarrollo Sostenible y la acción climática. Este tema será completamente desafiante. La gestión de tales eventos de forma totalmente organizada será objeto de discusión. Se presentarán ejemplos nacionales e internacionales para alcanzar un alto estándar de calidad para dicha participación. Además, integraré objetos arqueológicos y los compararé con temas de actualidad para mejorar la comprensión social de un tema específico.

Palabras clave: Cultura, Evento, Sostenibilidad, Ciencias Sociales, Museo.

Introduction

Museums are becoming increasingly important in the fight against climate change. They encourage intergenerational learning outside of the classroom and have affective social characteristics.

Event management is an exciting and continuously growing industry. It attracts people who possess creative talent and organisational skills. Cultural events can be fundamental in connecting the past and present as well as creating positive change in society by changing attitudes towards museums, which are not only a place for displaying objects but also a place that can facilitate social change.

Nowadays, in the field of museums, visitors tend to consult interactive and dynamic activities and not just receive information about the displayed objects. This shift applies to cultural events and their accompanying assets, as well as cultural organisations that provide many ideas that may help decide how to spend leisure time optimally.

Cultural events can be special and separate planned events that are also serious and related to specific messages. They can vary between outreach events, open-air events, special day events, gallery tours for exchanging ideas, conferences, concerts, museum nights, and more. Additionally, cultural events may be civic-oriented events, related to topics such as climate change and sustainable development goals (SDGs).

It is important to mention that museums are becoming increasingly important in the fight against climate change, particularly because they encourage intergenerational learning outside of the classroom and have affective social characteristics (Cameron, Hodge, & Salazar, 2013).

As environmental issues are related to human activities and museums play a societal role, it is important to examine the practices and approaches of museums in relation to the environment. (Sivrikaya & Güneröz, 2023)

As climate change is affecting every country on every continent, disrupting national economies and affecting lives—weather patterns are changing, sea levels are rising, and weather events are becoming more extreme (Goal, 2021)—the author will create SDG-related events and link them with climate action.

The context will be prioritised based on the importance of the topics that could be presented at the Grand Egyptian Museum (GEM).

Implementing SDG 11: Sustainable Cities and Communities: Futuristic Museum (The influence of museum design)

The first event that will be presented here is goal SDG #11, which is about creating sustainable development in cities, towns, and communities. The next event will present the Grand Egyptian Museum as a green building and link it with other futuristic international museums, revealing how architecture plays an essential role in planning, sustaining population growth, and tackling a number of social problems. It will demonstrate the impact of architecture not only on society at a high level but also on a personal level as well (Happy World Architecture Day, 2020). GEM won four ISO certificates of accreditation of international standards for environmental management systems.

The internal design of the Grand Egyptian Museum will be shown with an explanation of details of designs that preserve the environment, including the design of the ceiling, devices that maintain humidity, and modern devices and technology used in conservation labs to preserve archaeological objects.

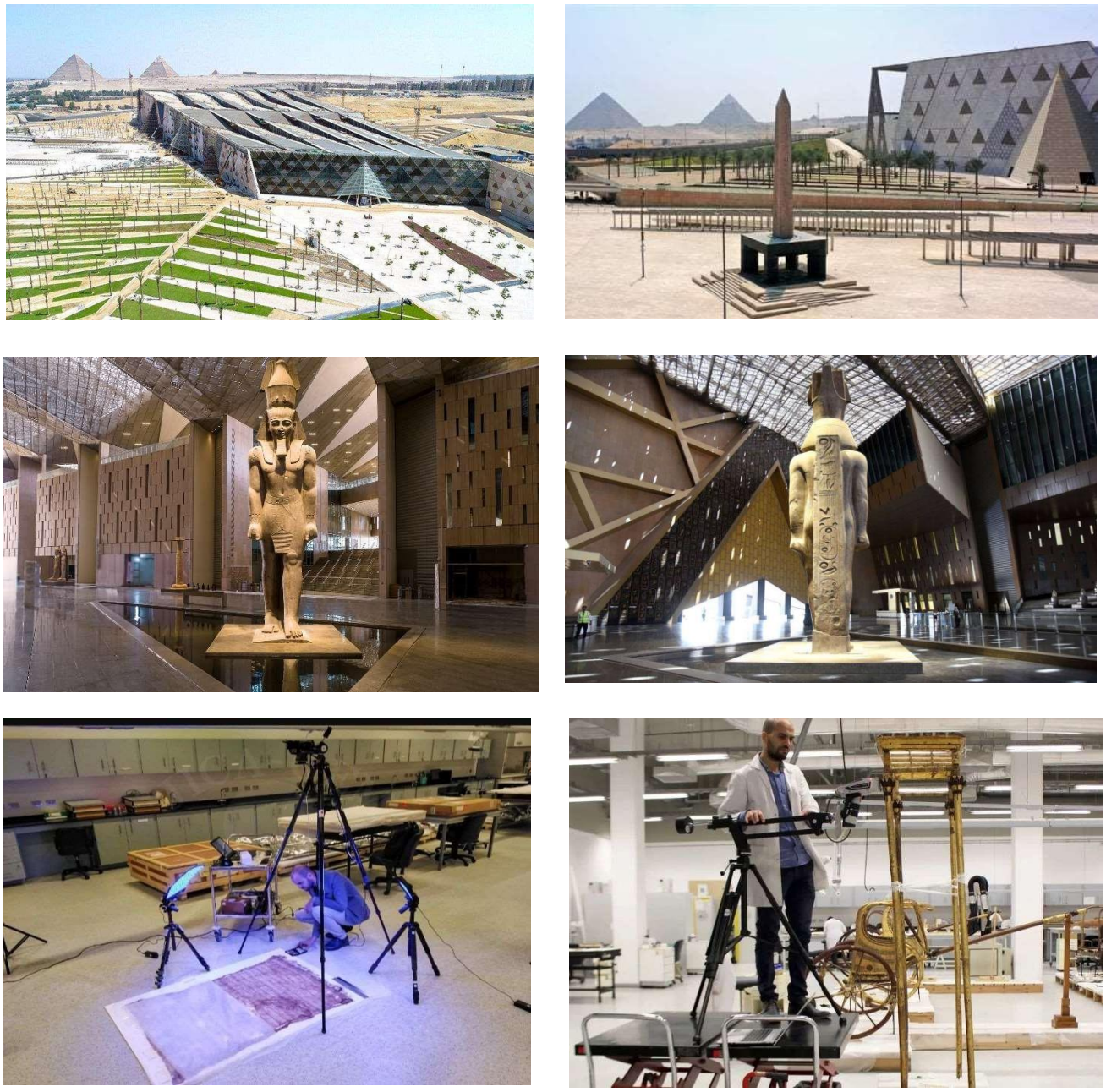

Figure 1: The external and internal design of the Grand Egyptian Museum shows details of designs that preserve the environment, including the design of the ceiling, devices that maintain humidity, and modern devices and technology used in conservation labs.

The next points will shape the event presented:

Event main information

Title: Futuristic Museum (The influence of museum design in climate)
Type of exhibitions/ event: Special Event
Venue: The Grand Egyptian Museum

Mission:

- Inspiring a local, national, and international community with the importance of museum design that could easily change the economy of the whole country in a positive way.
- Investigate how museum design can play a fundamental role in climate action.
- Highlight the most successful similar cases supporting museum design and climate action.

Time: Annually, on Architecture Day, World Environment Day and Earth Day.
Tools:

Lectures	Gallery talks	Documentary films	Ceremony Stands	Local handicraft shops
Guided tours	Conferences	Awards	Presentation	Round tale

The subject of discussion is "how museum design can play an important role in climate action, with a special focus on GEM designs."

Participants:

Architects	Economists	Businessmen	Engineers	Ambassadors
Investors	Planners	Developers	Museum experts	

Museums with inspiring architectural design (fundamental role in discussions)

Many museums all over the world, in the context of the museum sector, contribute to identifying, understanding, mitigating, and disseminating the effects of climate change, a subject that has been mobilising the scientific and political communities around the world (Vinicius Rosário da Silva & Ornstein, 2022).

The next few tables show several museums all over the world with futuristic designs. Not all of them can be classified as green buildings, but at least they are doing their best to save energy and reach global standards for climate preservation. Despite all the evolution in the use of techniques in the design of new buildings and in rehabilitation, intervention in all buildings is not an option due to the impossibility of changing the original architecture (Silva & Henriques, 2023).

Guggenheim Museums, which were built according to international standards to preserve the environment, will be presented to show how the design could change the economy of the entire city.

Museum	Location
Ordos Museum	China
Soumaya Museum	Mexico
Louis Vuitton Museum	France
Quai Branly Museum	France
Centre Pompidou-Metz	France
Taiyaun museum of Art	China
MAXXI - National Museum of 21st Century Art	Rome, Italy
Mobile Art Chanel Contemporary Art Container	Hong Kong, Tokyo, New York
Zentrum für Kunst und Medien (ZKM)	Karlsruhe, Germany
Jewish Museum	Berlin, Germany
Hanoi Museum	Vietnam
Milwaukee Art Museum	United States of America
Museum of Human Evolution	Burgos, Spain
German Oceanographic Museum	Germany
Musee des Confluences	France
Porsche Museum Stuttgart	Germany
Design Museum	United Kingdom
Mercedes Benz Museum	Germany

Table 1: summary of museums with inspiring international architectural museum design will be presented.

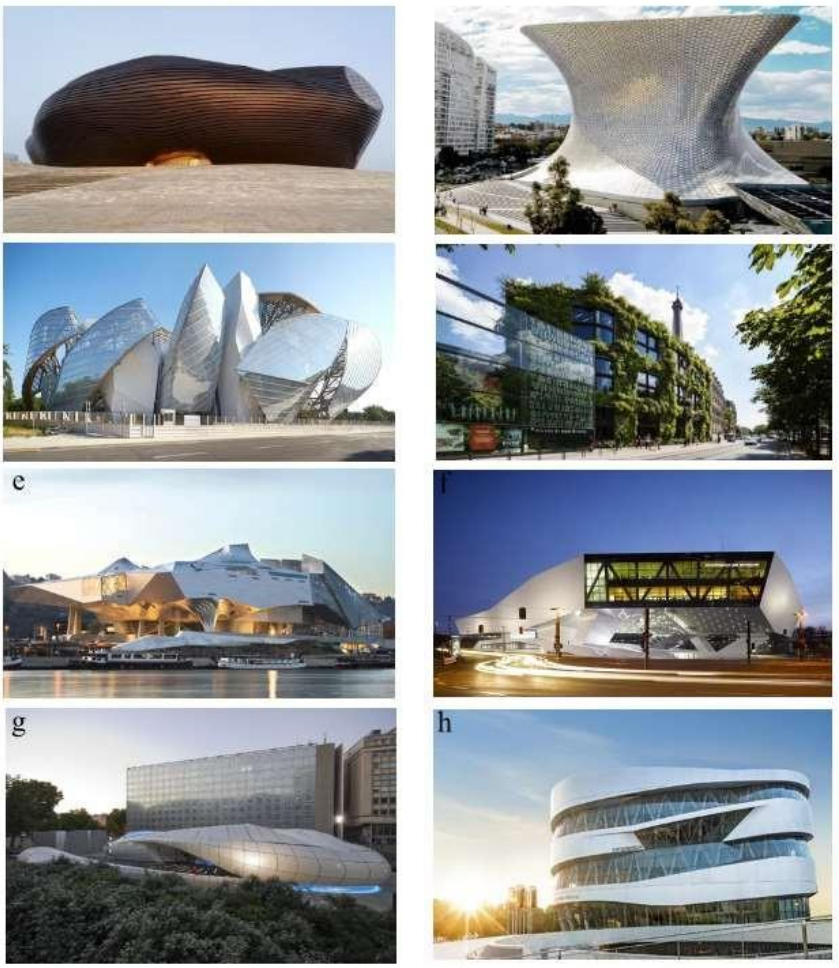

Figure 2: a- Ordos Museum, China (Ordos Museum by MAD, 2021) ; b- Soumaya Museum, Mexico (Museo Soumaya Plaza Carso, 2021); c- Louis Vuitton Museum, France (Beautiful building, 2021); d- Quai Branly Museum, France (Discover, 2021); e- Musee des Confluences, France (Lyon: réouverture, 2021; f- Porsche Museum, Germany (Porsche Museum, 2021); g- Mobile Art Chanel Contemporary Art Container. Hong Kong, Tokyo, New York (Hadid, 2021); h- Mercedes Benz Museum, Germany (Mercedes-Benz Museum Stuttgart, 2021)

Guggenheim Museums	
Guggenheim Museum	Bilbao, Spain
The Guggenheim Guadalajara in Guadalajara	Mexico
The Deutsche Guggenheim	Berlin, Germany
The Guggenheim Hermitage Museum	Las Vegas, Nevada,
The Solomon R. Guggenheim Museum	New York, United States
The Guggenheim Abu Dhabi	United Arab Emirates

Table 2: Summary of Guggenheim Museums in the world

Figure 3: Guggenheim Museum, Bilbao, Spain (The building, 2021)

Implementing SDG 16: Promote Just, Peaceful and Inclusive Societies

Considering that climate change is a vast, complex phenomenon impinging on biological and social life and is one of the most serious global threats facing the world (Cameron, 2012), the second event will serve SDG # 16, which is about creating an event based on peace and illustrating different models of peace and conflict and its impact on climate action.

The next point will describe the event presented:

Event main Information

Title: Power of the peace
Venue: The Grand Egyptian Museum in collaboration with Egyptian National Military Museum
Mission:

- It aims to inspire a local, national, and international culture of peace by displaying peace- and war-related material.
- The exhibits and programs will be designed to educate people of all ages about nonviolent responses to conflict and its effect on climate change.

Tools: The tools will be mostly similar to all themes and include:

Lectures	Gallery talk	Documentary films	Ceremony Stands	Local handicraft shops
Guided tours	Conferences	Awards	Presentation	Round tale

The subject of discussion: is "The Role of Museums in preventing war and promoting historical truth and Reconciliation".

Participants:

Veterans	Economists	peace experts	politicians	Ambassadors
Investors	youth	war victims	Museum experts	

Using SDG 17 to revitalize the Global Partnership

In this event, a wide-ranging collaboration with international organisations will be conducted, such as:

Nobel Peace Center:

This organisation holds public events to celebrate and share achievements awarded the Nobel Prize in science, literature, and peace. (Exhibitions, 2021). Additionally, they recognised climate change as the world's major challenge of the early 21st century, and it is a clear recognition of their interest in slowing climate change.

Figure 4: The Nobel Peace Center (left), and Nobel Prize Museum (right), Stockholm, Sweden, 2021

The United Nations Educational, Scientific, and Cultural Organization (UNESCO)

UNESCO is fully committed to addressing the impact of climate change on culture, and to enhancing the potential of culture for global climate action.

The International Network of Museums for Peace (INMP)

It aims to build a global culture of peace as well as creating several programs in different fields about climate change.

Peace Museums

There are almost 53 peace museums: 20 in Europe, 17 in Japan, seven in the United States, and nine in other countries. In addition to functioning as a traditional museum that displays peace-related objects of permanent value, it serves as an activity center for those who seek a community of peace.

Museum	Country
Dayton International Peace Museum	United States
University of Ulster Ahgee College	Northern Ireland
The Fukuromachi Elementary School Peace Museum	Japan
Yser Tower	Belgian
The Kyoto Museum for World Peace	Japan
Norwegian Nobel Institute	Norway
Yi Jun Peace Museum	Netherlands

Table 3: summary of peace museums in the world

Figure 5: Peace Museums: a- Dayton International Peace Museum, Ahgee, College, United States (What to know about the Dayton International Peace Museum, 2021); b-University of Ulster, Northern Ireland (Magee campus, 2021); c- The Fukuromachi Elementary School Peace Museum, Japan (Fukuromachi Elementary School Peace Museum, 2021); d- Yser Tower – Belgian (Yser Towers, 2021); e- The Kyoto Museum for World Peace, Japan (Kyoto Museums of World Peace Ritsumeikan; f- Norwegian Nobel Institute, Norway (The Norwegian Nobel Institute, 2021)

In Egypt, we have a similar case that could be presented as a peace museum. It is real evidence that shows the dark effects of the conflict. It is Bahr ElBaqar Primary School.

Figure 6: Bahr El-Baqar Primary School, Egypt (Bahr El Baqar Primary School, 2021)

SDG 12: Ensure sustainable consumption and production patterns

Of course, many museums are engaging deeply with the climate emergency rather than simply protecting their contents from the impending threat of climate change. Many museums are actively engaged in protecting the environment, both in their day-to-day operations (cafés, buildings, and estates) and in their cultural events to raise awareness of the topic (Harvey, 2023).

This will be shown in the third event that serves SDG # 12, which is about damage caused by overconsumption and waste. It will show how waste can be a disaster for the climate. Then a solution will be figured out—to create beauty from waste—by presenting international cases to raise community awareness of reproduction as well as encourage recycling behaviour.

The next points will shape the event presented:

Event main information

Title: Damage & Beauty (Beauty of the Waste)

Mission

- Raise awareness about unexpected damage we could cause accidentally and how waste materials could be a disaster for the climate.
- Create a series of installations of domestic objects using recycling.
- Understand how this waste material can be transformed into installations of innovative new objects.

Tools

Building models	Gallery talks	Documentary films	Ceremony Stands	Local handicraft shops
Guided tours	Conferences	Workshops	Presentation	Round tale

Participants

Craftsmen	Economists	Artisans
Environmental conservation organizations		

Museum's International participation in recycling

Here are some examples that show international participation in different museums that serve the same topic and will be presented as inspiring work to support the case:

Science and Technology Museum, Shanghai

Visitors view an installation of artwork made of plastic waste. The artwork, made of nearly 20,000 recycled plastic products, is displayed. (Plastic art goes, 2021)

Figure 7: Plastic exhibition, Science and Technology Museum, Shanghai (Plastic art goes on show, 2019)

Singapore Art Museum, Singapore

In this exhibition, more than 20,000 pieces of waste plastic - from water bottles and plastic bags – is presented. It aims to make the audience feel as if they are drowning in a sea of trash. (Imaginarium, 2016).

Figure 8: Singapore Art Museum- Plastic Ocean Exhibition (Singapore Art Museum, 2021), (Imaginarium, 2016)

Museum für Gestaltung Zürich, Switzerland

It is a traveling exhibition that toured in Morocco, Lebanon, Jordan, and Egypt. The aim is to raise awareness of what happens if consumers keep producing and using plastic, that often ends up in the sea. (Zurich, 2012)

Figure 9: To the sea? Plastic garbage project, Museum für Gestaltung Zürich (Zurich, 2012)

Gallery of the Modern Art Museum, Ethiopia

It is an exhibition of sculptures with themes of nature and society that are made from single-use plastic water bottles. It aims to show how garbage could be turned into real beauty.

Figure 10: Recycling plastic bottles, Gallery of the Modern Art Museum, Ethiopia (Recycling plastic bottles into art, 2012)

Rome's Museum of Contemporary Art, Italy

A ten-meter beehive made of recycled plastic bags hangs at the museum. The aim is to clarify that it is our decision either to create beauty from recycled plastic or a crisis. (Laylin, 2013)

Figure 11: Recycled Plastic Bags Exhibition, Rome's Museum of Contemporary Art, Italy (Laylin, 2013)

Conclusions

Events regarding climate change are already being presented in several museums. This research mainly focuses on creating SDG-related events and linking them with climate change, which is a key to achieving a wide range of other goals, including embracing the challenge of producing and consuming less, encouraging reuse and reducing waste, reducing pollution, and using natural resources in sustainable ways.

A special focus was put on creating cultural events at GEM. It is a museum under construction and is considered one of the biggest museums in the world dedicated to a single civilization. Ideas for future cultural events that might be held in GEM are presented, including peace-related events as well as presenting the museum as a green building with a special focus on architecture and museum design. Moreover, examples of events from international museums on the same topic have been shown.

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SESSION 2 – CREATING AND INNOVATING SUSTAINABLE SOLUTIONS

WORDS FROM LEENA TOKILA
FORMER CHAIR, ICOM ICTOP

ICOM International Committee for the Training of Personnel (ICTOP) was one of the organizing committees, together with three other international committees (INTERCOM, ICMAH, MPR) and ICOM Paraguay and ITAIPU BINACIONAL as host organizations. The topic of the conference Museum Leadership in Climate Action was divided into two subthemes, which addressed challenges related to climate change and innovating sustainable solutions to problems. The presentations were diverse and showed how fundamental a subject we were dealing with. It was also noteworthy that many of the speakers presented practical actions that their museums or organizations had developed to mitigate climate change. ICTOP keynote speaker, anthropologist and ICOM Executive Board Member Karin Weil González (Chile), discussed in her excellent keynote speech, *Museums addressing socio- environmental inequalities in the Global South,* how local people, especially young people, had the courage to face socio-environmental inequalities and act for their cultural heritage for a better, more democratic, participatory and sustainable future for communities. Among ICTOP speakers were ICTOP secretary Cheeyun Kwon from the Republic of Korea, ICTOP vice chair and treasurer Rita Capurro from Italy, advisor to the ICTOP Board Darko Babic from Croatia, ICTOP Young Professional Grant recipient Lisa Pigozzi from Italy/Portugal and Ginevra Addis from Italy. ICTOP local grantees Laurie Vera and Giovanni ver Mellstreing participated in the conference but also helped in a variety of ways with the organization of the event.

In her article *Meeting the Anthropocene in Korea*, Cheeyun Kwon explores the process of introducing the term *Anthropocene* in Korean academia and the museum field. She examines the coming of the global concept and the impact on academic discussion, but also the effects on practical museum work. This is expanded on in the publication *Manual for a Sustainable Museum*, which includes 19 guidelines for a sustainable future. Rita Capurro analyses training that focus on museums and cultural tourism. She explores the potential of sustainability-based knowledge and skills for the tourism industry. In her article *Training Tourism Experts to Meet the Challenge of Sustainability,* she states that museum studies can be a significant paradigm to analyse and test solutions for sustainability in a cultural environment. Analysing the needs of museum audiences produces information for a more extensive study of tourism. The sustainable solutions found in museums can be utilized in wider ecosystems, such as tourist destinations. Darko Babić highlights the complex and multifaceted role of museums in society, emphasizing the importance of ongoing professional training for museum staff. His article, *Expected Competencies of Museum Professionals in 2030,* explores the relationship between museums and the knowledge society, the concept of heritage, and the significance of regional approaches and heritage literacy, while also suggesting future competencies for museum professionals.

Lisa Pigozzi explores the role of ecomuseums in her article *Can street-art be a sustainable tool for tourism development?* She asks if an informal sociomuseological project can foster sustainable tourism. Based on two case studies, she found that it is important to understand the potential of ecomuseums to develop sustainable tourism linked to street art. Pigozzi concluded that it is also vital to ensure that that various local stakeholders are involved and that they have an active role in social museological processes. In her article *Sustainable Exhibitions in Copenhagen Art Museums: The Crucial Role of Aesthetics*, Ginevra Addis traces the evolution of sustainability- oriented contemporary art exhibitions in museums by exploring their impact on local areas and visitors. She found it difficult to measure the impact the art aesthetics had on the museum's community if there are not data to provide an accurate number of museum visitors for each exhibit. She argued this kind of data is important and would help museum professionals develop better practices to measure the role of art in its local surroundings. To conclude the conference, the chairs of four ICOM international committees published a Climate Action Recommendation to ICOM, which was sent to ICOM President Emma Nardi and ICOM Interim Director General Menea Ekner.

The Role of Art in Climate Change Dialogue. Croatian Coral Center Zlarin.

Ana Katurić (Italy)[1], Ana Marija Vašiček (Croatia)[2]

Abstract

The Croatian Coral Center (further in text: CCCZ or the Center) on the island of Zlarin emerges as a point where art, science, and environmental advocacy converge to address the challenges of climate change. At its core, the Center is conceptualized as a tool that aims to shift environmental perspectives and transcend conventional approaches to the concept of an interpretation center by leveraging the power of art to communicate environmental protection issues and create meaningful spaces for connection and collaboration between various groups and communities, both local and international. The Center aims to address the urgency of environmental protection, particularly focusing on fragile marine ecosystems, using the endangered red coral—the cultural emblem of Zlarin—as its main motif. The Center is envisioned as a future platform for engaging in various artistic initiatives, utilizing sustainable design concepts, installations, sculptures, and immersive experiences to evoke reflection on the environmental issues at hand. This paper presents the methodologies and approaches used in the conception of the Croatian Coral Center Zlarin and its efforts to address climate change through sustainable spatial and design solutions, interdisciplinary collaborations, and the transformative power of art. It delves into the various artistic mediums employed, the impact on visitors and the local community, and the potential for such initiatives to create a broader awareness of environmental issues while fostering a sense of responsibility and stewardship toward our common future.

Keywords: sustainable islands, museum design, red coral, art and climate change

[1] Mag.Art, Via Aselli 6, 20133 Milano, Italy. E-mail: anakaturic@gmail.com
[2] M.A. Vlaška 95, 10000 Zagreb, Croatia. E-mail: urbanex@urbanex.hr

Resumen

El Centro Coral Croata (en adelante CCCZ o el Centro), ubicado en la isla de Zlarin, surge como un punto en el que convergen el arte, la ciencia y la defensa del medio ambiente para abordar los desafíos del cambio climático. En su esencia, el Centro se concibe como una herramienta que tiene como objetivo cambiar las perspectivas ambientales y trascender los enfoques convencionales al concepto de centro de interpretación, aprovechando el poder del arte para comunicar cuestiones vinculadas a la protección ambiental y crear espacios significativos para la conexión y colaboración entre diversos grupos y comunidades, tanto locales como internacionales. El Centro tiene como objetivo abordar la urgencia de la protección ambiental, enfocándose especialmente en los frágiles ecosistemas marinos, utilizando el coral rojo en peligro de extinción, emblema cultural de Zlarin, como su principal temática. Se concibe el Centro como una futura plataforma para participar en diversas iniciativas artísticas, utilizando conceptos de diseño sostenible, instalaciones, esculturas y experiencias inmersivas para suscitar la reflexión sobre los problemas ambientales en cuestión. Este documento presenta las metodologías y enfoques utilizados en la concepción del Centro Coral Croata Zlarin y sus esfuerzos para abordar el cambio climático a través de soluciones espaciales y de diseño sostenibles, de colaboraciones interdisciplinarias y del poder transformador del arte. Se adentra en los diversos medios artísticos empleados, el impacto en los visitantes y la comunidad local, y el potencial de tales iniciativas para crear una conciencia más amplia sobre los problemas ambientales, fomentando, al mismo tiempo, un sentido de responsabilidad y custodia hacia nuestro futuro común.

Palabras clave: coral rojo, diseño de museos, islas sostenibles, arte y cambio climático

Introduction

Acting as a catalyst for new initiatives on the island, the purpose of the Croatian Coral Center Zlarin is to propose models of sustainable development and address the need for environmental protection, focusing in its case on a coral native to the island's geographical area. The complexity of this relationship is seen in the chronological interplay between the island's cultural history—which was built on red coral harvesting—gradual changes in environmental and technological circumstances, and the search for a balance between appetites for growth and expansion and necessary limitations. As a means to address these issues on both the local and broader scales, the dispersed center concept of CCCZ proposes a variety of art, science, and community collaborations, with the common goal of finding applicable solutions and remaining adaptable to ever-changing climate and social needs.

Case study: Croatian Coral Center Zlarin

Tourism in fragile ecosystems

Croatia's coastline is characterized by its numerous islands, islets, rocks, and reefs, which number at a total of 1,244. This extensively scattered coastal configuration evokes romantic notions of idyllic seaside living, contributing significantly to its status as a highly sought-after tourist destination. Indeed, tourism in Croatia has experienced significant growth in recent years and it currently plays a major role in the Croatian economy; in 2021 alone, 12,000 vessels sailed the Adriatic Sea and three million overnight stays were recorded.

Unsurprisingly, this surge has brought about various environmental challenges, primary among which is the resultant strain on Croatia's coastal ecosystems due to sudden and excessive development, unregulated construction, and waste disposal. These activities have led to coastal erosion, water pollution, and damage to marine life, as the increased number of tourists contributes to littering, overconsumption, and environmental degradation in some areas. In terms of numbers, there were 13 million visitors to Croatia in 2021, amounting to three times the country's entire population (Web, 2023).

Efforts are being made to promote sustainable tourism practices and raise awareness about the importance of protecting the country's environment, but balancing the economic benefits of tourism with environmental preservation remains a significant challenge. Aside from the numerous environmental issues brought by a monocultural focus on tourism, one notable problem often experienced by coastal communities is a lack of educational and cultural content during the off-season; with the departure of visitors at summer's end, they fall into a cultural slumber.

Zlarin

Together with around 40 other islands and islets, Zlarin is part of the Šibenik Archipelago. The island has a land area of roughly eight square kilometers and 18 kilometers of coastline; it is situated in the central eastern Adriatic on a former main sailing route between the ancient ports of the Adriatic and the remainder of the Mediterranean. This position—in addition to its proximity to the city of Šibenik and the mainland at just 3.5 nautical miles away—was an important strategic advantage for the port of Zlarin and its development; the eastern Adriatic coast provides excellent maritime conditions as its numerous islands offer protection from the perils of the open sea, and its natural landmarks made sailing easier, especially in times when sailors primarily navigated by the use of oral tradition, cognitive mapping, and other provisory means. Until the beginning of the 20th century, the island's social and economic profile was a relatively prosperous one, but it has been dwindling ever since due to the gradual exodus of the island's youth and the age structure of the remaining population. In 2021, the island of Zlarin had 30,233 overnight stays, while its population amounted to a total of 293 inhabitants (Web, 2023).

In this context, it is important to note that the town surrounding the port occupies only 6% of the island's surface area; today, most of the island is covered with dense Mediterranean forest and scrubland (Zlarin – SMILO, 2021), although vast parts of these surfaces were used as agricultural land in the past. Sprawling urbanization for tourist accommodation and the artificialziation of coastline through concrete and rubble construction (the latter of which is present on Zlarin to some extent) is resulting in the devastation of nature on the Croatian coast. Bearing this in mind, Croatian Coral Center Zlarin and its accompanying facilities are housed in two pre-existing historic buildings, in accordance with the goal of minimizing land take. This is particularly relevant as the pronounced urbanization observed in cities on the Mediterranean raises concerns, particularly given that the region has been identified as a climate change hotspot in Europe. Projections indicate an anticipated two-degree summer temperature rise between 2021 and 2050 as compared to the period from 1961 to 1990. Such warming trends pose a significant risk of triggering prolonged droughts and exacerbating water scarcity issues, intensifying their severity over time (Decoville & Valérie Feltgen, 2023).

For half a century, Zlarin has set a pioneering example of ecological leadership thanks to the progressive stances of its inhabitants and the implementation of tangible protection measures. The island witnessed the emergence of green initiatives in the latter half of the 20th century. In the 1970s, Davor Cukrov, a native of Zlarin and biologist and longstanding inspector for the Croatian Ministry of Environmental Protection, in collaboration with Austrian colleagues, undertook a research project focusing on the Adriatic seabed. Simultaneously, the concept of establishing a marine biology and ecology research and educational center on the island took root. Initial strides towards creating such a center materialized in the 1990s under the Green Island Zlarin project. Decades later, contemporary Zlarinians are initiating diverse social activities and programs aimed at heightening awareness within their community and among island visitors as to the crucial role of ecology in preserving the island's quality of life. The Zlarin community has taken action to reduce and minimize the use of plastic, with the hope of ultimately becoming a plastic-free island. In addition to voluntary initiatives such as workshops and video screenings, the island has implemented educational programs to raise awareness and teach sustainable practices. Through dedicated efforts, since 2021, Zlarin has been actively pursuing the "Sustainable Islands" label, recognizing positive local dynamics and sustainable practices, as a part of a program by SMILO (Small Islands Organisation). A local initiative, Tatavaka, constantly organizes activities in the field of sustainability, primarily focusing on revitalizing the island's natural resources, restoring traditional dry-stone walls, and revaluing sustainable lifestyles from its past, particularly emphasizing the management of water resources. Also, Zlarin is one of seven car-free islands in Croatia; the only motor vehicles allowed on the island are small electric cars, colloquially known as popemobiles; this positively reflects not only on air quality and noise pollution, but also improves pedestrian safety, which is greatly appreciated by locals and visitors.

On the previous topic of pollutants, museums (including interpretive centers) frequently utilize materials like non-recyclable plastic-based foams, temporary adhesives, disposable plastic tarps, vinyl signs, and non-recyclable plastic product packaging to build their exhibits, thus generating a considerable amount of scrap

material that is generally unusable for other projects (Doyle, 2021). Recognizing this issue and dedicated to the integration of culture and sustainability, Urbanex recognized the potential of piloting this topic on the island of Zlarin. Urbanex is an independent sustainable urban development think tank and member of ICOMOS operating as an international research network, offering programs and targeting the topics of sustainable islands, museum design, providing tools, guides, training, networking, and mentoring on how to achieve sustainability in the broadest sense, covering environmental, social, and economic pillars. In alignment with these values and with a belief in the need to ecologically restructure cultural systems, special attention was paid in designing and equipping CCCZ to the choice of materials, with a preference for biodegradable and natural materials.

Dispersed center concept

The development of the concept of the Croatian Coral Center ensued through several steps; the process involved discussions with interest groups, mapping potentials, and grouping topics related to the natural aspects on the one hand, and cultural heritage on the other. Urbanex worked extensively with the local community for over a decade in transforming the idea of static ethnographic exhibits towards a regenerative project for the entire island based on the concept of intertwining ecology and art. Transdisciplinary and multidisciplinary teams of marine biologists, artists, historians, art historians, economists, geographers, and architects worked extensively with stakeholders. Bearing in mind the potential for economic and biological sustainability, the Center is conceptualized as a sustainable model that combines cultural preservation, economic development, and environmental advocacy. Designing the Center as a self-sustainable entity, but not excluding the many tourist attractions the locale provides, the project focused on diving and scientific tourism as well as heritage and cultural tourism. Purposefully designating spaces and facilities that allow for scientific, creative, and artistic exchange, CCCZ is open to the creation of new content and communication with different markets, upgrading conventional seasonal tourism in favor of a year-round schedule, addressing the issues of the seasonal drop in community, educational, and cultural substance coastal areas face. Specific attention was pait to the long-term management structure, so the project was developed by the city of Šibenik and is managed by Fortresses of Culture, an innovative public body that manages several sites in the Šibenik area and works extensively on such programmes.

The vision of the project was not to centralize activities within the Center alone, but the gradual distribution and amplification of its impact throughout the area of the island—and beyond. CCCZ is thus envisioned as a dispersed center consisting of distinct units that together form a theme; allowing for the connection of different sites into a unified development project. Such a strategy allows flexibility and gradually expands the Center into its surroundings, shifting attention from a single facility to a comprehensive plan for the revitalization and preservation of the island, thus turning its entire surface into a means of communicating values related to nature, cultural heritage, and territory. To better illustrate the logic of the spatial concept, starting from the smallest to the largest scale, the following designations can be used:

S (small) refers to the physical outline of museum building, the Kažerma house.

M (medium) designates the nucleus – the museum and research center, located in two adjacent structures, the Šare and Kažerma houses, and the museum's space opened to its immediate surroundings, defined through the physical proximity of the two neighboring buildings.

L (large) signifies the development of the concept at the scale of the entire island and archipelago, realized through different interventions, outdoor programs, and organized events.

The structures that today physically embody the concept (on the S and M scale) are two buildings categorized and protected as cultural heritage, imprinted in the collective memory of the town as centers of social life and the last strongholds of the coral processing tradition.

Kažerma, a former coral processing facility, today houses the Croatian Coral Center Zlarin. During the Second World War, the Italian occupiers used it to house their carabinieri (police) station, a purpose it served from 1941 to 1943, during which time Partisans and their family members were imprisoned and tortured there, sometimes until death. In memory of the victims, the building carries a memorial plaque. Later, the building was mostly abandoned, and served partially as an official community space for the island and acted as a small, informal eco-museum, through which locals preserved their traditions through self-organized cultural and artistic activities. Through its function today, it continues to act as a social condenser, fostering interaction and promoting a sense of community and shared identity.

The Šare house located adjacent to the Center was formerly the home and studio of local self-taught artist Ante Gregov, whose work is shown in the Center. Today, the building has been repurposed to house guest researchers, scientists, artists, and students, providing full amenities, including a multimedia hall and a garden for outdoor events. The possibility of renting the spaces allows the Center to have an independent financial stream and gain profit that can further be invested into developing its programs.

In the case of CCCZ, the available common space is an asset to the local community in terms of organizing and implementing cultural events throughout the year, especially in the winter months, while the option of providing accommodation to non-locals opens the door to new collaborations and the establishment of a creative hub for artistic, educational, and scientific year-round programs; this further aids the Center's sustainability, as it does not rely solely on one purpose, function, or season.

It is important to emphasize that the function of the Šare house reflects the main idea of the entire Center. It is a space of coexistence where various actors can meet and design a sustainable future for the island together through creative processes.

This kind of a future—without romantic connotations—should preserve all the important characteristics of the Mediterranean: a clean environment, food based on local ingredients, strong social ties, and a pronounced need for esthetics. Facts based on scientific research can be more easily implemented in society and everyday life with the help of artists and designers. Not only is the local population involved in various creative actions, but tourists as well, who are asked not to be exclusively consumers of the island, but to actively participate in its protection and development. Art thus becomes a channel that communicates strong scientific messages and evokes emotions amongst both islanders and visitors. CCCZ is the source of precisely this kind of approach to environmental protection and culture of living, which future projects may spread to the entire archipelago.

The exhibition concept

Museographic aids and exhibits interweave cultural and natural heritage connected under the overarching theme of coral harvesting, the distinguished tradition of the island of Zlarin. The exhibition utilizes various educational and artistic content along with designed equipment, making the content accessible to visitors through texts, audio recordings, music, legend-bearing maps, replicas, installations, graphics, paintings, sculptures, photographs, films, and tactile exhibits. The process was lead by Ana Katurić as creative director with Urbanex transdisciplinary team and collaborators; Goranka Horjan – museology, Ante Čepić – researcher and scenarist and others. Throughout the development of the exhibition, there was an insistence on including works of local artists and presenting archival materials and family heirlooms donated by the local community, in an effort to establish an environment that authentically reflects the presence of both historical and contemporary inhabitants, while deliberately avoiding conformity to the archetype of a conventional interpretation center.

The spatial framework of the exhibition unfolds through a temporal narrative, connecting the fragmented space of the Center into a whole following a theme of dynamic opposition between the elements of nature and human activity. Progressing across four floors, the exhibition sequentially guides the visitor through the historical legacy and contemporary challenges, resolving in contemplation on the indeterminate future on the top floor.

Red coral

Coral reefs are among the most vulnerable ecosystems on the planet, and while their colonies occupy a small portion of the ocean floor, nearly a quarter of marine species rely on reef ecosystems for shelter and sustenance in the coastal areas of around 100 countries or territories; approximately one million aquatic plant and animal species utilize thriving reefs for feeding, spawning, and as nurseries (Coral Reefs: Strategies for Ecosystems on the Edge, 2021). Besides their known ecological functions, it has been suggested that coral communities, especially those "at the edge of environmental limits" (Schoepf et al., 2023), can potentially serve as resilience hotspots and climate change refuges, and thus provide insights into how coral reefs might function in future ocean conditions.

Red coral (lat. Corallium rubrum), the common thread of the entire project (belonging to a different coral subspecies than the aforementioned reef-building ones), ties together the different scales and topics the Croatian Coral Center addresses. Due to its rarity and ecological sensitivity, as well as its cultural and economic value, the coral serves as a metaphor for the urgent need to protect natural heritage; while it is a symbol of the island's history, it also embodies the fragility of our common future in current climate circumstances.

Since ancient times, man has been fascinated by coral and attributed it apotropaic powers; its elusive nature only heightened its value, driving coral harvesters to develop meticulous techniques, evolving from rudimentary tools to today's sophisticated technologies. With red coral as its central motif, the exhibition concept portrays the coexistence and co-dependency of man and nature throughout history, exploring it in depth through the local example and context, while simultaneously positioning it in a broader, global frame. In essence, the exhibits at CCCZ narrate the ecological developments of the preceding one to two centuries, illustrating the brief timeframe within which the dynamics between humanity and the natural environment has transformed.

Ground floor

The sea is presented as a source of both life and death through an image of the island as a sanctuary, which is subject to the sea, a source of threat. This symbiotic connection between islands and the sea is explored through the islanders' reliance on sailing for sustenance, which they did guided by cognitive maps and exposed to unpredictable maritime elements. The myth of the origin of coral, wherein the blood from Medusa's head spills into the sea after being severed by Perseus and transforms into coral is visualized in augmented reality, introducing the intense topic of the exhibition. The strategic employment of black color throughout the floor serves a dual symbolic role, signifying danger and the enigma of the unknown, while also representing the profound sea depths where corals flourish. The same hue is also central to poetic animation commemorating the tragic deaths of local coral harvesters, enhancing the overall sensation of immersion in the deep sea. Following the guiding thread, positioned central to the exhibition level, the remnants of an ancient shipwreck serve as a poignant reminder of the inherent dangers that awaited those who sailed, with a section highlighting the fortitude of local coral harvesters and sailors, some of whom sailed across the world. Focusing on the history of coral harvesting in the Adriatic, insights into the laws, tools, and techniques employed in coral harvesting are provided, underscoring the logistical intricacies; for a long time, coral was exclusively extracted using the inženj ("engine"), a device that was challenging to handle and caused damage to coral habitats. In the 1920s, divers in the Adriatic began harvesting red coral, but the equipment was expensive and often inaccessible to most fishermen.

A section on the cultural and spiritual aspects of seafaring and homecoming presents votive and superstitious practices, beliefs, and customs that have evolved as an antidote to the uncertainty of life at sea. A painting by artist Ante Gregov offers a colorful, kaleidoscopic portrayal of anecdotes, superstitions, and votive practices specific to Zlarin, creating a bridge between tangible and intangible maritime heritage.

First floor

The island's intangible cultural heritage is central to this floor, unfolding through photographic archives, archival footage, and rare documentaries. Particularly poignant are poetic documentaries by the late Ante Viculin, whose directorial excellence is overlooked by the general public. As previously mentioned, particular attention was paid to detailed field research and the use of materials donated by locals, thereby presenting a unique display of the island's material and immaterial heritage. This section's emphasis on community is spatially manifested in the multifunctionality of the space; by sliding the panels, the area seamlessly transforms into a communal center.

The economic history of the island is portrayed through a juxtaposition of dualities. On the one hand, there are maritime activities—fishing, coral harvesting, and sailing—which are predominantly carried out by men. On the other hand, there are the onshore activities predominantly managed by women, presenting two contrasting perspectives of the same lived reality. As men ventured out to sea, engaging in activities like sailing, women remained on the island, playing a pivotal role in sustaining entire homesteads independently. This section sheds light on the daily routines of women in managing the island's domestic affairs, while subtly bringing into focus the complexities of the gender roles at play and the vast polarities that constituted their everyday life—departing and staying behind, solitude and companionship. Amidst the challenges of migrations and the absence of men, women took over preserving traditions on the island, now showcased in tools, traditional costumes, archival footage, and poignant written materials revealing snippets of their day-to-day lives.

Opposing concepts are further shown through the prism of success and failure, coral catches and sales, and modernization and tradition. Examining the factors behind the 20th-century wave of migration, the exhibits capture stories, testimonies, photographs, letters, and a rare documentary film, highlighting the complexity of expatriate life and the long reach of Zlarin's global diaspora. Despite challenges and homesickness, migrants adapted to life abroad, shaping new communities; materials showcasing diverse communities of expatriates present the experiences, challenges, and contributions they made to both their adopted homes and the island of Zlarin. A section dedicated to emphasizing the intersection of political support and the island's economic endeavors traces the historical trajectory of forming the island's cultural identity, along with the maritime industry that defined its existence, highlighted with documentary propaganda films about sponge and coral harvesters. The development of tourism and the island's cinematic appeal is depicted in "The Coral Princess", filmed in the 1930s by a German production team that utilized the island's picturesque backdrop, contributing to the island's image as an exotic

Mediterranean locale, with musical scores composed by prolific Croatian composer Ivo Tijardović. Yet another contrast is present here: the fate of many women of Zlarin, whose challenging lives have carved their resilience, communicating a different reality in the cinematic version of female characters in the film.

Second floor

The underlying theme on this floor deals with changing power dynamics; propelled by swift technological progress, mankind appears to have asserted dominance over nature—albeit superficially—which poses questions as to which limitations and regulations must be imposed upon humankind, by humankind itself. This section places particular emphasis on the biology of corals and the coral reef ecosystem. Visitors gain insight into the biological aspects of corals, with various coral species systematically categorized by type, genus, family, order, and subclass, illustrating their extensive diversity. By delving into the nature of corals, their biological classifications, habitats, and living conditions, the exhibition enables visitors to grasp the broader context of their ecosystem. The showcased geological history of corals serves as a testament to their longstanding presence on Earth, arguing against their destruction during the Anthropocene. The presentation juxtaposes pollution and protection, negligence and care, and the awareness of environmental conservation against technological development. The elements of the exhibition are curated to shift visitor's perspectives—the re-classification of coral from a plant to an animal, a reality-altering VR piece, a large scale mural painted by young artist Agata Lučić with an animated AR intervention, a video installation, and a tangible interface interactive table—information is dynamically presented to encourage active involvement and provoke reflection on the environmental reality we inhabit. One element in particular is imbued with such intention—a blackboard upon which bleak environmental statistics are regularly written and re-written suggests that ecological conditions are constantly changing, with an open-ended outcome. Display elements enclosing the space are positioned on guide rails, and are therefore mobile and interchangeable with new elements, suggesting adaptability within the room itself, while simultaneously hinting at the expansive potential of the Center to expand into its outdoor surroundings.

Third floor

On the final floor, visitors are allowed space for contemplation on the totality of the themes presented through the exhibition, accompanied by the read poetry of Vesna Parun, one of Croatia's most famous poets, who was born on Zlarin. For the youngest visitors, there is a coral-themed videogame through which they learn how to care about nature by taking care of coral. The centerpiece of the floor, and perhaps the culmination point of the entire exhibition, lies in a large kinetic sculpture by artist Paolo Pili underlining the motto of planetary ecological interdependence. The interactive mechanical sculpture, elements of which utilize pieces of fishing equipment, creates an experience of the interconnectedness of species by moving and reacting to visitors' breath, symbolically embodying the fact that the majority of the oxygen we breathe is provided by the oceans, microscopic phytoplankton being the main producer. Still, the bleak fact remains that, over the

past half a century, human influence on the global climate has halved the phytoplankton in seas and oceans through acidification, temperature rises, and other environmental stresses (Coral Reefs: Strategies for Ecosystems on the Edge, 2021). The conclusion here is poetic but certain nevertheless: unless we all breathe together, it will be(come) impossible for us to breathe at all.

Creating and innovating sustainable solutions
The role of art in climate change dialogue

The CCCZ's core aim is to foster an understanding of the cohesive, worldwide influence of the sea and the resulting planetary interconnectedness. Art, equally global and connective, is extensively used in the exhibition in parallel to encourage individual examination of one's position towards the environmental issues presented. The implementation of a variety of artistic media here is purposeful, as it addresses the visitor more directly, capturing attention by invoking emotions and visceral reactions. The kinetic sculpture on the top floor of the center achieves precisely that goal: the immersive experience of "breathing as one" with the moving sculpture is, according to the testimony of many visitors, the most poignant takeaway from the exhibition. By engaging them in this way, the piece departs from the abstract manner in which ecological data is usually presented, which studies show often lacks attention and meaningful reception among the non-scientific public (Li et al., 2023).
During the past year alone, it has been noted that vast numbers of leading museums and established institutions all over the world are exhibiting large shows of environmental, eco-conscious art, clearly showing that climate change is in central focus. However though powerful, such shows sometimes have their limitations: the impact of so-called "ecocritical art" often fails to resonate further than the gallery space (Eco Exhibitions Won't Save Us, 2023). What is proposed as a solution is instead a shift from the creation of art pieces that exist for their own sake to an embodied artistic ecological practice situated in the real world, especially in rural and agricultural environments, and centered on knowledge exchange and interdisciplinarity. An excellent example of such projects are those of INLAND, an ecological activist collective that engages with rural movements, founded by artist Fernando García-Dory (Inland: Fernando García-Dory, 2015).

In terms of recognizing the necessary involvement of arts and culture in climate change action on a more formal level, there is an ongoing campaign to impose a "Joint Work Decision on Culture and Climate Action", a UN process that would trigger policies and frameworks to enable culture to more fully contribute to climate solutions (Joint, 2014). The combination of art and ecology has also entered the field of education. Some institutions already offer programs on this topic. Goldsmiths, University of London has launched an Art & Ecology postgraduate program intended for artists who want to direct their practice towards important issues in sustainability and society, climate change, pollution, and reduced biodiversity. During the program, with the support of the university, artists develop projects dedicated to inventing and designing a better future with a strong emphasis on ecology and social justice.

Art and Science in Collaboration

For at least a decade, there have been growing numbers of art/science collaborations that successfully tackle ambiguous topics and wicked problems, such as effectively educating the general population about climate change and determining the objectives of communicating climate change science.

This is inherently challenging due to its nuanced nature, subjective interpretation, and general resistance to traditional scientific problem-solving approaches. The abstraction of shocking environmental scores unwittingly allows relativization and detachment from the information, regardless of how important it may be, and this poses a significant issue when the goal is to incite action: what is unimaginable is unactionable. One example of such an invisible issue is the Great Pacific Garbage Patch. Scattered across the ocean are significant accumulations of plastic debris, revealing the consequences of overconsumption and the enduring nature of plastic. However, efforts to find visual evidence of this sizeable pollution are hindered by the microscopic nature of degraded plastics, which exist as a "soup" of tiny particles beneath the ocean's surface. This relative invisibility relegates these patches to imaginative symbols of environmental decline, seemingly resistant to motivating environmental action (Gabrys, 2023).

In such cases, partnerships between science and the arts can help by crafting creative visualizations to reshape audiences' comprehension of information and foster emotional engagement with such pressing topics. Heartbeat of the Earth is an ongoing series of online artworks created in collaboration with artists, the Google Arts & Culture Lab, and the United Nations Framework Convention on Climate Change (UNFCCC) to respond to and interpret scientific climate data (Experiments with Google, 2024). For example, the use of AI-collected and open data has resulted in a stunning artistic-scientific collaboration, which presents the "health" parameters of a plant afflicted by the "diseases" of climate change (MRI of the EARTH by Refik Anadol Studio and Variable in Collaboration with Google Arts & Culture, 2024).

It is beneficial to transcend the dichotomies between art and science, logic and intuition, and create space for a third option—collaboration. As one of its core tenets, the concept of a dispersed center calls for dialogue between actors, specifically targeting the scientific and artistic communities to cooperate and experiment. Reaching beyond the mere physical structures of the exhibition space of Croatian Coral Center Zlarin, the hope is for it to serve as a platform for the development of scientific tourism and education, with the amenities in the Šare house purposefully designed to support residence programs for artists and researchers who wish to engage with topics of environmental protection, translate their observations into various media, and present critical topics engagingly and innovatively.

In addition to the coalition of science and the arts, numerous other disciplines are needed to transfer the ideas and solutions developed at CCCZ to the outside world and test them in everyday life. Applied arts, various branches of design, and sociology are also important for scientific data to be well communicated and directed to target groups—the local population and visitors to the island.

Traditionally, many ecologists perceived the word 'design' in a negative light, as they considered designers generators of the consumer culture that is destroying the ecosystem (Rawsthorn: Hello World). However, good design today must integrate an awareness of environmental impact, sustainability, and ethics. CCCZ wants to raise awareness of how good design—not just production design, but organizational design—is an elementary actor in improving life on the island, together with the sciences and arts. If science provides exact information and the arts inspire visitors to feel a need for change through emotions, other disciplines will be tasked with implementing these changes outside the Center, in the space of the island and in the lives of people. CCCZ will initiate some of these changes itself in the future, while others will certainly develop spontaneously within the local community under the influence of exhibits, lectures, and projects at the interpretation center.

Co-creating with the community

As mentioned above, the dispersed center concept of CCCZ wishes to further expand this collaboration into the local community and create a triangular science-art-local community action. To do so, it can rely on and deepen some pre-existing traditions. The Punta Arta artistic initiative was launched in 2008 on the initiative of Marina Viculin and Vedran Perkov to connect arts, locality, and community. Since its beginning, this association has been focused on matters of contemporary art production in an isolated island environment within a community of less than 300 inhabitants, and on how this way of life affects the creation of art. The program invites regional and international contemporary artists for an off-season residence to create works influenced by residing on the island, and all activities occur in public spaces, in direct contact with audiences, thus involving locals in the creative process (Punta Arta - island map, 2013).

Building on such a well-entrenched background, the Center indeed fills all the prerequisites to become a platform for the creation of productive future alliances.
Some international examples of successful collaborations between the arts, science, and local coastal communities focusing on coral restoration and preservation that have achieved concrete solutions are initiatives like Global Coralition (Global Coralition, 2024) and The Global Coral Reef Alliance (Goreau, 2023). They have initiated projects, such as those at Senggigi Beach in Indonesia, collaborating with local artists and communities to establish underwater sculpture parks, which serve multiple purposes: coral reefs, which were on the brink of extinction, are spawning on these works of art, creating sustainable snorkeling tourist attractions, thus generating ecotourism income for locals. This kind of action discourages an excessive number of users from visiting natural coral habitats. This allows visitors to enjoy the experience of observing corals up close without disturbing the stability of the ecosystem. Art here serves as the bearer of broader ecological topics, as well as a marketing trick to attract as many divers as possible into a controlled environment that will not harm the environment. Additionally, the unusual context of the exhibition in the underwater world attracts the attention of the population, who might not personally participate in diving, but will certainly remember and become aware of the ecological drama unfolding in the coral reefs. The idea of CCCZ is based on this similar principle —cooperation between scientific data and a

powerful visual element creates the basis for specific action that can push the island society, economy, and environment into a sustainable, ecologically developed future.

A sustainable center for sustainable solutions

CCCZ is designed as an experimental model of a dispersed center — one part of which is museum building —which allows for gradual adaptation and co-creation between different actors involved; it has been designed with change in mind. Both spatial and exhibition concepts, from the materials used to the design solutions employed, including the physical location and its facilities, have been created as adaptable elements with functions that expand and change over time in response to various needs that may and will arise. In technical terms, the sustainability of the exhibition design is reflected in its use of guide rails, which allow the current set-up to be moved and changed, and encourage the addition of new elements according to how the presented themes evolve and new materials and contributions gather. A similar approach is intended in the digital content presented on screens throughout the Center—new materials can be added at any point, meaning the exhibition is constantly changing and evolving.

By adopting a flexible mode, the Center remains sustainable, not only physically or in a strictly ecological sense, but as a design concept that gains resilience with each following adaptation. To underscore, a quote by John Cotton Dana can be applied here: "A complete museum is an impossibility. If it is alive, it is always in the making, never quite in order in every part. A growing museum, even though it be small, stimulates the interest from which it gets its growth" (Dana, 1999: 151-152).

By avoiding a didactic approach, this model does not impose answers and solutions, but rather asks questions; the Center is, above all, conceived as a tool, an incubator for ideas focusing on the task of preserving the environment while bridging the gap between its users. The future Center sees the local population and the expert community as mutual co-creators of novel ways to approach environmental protection.

Conclusion

CCCZ seeks to depart from the conventional interpretation model by adopting a multifaceted approach to climate change on all levels and scales, because if the future indeed "arises directly from objects that we design" (Morton, 2021), then the responsibility for our collective prospects lies within our grasp. However, this implies a higher degree of individual and collective ecological agency than we, as a society in general, currently instrumentalize, and discerning the starting point and manner in which to wield this influence can be challenging. With the preservation of sea life and nature as its main focus, the point of the dispersed center concept at large is to educate on possible mechanisms of action, while actively asking questions about what novel forms of politics, policies, and practices might be able to address emergent ecological events.

Despite the perception of the island as an isolated entity, constrained in its distinctiveness and constituting a universe of its own, when observed within the framework of environmental protection, it emerges as an integral component of a broader aquatic ecosystem; linked to the global territory through the sea, it can be a source of dissemination of new modes of action, potentially transcending local boundaries.

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Indigenous management in the protection of cultural and natural cultural heritage: A socio-legal analysis between Costa Rican and Paraguayan regulations

Pablo Zamora Rodríguez (Costa Rica)[1]

Abstract

This research aims to analyze the cultural management processes that Costa Rica and Paraguay grant indigenous persons as a mechanism for the protection of cultural rights of these peoples today. In this way, it describes the applicable regulations on indigenous cultural management in both countries, to subsequently identify the shortcomings found in both regulatory bodies and, therefore, Finally, provide recommendations based on the elements identified throughout the investigation.

Keywords: Cultural heritage, mixed heritage, cultural management, indigenous people.

[1] Policy Advocacy Coordinator at Fundación MarViva. He holds a double Bachelor's degree in Art History and Law from the University of Costa Rica and a Master's in Cultural Heritage from the National Institute of Anthropology and History of Mexico. He is also a member of ICOM Costa Rica. E-mail: pzamora2809@gmail.com.

Resumen

La presente investigación pretende analizar los procesos de gestión cultural que Costa Rica y Paraguay otorgan a las personas indígenas como mecanismo de protección de los derechos culturales de estos pueblos en la actualidad. De esta manera, se describe la normativa aplicable en materia de gestión cultural indígena en ambos países, para posteriormente identificar las falencias encontradas en ambos cuerpos normativos y, por último, brindar recomendaciones con base en los elementos identificados a lo largo de la investigación.

Palabras clave: patrimonio cultural, patrimonio mixto, gestión cultural, pueblos indígenas

Introduction

In a globalized world, the preservation and protection of the cultural rights of Indigenous communities stands as a fundamental challenge for nations committed to diversity and inclusion. In this context, the present research delves into an in-depth analysis of the cultural management processes implemented by Costa Rica and Paraguay in relation to their Indigenous populations. The central purpose of this study is to examine how these two countries currently address the protection of the cultural rights of Indigenous peoples through their legal frameworks and cultural management policies.

The relevance of this study lies in the need to understand how nations are fulfilling their responsibility to safeguard and promote the unique cultural expressions of their Indigenous communities in a world characterized by social change and transformation. To this end, a thorough analysis will be conducted of the current legislation and policies regarding Indigenous cultural management in Costa Rica and Paraguay. This analysis will help identify the approaches, mechanisms, and strategies used by both countries to ensure the active participation of Indigenous communities in decision-making processes that affect their cultural affairs.

However, this study will not be limited to a mere description of policies and regulations. It will also delve into identifying shortcomings and challenges present in the legal frameworks and in the practice of Indigenous cultural management in Costa Rica and Paraguay. Through a critical and comparative analysis, the limitations and areas where these approaches may not be achieving their intended goals will be highlighted.

Finally, based on the results of this analysis, well-founded and contextualized recommendations will be provided. These recommendations aim to strengthen cultural management processes in both countries and improve the protection of the cultural rights of Indigenous communities. This research aspires to contribute to the enhancement of policies and practices that promote cultural diversity and equity for all groups that make up the richness of a nation's identity.

Conceptual and Normative Development of Cultural Rights

Legal doctrine has established certain determinations regarding human rights related to the protection of heritage and cultural rights, which certainly involve a relationship between culture and the environment. According to Enrique Leff (2000, p. 10), sustainable development seeks to incorporate a cultural dimension into the economic, social, and environmental pillars—one that protects the interests and customs of Indigenous peoples and moves away from prioritizing economic growth and human development alone. This is because sustainability aims for harmony between the environment and human beings, viewing our species as just one component of the broader ecosystem. This school of environmental law has led to the consolidation of rights related to cultural aspects.

Cultural rights refer to the typically democratic recognition of the equal right of all human beings to access and enjoy cultural values, governed by shared rules within a framework of solidarity and respect. These rights are aimed at ensuring free participation in cultural, artistic, and recreational life; the protection of artistic and intellectual production; freedom for creative research; and the enjoyment of one's own culture—especially for groups in sociocultural disadvantage, such as Indigenous peoples, women, the elderly, children, and people with disabilities. They also include the protection of heritage resources that shape collective identities, whether tangible (documentary, architectural, or archaeological) or intangible (oral history or linguistic heritage of peoples) (Mora, 2004).

These rights are important for everyone, but they become especially relevant when dealing with populations that have historically been in vulnerable conditions. The concept of historically discriminated populations refers to groups with a history of discrimination and negative social prejudice, which may be reinforced by legal norms, thereby reducing their ability to defend collective interests (Quiñones, 2015, p. 205). One assertive and reparative way in which Costa Rica can recognize the cultural rights of its peoples is through the declaration of archaeological sites that are fully integrated with their natural context, and by providing protection that safeguards both these places and the people whose legacy has been undervalued until now. In doing so, entire ecosystems are preserved from a natural perspective. This is an effort the country is already undertaking, and although it aims to preserve all Indigenous material culture in situ, it is currently difficult to find such sites due to state policies of "huaquerismo" (looting of archaeological sites) that persisted until the 20th century (Corrales, 1999, p. 15). Thus, not only is a historical debt of the State to Indigenous peoples addressed, but the task of protecting cultural and natural heritage becomes more complex when it has already been looted for centuries.

On the other hand, there is a natural function behind the State's interest in protecting archaeological remains that involve a relationship with the environment. In recent decades, the planet's climate has changed drastically due to natural events or human intervention (Giorgi, 2013). Climate change, therefore, is a variation in climate caused by natural events and human activities that directly or indirectly alter the global atmospheric composition. This is compounded by the natural variability of climate over comparable time periods (United Nations, 1992).

These changes have direct consequences on natural elements such as biodiversity and ecosystems. The Convention on Biological Diversity (CBD) defines biodiversity as the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part. It includes diversity within species, between species, and of ecosystems (Convention on Biological Diversity, 1993, Art. 2). An ecosystem, in turn, is understood as a dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit.

However, when these factors affecting natural resources are caused by humans, there are principles of responsibility that hold accountable those who significantly harm the environment. According to the International Court of Justice (ICJ), a State bears international responsibility when it causes significant environmental harm (ICJ, 2015, para. 153). The significance is determined by considering the nature and magnitude of the project or activity and the context in which it is carried out.

The Inter-American Court of Human Rights (IACHR) notes that the term "significant" means "more than detectable" but does not need to be "serious" or "substantial" (IACHR, 2017, para. 136). The harm must result in a real adverse effect on matters such as human health, industry, property, the environment, or agriculture. To understand the concept of environmental responsibility, it is important to distinguish between the precautionary principle and the principle of environmental prevention. In summary, one addresses potential risk, and the other addresses verified risk. Precaution refers to the possibility that hypotheses not yet scientifically proven at the time of action may turn out to be correct (Lloret, 2018, p. 8)

In this regard, the precautionary principle in environmental law suggests exercising caution and considering environmental well-being when taking action, even if there is no certainty about whether that action may cause environmental harm. In contrast, the preventive principle states that States must ensure environmental well-being when there is certainty that an action or project could negatively impact the environment. Consequently, States must prevent significant environmental damage through environmental impact assessments and other scientific tools that provide opportunities for environmental protection in a given context.

This leads to the right to a healthy and ecologically balanced environment, which refers to the set of national and international legal norms and principles that regulate the relationship between human beings and their natural and urban surroundings. The goal is to achieve a balance that allows for the fulfillment of human needs through social, productive, and cultural processes, while safeguarding the integrity and conservation of resources (CIJUL, 2013).

The concept of sustainable development, as expressed in the 1972 Stockholm Declaration, helps us understand the importance of protecting various types of national heritage. This concept indicates that, based on economic, social, and environmental considerations, the basic conditions necessary for life must be guaranteed, avoiding exploitative practices that have compromised the planet's capacity. This is the type of development that seeks to balance three fundamental aspects of human life.

The first is society—that is, the goal is to promote forms of organization that enable individuals to live in harmony with their social and natural environments, and to meet basic needs such as access to healthcare, education, and employment, equally for all people (Landa, 2010). The second aspect is the economy, which aims to eradicate poverty through wealth distribution and to maximize the well-being generated by economic activities, ensuring sustainable income and equity within each generation (Landa, 2010).

The third aspect is the environment, as all human activities should aim to manage natural resources with consideration for their regenerative capacity and conservation, and to handle waste in ways the environment can absorb or degrade (Landa, 2010). All these concepts relate to different elements within the scope of natural cultural heritage protection.

However, there is an international instrument that explicitly addresses natural cultural heritage: the Convention Concerning the Protection of the World Cultural and Natural Heritage, ratified by Costa Rica in 1976. Articles 3 and 4 of this convention establish that States must protect their natural and cultural heritage and propose the creation of national monuments to safeguard each country's cultural legacy.

In addition to the aforementioned Convention and the UNESCO Universal Declaration on Cultural Diversity, UNESCO also recognizes a category of mixed heritage—that is, heritage that combines the significance of both natural and cultural elements in a single entity that requires protection. However, UNESCO has not registered any mixed cultural and natural heritage sites in Costa Rica (UNESCO, 2023), not even the Guayabo National Monument has been classified under this category.

Furthermore, the International Labour Organization (ILO) issued Convention 169 on Indigenous and Tribal Peoples, which addresses land rights and cultural rights relevant to Indigenous and tribal populations around the world.

Article 15 of ILO Convention 169 grants special protection to the rights of Indigenous peoples over the natural resources on their lands, including the right to participate in the use, management, and conservation of those resources. It also establishes the State's duty to take measures to safeguard the rights of Indigenous peoples to use lands not exclusively occupied by them but to which they have traditionally had access for their traditional and subsistence activities. Additionally, the Convention frames the responsibility of States to consult Indigenous peoples whenever legislative or administrative measures that may directly affect them are being considered. The Convention emphasizes the link between the duty to consult and public participation, as these are the mechanisms that ensure Indigenous peoples can determine their own priorities.

Analysis of the costarican case

In this regard, Indigenous participation in the management of cultural and natural heritage inherited from their ancestors is essential for the proper implementation of cultural rights in Costa Rica. This is particularly important given that current legal instruments do not even consider the need for a category of natural cultural heritage in the country, nor do they require Indigenous consultation for archaeological sites that are not located within Indigenous territories.

Indigenous consultation refers to the obligation to consult Indigenous peoples freely, prior to any action, and in an informed manner, through appropriate procedures and their representative institutions, whenever administrative measures, executive-sponsored bills, or private projects that may affect them are being considered (Executive Decree No. 40932, General Mechanism for Consultation with Indigenous Peoples, 2018). This mechanism is regulated under the environmental legislation discussed so far, as well as in Executive Decree No. 40932.

For the Inter-American Court of Human Rights (IACHR), such consultation is of great importance for preserving the rights of Indigenous peoples across the continent.

This is because the concept of culture has evolved beyond the accumulation of works and knowledge produced by select minorities. Today, it encompasses, according to the experience of the majority of the population, traditional arts, humanities, education systems, media and cultural industries, religious and identity expressions, and the environment (Hernández, 2011, p. 4).

Hernández argues that, while individual human rights are internationally recognized and guaranteed—based on principles of individual autonomy, equality, and non-discrimination, and supplemented by tolerance toward others (minority groups)—there is a need to create enforceable mechanisms for cultural rights, the preservation of cultural identity, and guarantees for peaceful coexistence with the rest of society. This would allow Indigenous peoples to negotiate their dialogue with society from their cultural distinctiveness, as well as their forms of integration (understood as strategies for social interaction) and participation in shaping public space.

In this sense, the right to cultural development and cultural identity does not deny the existence of underlying cultural conflicts in public spaces. On the contrary, these conflicts must be acknowledged, just as they are in social, political, and economic spheres. Moreover, the inherent mobility of culture must be considered—where belonging (to the group one is born into, lives in, and identifies with) becomes an experience of contact with others in diverse contexts. This leads to the ongoing evolution of culture over time and within each individual.

It is also essential to consider the preservation of other ways of life and the need to protect them in relation to their cultural expressions, organizational structures, and use of natural resources within their settlement territories. These territories contain their heritage, including languages different from the majority, rituals, meanings, relationships, and worldviews (Velázquez, 2016).

Beyond legislation, the enforcement of cultural rights requires the existence of judicial legal remedies and the ability to demand their fulfillment through the courts—just as with the right to benefit from the protection of moral and material interests resulting from any scientific, literary, or artistic production, and the right to education (Velázquez, 2016). In any case, it is necessary to revisit the debate on the specific obligations of States to guarantee the exercise of cultural rights, beyond the adoption of immediate measures that are not conditioned by available resources (Velázquez, 2016).

Finally, the demand for the cultural rights of Indigenous peoples is not separate from other human rights claims: freedom, equality, access to and enjoyment of goods, and justice. However, their enforcement would require reconciling individual and collective rights as they manifest in the daily lives of these communities (Velázquez, 2016). For this reason, mechanisms must be created to ensure their human rights, as outlined in the United Nations Declaration on the Rights of Indigenous Peoples, adopted by the General Assembly on September 13, 2007, and these rights must be considered in political programs beyond the political and ideological tensions implicit in their agendas.

These mechanisms—related to the affirmation and enjoyment of the specific cultural rights of communities and peoples, and linked to collective rights—could engage in dialogue on equal terms with individual rights as a non-reducible minimum standard. Under current conditions, the enjoyment of these rights risks disappearing without the preservation and respect of the collective rights of groups whose connection and interaction with the society in which they are territorially settled have been undermined. It is therefore clear that the full enjoyment of cultural policies and the formulation of political programs must be articulated and translated into public policies (Velázquez, 2016), so that the demands, rights, and cultural needs of these groups lead to the establishment of instruments that ensure their participation in shaping their own vision.

At a macro level, it would be advisable to promote criteria and notions of development with dignity, enhancing individual and collective capacities and including the cultural dimension and environmental considerations as part of the strategies and economic programs in operation (Velázquez, 2016).

Lastly, there is no comprehensive registry or declaration mechanism for cultural and natural cultural heritage in the country. As previously discussed, this leads to mismanagement, as there is no legal framework to support it. In this regard, Costa Rica must develop a legal framework that protects natural cultural heritage as an autonomous category and seeks to safeguard the rights of historically discriminated populations in the country. Otherwise, the State may, in the future, face controversies due to the mismanagement of national heritage and the cultural rights of historically marginalized populations within its territory.

Analysis of the Paraguayan case

The normative development of the rights of Indigenous populations in Paraguay follows a trend similar to that of Costa Rica. Chapter V of the Paraguayan Constitution establishes several rights for Indigenous peoples, including the right to collective property; the right to self-determination; their preexistence to the Paraguayan State as distinct peoples within the national society; the right to their own forms of governance (self-government); legal pluralism (application of their own law); the right to effective participation in decisions that may affect them; the right to preserve and develop their culture and spiritual traditions (including knowledge, objects, and sites related to them); the prohibition of forced removal or relocation; the right to free, prior, and informed consent; and the rights to a healthy environment and to the conservation of their habitat necessary for survival.

Law No. 904/81, known as the Statute of Indigenous Communities, establishes the defense of their heritage and traditions, the improvement of their economic conditions, their effective participation in the national development process, and their access to a legal regime that guarantees land ownership and other productive resources on equal terms with other citizens (Article 1). It also recognizes the legal personality of Indigenous populations and their cultural and heritage rights associated with their traditions, lands, and identity, creating a National Registry of Indigenous Communities.

Unlike Costa Rica's Indigenous Law, Paraguay's Law 904/81 provides a broader protection regime for territories considered Indigenous. Article 14 states that the free and express consent of the Indigenous community is essential for their settlement in areas other than their usual territories, except for reasons of national security. This reflects a more comprehensive legal understanding of Indigenous rights.

Meanwhile, the Law on the Protection of Cultural Property (1982) provides protection for cultural assets relevant to the Paraguayan State. However, it does not specifically regulate matters related to Indigenous peoples or communities (Legal Framework Study, 2015, p. 18). Additionally, Law No. 1372/88 (1989), which establishes the regime for the regularization of Indigenous community settlements, outlines the procedure for granting land to Indigenous people and ensuring their rights. However, this law defines Indigenous lands as "settlements," described as a physical area consisting of a cluster of houses, natural resources, crops, plantations, and their surroundings, ideally linked to their cultural tradition, assigning a minimum area of 20 hectares per family in the Eastern Region and 100 hectares in the Western Region (Article 3). This definition is incompatible with the right to recognition of Indigenous lands, as neither the Inter-American Court of Human Rights (IACHR) nor the ILO has defined this right in such terms.

As a result, the 2015 Legal Framework Study on the Human Rights of Indigenous Peoples in Paraguay related to potential REDD+ projects identifies several structural shortcomings in the legal system concerning Indigenous peoples. These issues stem from the lack of certain protections not covered by domestic law, although they are outlined in international law applicable to Paraguay. Therefore, there remain

obligations to adopt domestic legal provisions to align with existing treaty commitments.

In practice, there is clear evidence that the laws lack proper implementation, as shown by the absence of effective judicial or administrative remedies to safeguard rights—whether due to delays in rulings, lack of consistent interpretation, or inadequate application of international human rights standards and constitutional guarantees. Furthermore, even when political will to enforce the law is evident, significant challenges remain due to the complete lack of institutional capacity and legislative, administrative, or other mechanisms to harmonize laws, ensure their application in accordance with international law, and prevent violations of human rights obligations arising from treaties.

An important point is that although both countries have similar regulations regarding the granting of rights to Indigenous peoples, Paraguay has already been condemned by the IACHR for violations of international law concerning Indigenous peoples. The cases of Yakye Axa (2005), Sawhoyamaxa (2006), and Xámok Kásek (2010) have shown that Paraguay violated the rights of Indigenous peoples because the internal administrative process for reclaiming traditional lands was ineffective. According to the cited Legal Framework Study, these rulings have not been fully implemented within Paraguay.

Conclusion: Comparisson between legislations and possible solutions

The issues and challenges identified in the analysis of Indigenous management in the protection of cultural and natural heritage in Costa Rica and Paraguay highlight the importance of establishing strong legal frameworks and effective mechanisms to guarantee cultural rights and ensure the active participation of Indigenous communities in decision-making processes that affect their cultural and territorial matters. Based on the identified issues, the following recommendations can be suggested:

1. Recognition and Indigenous Consultation: Both countries should strengthen the process of free, prior, and informed consultation with Indigenous communities in all decisions that may affect their cultural and territorial rights. Consultation must be a genuine and meaningful process that involves communities from the early stages of planning.

2. Specific Legislation and Protection: Costa Rica and Paraguay should develop specific legislation that protects natural cultural heritage, recognizing the interconnection between cultural and natural aspects. This may include the creation of mixed heritage categories and the implementation of measures to safeguard Indigenous communities' cultural and natural sites and resources.

3. Compliance with International Decisions: Both countries must comply with rulings and decisions from international bodies, such as the Inter-American Court of Human Rights, to ensure that the rights of Indigenous communities are respected and protected. This involves taking concrete actions to address the issues identified in cases of rights violations.

4. Institutional Strengthening: It is necessary to strengthen the institutions responsible for protecting cultural and natural heritage, as well as those implementing and monitoring policies and programs related to Indigenous rights. This includes allocating adequate resources, training personnel, and promoting inter-institutional cooperation.

5. Education and Awareness: Promoting education and awareness among the general public and government bodies is essential to highlight the importance of Indigenous communities' cultural rights and their role in protecting cultural and natural heritage.

6. International Coordination: Countries can benefit from international cooperation and the exchange of best practices in Indigenous management and heritage protection. Participating in international networks and sharing successful experiences can enrich national approaches and strategies.

In conclusion, the analysis of Indigenous management in the protection of cultural and natural heritage in Costa Rica and Paraguay reveals the need to establish solid legal frameworks, effective consultation mechanisms, and participatory management strategies. Recognizing the cultural and territorial rights of Indigenous communities is essential to achieving sustainable and equitable development that respects cultural diversity and the relationship with the natural environment. The protection and promotion of these rights will not only enrich national identity but also contribute to preserving cultural and natural wealth for present and future generations.

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From sustainable fashion to a more sustainable institution: audience-led climate action

Katrina Orsini (USA)[1]

Abstract

Over a decade on the George Washington University campus, The George Washington University Museum and The Textile Museum staff identified sustainable fashion as an area of overlap in student interest and museum staff expertise. Therefore, museum education staff dedicated resources to programming, meaningful partnerships, a student org, and academic offerings including a Responsible Fashion class. By following the desires of their audience, new doors have opened for the museum. But it has also given staff the opportunity to build a more sustainable institution. The momentum from the success of sustainable fashion work has led to internal audits and the development of a strategic framework for sustainability, in pursuit of a holistic definition of a sustainable institution led by the institution's mission, vision, and audience.

Keywords: sustainable fashion, textiles, museum education, museum programming, sustainable museums, textile preservation

[1] Katrina Orsini is the programs associate at The George Washington University Museum and The Textile Museum at 701 21st St NW, Washington D.C. 20009. E-mail: katrinaorsini@gwu.edu

Resumen

Durante más de una década en el campus de la Universidad George Washington, el personal del Museo de la Universidad George Washington y del Museo Textil identificó la moda sostenible como un área de superposición en el interés de los estudiantes y la experiencia del personal del museo. Por lo tanto, el personal educativo del museo dedicó recursos a la programación, asociaciones significativas, una organización estudiantil y ofertas académicas que incluyen una clase de Moda Responsable. Siguiendo los deseos de su público, se han abierto nuevas puertas para el museo. Pero también ha brindado al personal la oportunidad de construir una institución más sostenible. El impulso del éxito del trabajo en moda sostenible ha llevado a auditorías internas y al desarrollo de un marco estratégico para la sostenibilidad, en busca de una definición holística de una institución sostenible liderada por la misión, la visión y la audiencia de la institución.

Palabras clave: moda sostenible, textiles, educación en museos, programación de museos, museos sostenibles, preservación textil.

Body

The collections at The George Washington University Museum and The Textile Museum comprise over 25,000 historic, handmade non-Western textile objects from five continents and spanning five millenia on the George Washington University campus in Washington, D.C. The museum was previously an independent institution and moved to the university campus in 2015. As part of the transition into an academic museum, the museum staff worked to identify ways in which to serve a new audience: namely, university students and faculty researchers.

Over the first few years on campus, sustainable fashion was identified as an area of overlap in student interest and museum staff expertise. Therefore, museum education staff dedicated resources to programming where the impacts of contemporary fashion practices on people and the planet could be discussed. This programming opened up opportunities for meaningful partnerships, including being the home of the D.C. Sustainable Fashion Collective's annual conference and providing support for GW student groups like the student-run, pop-up thrift clothing store (POP!). By providing consistent support for such programs, the museum was positioning itself to be a leader in sustainable fashion in the D.C. metro area.

In 2022, the museum became the home base of the newly founded GW Sustainable Fashion Student Organization. Museum education staff provide support for the student organization in many ways, including guiding their many ideas and initiatives into structured pillars and missions. The student organization is now divided into three committees: programming, communication, and advocacy. Each committee is responsible for at least two projects each semester, often working across committees for increased impact.

For example, a student from the advocacy committee worked with the programming committee to write an op-ed in the GW student newspaper, The Hatchet, arguing that the current programs, such as the aforementioned POP! thrift, need more support from the university administration. The op-ed was argued based on successful demonstrations of student demand – the first POP! saw 1,000 students come through the museum – and on the idea that a closed-circuit fashion system was a step in support of the university's stated climate commitments (Sustainable GW, 2024). The second argument was supported by the students' quantification of their impact; after two semesters of once-monthly pop-up thrift sales, the students had diverted 1,600 pounds of clothing away from the landfill. Their advocacy work, supported by the museum and other university institutions, led to the securing of a new "storefront" location, where the thrift purchase model will be replaced with a swap model, making sustainable fashion choices free for students campuswide.

The success of the student organization combined with the demand for circular fashion options on campus caught the attention of many faculty, including the director of the sustainability minor at GW. The 18-credit minor in sustainability offers students an interdisciplinary platform to examine critical sustainability issues and solutions. The classes within the minor are offered through a variety of schools and departments within the university. Starting in the spring 2024 semester, the museum will be a contributor to the minor by offering Responsible Fashion: an undergraduate course built on the museum's collection and research centers that turns a critical eye on the growing industry and brands that claim to be "sustainable." Through multiple perspectives, the class will provide insight into the history and context of the fast fashion phenomenon. It will explore different business models within the fashion industry, textile and fashion production techniques, and fractured governmental policies regarding how our clothes are made. As alternative perspectives, it will also provide models of clothing cultures outside of Western capitalist systems. These frameworks will provide pathways for critical examination of contemporary sustainable fashion vernacular such as "slow fashion," "recycled," "natural materials" or "greenwashing." This will be the first course offered by the museum in the university system, an important step in the museum's integration to the university campus.

By following the desires of their audience, new doors have opened for the museum. But it has also given staff the opportunity to build a more sustainable institution. Until now, most of the work in sustainability has been serving audiences externally: workshops, panels, lectures, and classes among other programming. The momentum from the success of sustainable fashion work has led to a moment of self-reflection about what a sustainable museum looks like in 2023. The museum director has tasked department leaders with building a strategic framework for sustainability as the museum moves towards its centennial year and closes in on a decade on campus.

To begin building a sustainability framework, staff are taking internal audits on practices they already employ that are sustainable. For example, the collections and exhibitions departments reuse wall paint colors, mounting boards, temporary exhibition walls, and exhibition cases rather than making or buying new ones. Their system of reuse is sophisticated enough that they have an inventory tracking spreadsheet database so they know what is available when and where and can avoid having to remake new exhibition materials. The museum office space is certified as a Level 4 Green Office, the highest level of achievement on GW's Green Office Network (Sustainable GW, 2024). This means the museum office space has been awarded maximum points for the completion of certain projects and practices in areas such as low-carbon commuting, water conservation, kitchen and appliances usage, and responsible electricity and paper usage. The museum's shop, the Artisans Gallery, has been transformed from a typical museum store into an educational gallery where you can purchase and learn about global textile traditions. Everything sold within the Artisans Gallery is handmade and labeled with information about the textile tradition, the person who made the textile, and the impact of that tradition on its geographic region. The Artisans Gallery operates on the principles of Fair Trade and culturally authentic works, meant to sustain the traditions practiced by textile artisans around the world.

Through this internal survey, a more holistic definition of sustainability comes to light. One in which energy is conserved and emissions are reduced but also the continuity of the objects and traditions in the museum collection comes to the forefront. With a more full understanding of what sustainability could look like for their institution, research into a proper strategic framework can begin: one which includes intangible heritage as much as focuses on the physical threats of climate change. In her essay, "Why Cultural Heritage Belongs in the Climate Conversation," Grace Bowie illuminates the structural challenges that prevent a clear connection between climate change and the loss of irreplaceable tradition and knowledge (Bowie, 2023). This expansive view of climate impact is the necessary perspective for the museum when moving forward with a strategic framework.

In applying this perspective, it becomes clear that the threat of climate change to the institution is two fold: first, in the well understood threats of climate change including the fallout from increased temperature and changed weather patterns. But also through the loss of the knowledge and production of the very objects their mission seeks to protect. The threat to textile traditions around the globe is acutely felt in the museum's primary areas of collection. For example, the museum has an established collection of kanthas: a type of textile produced primarily by women from the West Bengal area of India to what is now Bangladesh. These textiles are made from recycled materials, often sari silks, and used domestically, meaning they are not produced for market purposes.

The demand for fast fashion has been exported to the Global South due to the low cost of labor and large populations for employment. The ever-growing demand for labor to produce fast fashion can pull skilled sewers away from producing the traditional, culturally important textiles that the museum cherishes, particularly if those textiles, like kantha, have little market value.

Therefore, the museum not only comes under threat from the effects of climate change, but their collection is affected by one of the very causes of climate change that began their quest into sustainability: overproduction of fashion goods for the West.

As sea levels rise and threaten the existence of entire islands in Polynesia, Melanesia, and Micronesia, so too would disappear the many traditions of tapa cloth, or bark cloth. The loss of land masses and the resulting humanitarian crises of climate refugees will likely dominate much of the political and public discourse. But cultural institutions can and should be prepared to make space to ensure that the very traditions that hold a group of people together are not lost.

By following the desires of their audience, The George Washington University Museum and The Textile Museum has been a locus for conversation about the many meanings of sustainability and textiles. It has also become more sustainable in a way that directly reflects the mission and vision of the institution through programming and thoughtful adaptations to their work. In building a path forward, climate leaders in museums and cultural institutions should work with audiences as much as museum leadership and stakeholders to identify areas of improvement that can support their mission and build lasting change.

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Museums and strategic silence: a case study of sustainability shortcomings

Avigail Rotbain[1] and Sofie Öberg (Sweden)[2]

Abstract

In Sweden, there are comparatively favorable circumstances for creating sustainable museums, such as relatively high degrees of safety, wealth, and democracy. Although the National Museums of World Culture are state funded, we work under the so called "armlength principle", meaning that politicians shouldn't have any direct influence over our work. We therefore have the privilege and opportunity to be able to work preventively with climate issues. So why aren't we further along in creating a sustainable museum sector? The objective of this article is to examine sustainability projects from our organization, the National Museums of World Culture in Sweden (NMWC). We will discuss their merits but mainly highlight the lost potential. This will be approached by a critical analysis of three cases where the organization has aimed to enhance sustainability efforts. We will apply the theoretical framework of "Strategic silence", suggesting that in certain circumstances, organizations rather hush down their sustainability work than highlight them, due to the risk of being accused of green-washing. The three cases represent varied parts of the work at the NMWC: an in-house produced temporary exhibition, a research-based anthology and a practical collaborative toolbox for sustainable practice directed at Swedish museum professionals. The aim of the article is to highlight the underlying reasons as to why museum organizations that seemingly have the potential, engagement and means to be strong actors for sustainability fall short.

Keywords: Credibility, Strategic silence, Sustainability

[1] Avigail Rotbain, PhD in history and Collection Administrator at National Museums of World Culture. E-mail: avigail.rotbain@varldskulturmuseerna.se

2 Sofie Öberg, MA in political science with international focus, Administrator and Sustainability coordinator at the National Museums of World Culture. E-mail: sofie.oberg@varldskulturmuseerna.se

Resumen

En Suecia, existen circunstancias comparativamente favorables para la creación de museos sostenibles, tales como relativamente altos grados de seguridad, riqueza y democracia. Aunque los Museos Nacionales de Cultura Mundial reciben financiación estatal, trabajamos según el llamado "principio de libre competencia", lo que significa que los políticos no deberían tener ninguna influencia directa sobre nuestro trabajo. Por lo tanto, tenemos el privilegio y la oportunidad de poder trabajar preventivamente en cuestiones climáticas. Entonces, ¿por qué no avanzamos en la creación de un sector museístico sostenible? El objetivo de este artículo es examinar los proyectos de sostenibilidad de nuestra organización, los Museos Nacionales de Cultura Mundial de Suecia (NMWC). Discutiremos sus méritos pero destacaremos principalmente el potencial perdido. Esto se abordará mediante un análisis crítico de tres casos en los que la organización se ha propuesto mejorar los esfuerzos de sostenibilidad. Aplicaremos el marco teórico del "silencio estratégico", sugiriendo que en determinadas circunstancias, las organizaciones prefieren silenciar su trabajo de sostenibilidad que resaltarlo, debido al riesgo de ser acusadas de green-washing. Los tres casos representan distintas partes del trabajo en el NMWC: una exposición temporal producida internamente, una antología basada en investigaciones y una caja de herramientas colaborativas prácticas para la práctica sostenible dirigida a los profesionales de los museos suecos. El objetivo del artículo es resaltar las razones subyacentes por las que las organizaciones de museos que aparentemente tienen el potencial, el compromiso y los medios para ser actores fuertes para la sostenibilidad se quedan cortas.

Palabras clave: Credibilidad, Silencio estratégico, Sostenibilidad

In Sweden, there are comparatively favorable circumstances for creating sustainable museums, such as relatively high degrees of safety, wealth, and democracy. Although the National Museums of World Culture are state funded, we work under the so called "armlength principle", meaning that politicians shouldn't have any direct influence over our work. We therefore have the privilege and opportunity to be able to work preventively with climate issues. So why aren't we further along in creating a sustainable museum sector?

The objective of this article is to examine sustainability projects from our organization, the National Museums of World Culture in Sweden (NMWC). We will discuss their merits but mainly highlight the lost potential. This will be approached by a critical analysis of three cases where the organization has aimed to enhance sustainability efforts. We will apply the theoretical framework of "Strategic silence", suggesting that in certain circumstances, organizations rather hush down their sustainability work than highlight them, due to the risk of being accused of green-washing.

The three cases represent varied parts of the work at the NMWC: an in-house produced temporary exhibition, a research-based anthology and a practical collaborative toolbox for sustainable practice directed at Swedish museum professionals. The aim of the article is to highlight the underlying reasons as to why museum organizations that seemingly have the potential, engagement and means to be strong actors for sustainability fall short.

The framework of Strategic Silence

The theoretical framework of Strategic silence by Carlos and Lewis (2018) draws on work on perception management and organizational hypocrisy. They discuss how organizations handle the increasing pressure to behave sustainably, and how sustainability efforts are communicated. The preconception was that the prevalence of a certification awarded by an objective third party was perceived as an undeniably positive way to communicate a trustworthy commitment. Carlos & Lewis (2018), however, argue that there are instances where there seem to be a strategic decision not to promote such certifications. They analyse under which circumstances the visibility of a certification appear to be considered a reputational risk rather than a strength. They argue that in situations where scrutiny and bad publicity potentially could follow presentations of sustainability claims, the positive effects are considered subordinate to how the brand is perceived and is therefore not published.

In this explorative article we investigate if museums choose to limit their sustainability initiatives in a similar manner, and possible explanations for why that is. This will be done in small scale, by analysing three examples from the NMWC.

Three cases from the National Museums of World Culture

Case 1

The exhibition "Human Nature" was shown at two museums of the NMWC in 2019–2021, at the Museum of World Culture in Gothenburg and the Museum of Ethnography in Stockholm. The concept was an exhibition addressing goal 12 of Agenda 2030, on sustainable consumption and production. Drawing on Donna Haraway's (2017) "connectedness", the visitors could learn about natural and human preconditions, and effects of human behaviour as well as threats and possibilities for the future (Arfvidsson & Follin, 2020). The ambition was to balance despair and hope, wishing to underline the gravity of the situation while not causing paralysing hopelessness but rather inspire change.

The topic raised concerns early on. Museum staff indicated that it could generate questions about how the environmental and social impact of the NMWC was managed. Given these concerns, the creative team strived to embed sustainability in the design process. The discussion reignited the sustainability work within the organization, and materials and waste were addressed as a major part of the organizations environmental impact. The concern of critique from the public, however, turned out to have been exaggerated.

There was no real evaluation of the sustainability outcome of the exhibition and the possibilities for systemic change in project practices, hence the internal discussion faded away in the continuous stream of new productions. Though the exhibition was a public display of a willingness to address issues of sustainability, they were directed away from the institutional level. This avoidance could be compared with Carlos & Lewis (2018) discussion that organizations' sustainability claims in domains close to home could be perceived as hypocritical, while efforts outside of the core operations are safer to communicate.

Case 2

The anthology (Nordbäck & Rotbain, 2022) was developed through workshops with pedagogic staff from Swedish museums. The theme was to explore eco-critical perspectives on museums teaching and exhibitions and included articles both from researchers and museum pedagogues working with sustainability.

A few days before the book release a concern arose that the book could be viewed as activistic. There had recently been a media debate about activistic researchers, and a researcher who works in the field of critical animal studies had received heavy critique in the media followed by cyber hate. The focus of the critique was whether state funded research should be activistic or not. Since some of the authors discuses similar topics in the anthology, the question was raised on how to best support them during the book release. While academics are well-trained in answering critical questions, the concern was that the event might be attended by people who did not intend to discuss the questions at hand, but rather only disrupt. The initial concern before the book release was the well-being of the authors, but the concerns gradually shifted to whether the NMWC could be accused of behaving activistic. The objective was not how to explain or defend the research, but to convey that the organization is the publisher and not to be entangled with the research itself.

There is, of course, a larger question within academia whether researchers should, and to what extent, be activists in their research, as well as how research activism should be defined (Þórsson, 2020). The anthology can indeed be interpreted as activistic, and some of the authors call their research activistic both in the anthology and elsewhere. That raises questions of whether there was an initial lack of understanding of what the research in the anthology entailed, or if the risks increased more than anticipated.

Case 3

The third example is a website to support museum professionals to make sustainable choices in their day-to-day work. The initiative was preceded by a conference at the NMWC in 2019, to which museum professionals were invited to discuss sustainability in thematical and practical terms. An attendee proposed a collaborative project to create a digital space for museum professionals in Sweden to share and build knowledge in matters of museum sustainability. This resulted in a case study in which perceived needs and wishes were collected and analysed.

When the case study was finished the NMWC were agreed to proceed and create the digital space.

This proves a willingness to prioritize sustainability efforts in the organization and take a leading role in the sector. The website was intended to be an external and shared space for interaction, but the personnel and economic resources allocated to the project were limited, and the result was reduced to an overview of condensed information under the existing domain of the NMWC.

A partial explanation for the downsizing of the project is Covid-19, which created unforeseen challenges. A couple of years after the pandemic however, there have been limited ambitions to revive the project. There are many initiatives for sustainability in the museum sector, but they are quite disparate and the collective wish for a support system and overarching collaboration is still not in place. The advocacy group for museums in Sweden initiated a work group to develop guidelines for sustainability related matters, but the process came to a halt after the draft was delivered, and no final product has been decided on.

Analysis

In this study, we intended to apply the concept of Strategic silence on three cases from the NMWC. The idea was that it could be an explanation to why the NMWC, as well as many other similar organizations, don't follow their sustainability projects all the way through, but rather pause at a seemingly "comfortable" place.

Although we would like to stress that this is a small study with tentative results, we believe that the concept of Strategic silence can be a partial but not complete explanation for these cases. While the exhibition Human Nature addressed issues on sustainable consumption and production, the main objective was for the visitors to reflect on the effect of individual behavioural change. The MNWC succeeded in creating a relevant exhibition but failed to take the opportunity to apply the concept on their own operations. The website on the other hand focused on sustainable museum practices, but the limitation of time and resources to develop the site indicate that a prestigious idea is more appealing than its implementation. In the case of the anthology, the fear wasn't that the general public would deem NMWC hypocritical. Instead, the concern was that other parts of the public would view this research as a political statement. In attempting to please stakeholders of opposing opinions, the NMWC places itself in what we would refer to as a state of Strategic Limbo, where initiatives are taken to prove commitment to a cause, but which decrease in intensity along the way. Consequently, we argue that while sustainability awareness is steadily increasing in the Swedish museum sector, there is need for more substantial changes in the way the organizations' function. A sincere ambition to decrease the negative impact of museum activities would require for the museums to open up for potentially drastic changes in the way they work, or otherwise admit that they are not willing to do so.

Results and ways forward

In this article, we suggest that the status of these cases is in a state of limbo rather than strategically silenced. Horiuchi et al (2009) claims that it is the ever-watchful gaze of activists that makes organizations prone to green hushing, but in the case of the NMWC the activists' opponents have the same effect. There is also a pressure from within the NMWC and the museum sector at large to take responsibility and adapt to greener practices. This leaves organizations stuck between a rock and a hard place: they see a need for sustainability measures, but fear accusations of both inaction and activism. Therefore, they linger in a state of limbo by favouring sustainability issues that are safely distant from their own operational work, or through initiating commendable projects without allocating enough resources to see them through.

We suggest that there are resemblances to decolonization processes, which for a long time was disregarded by many museums. Godfrey (2005; 2009) argues that companies accumulate good-will by proactively working with issues close to hearts of their customers. It could be argued that this is the approach NMWC has attempted in questions regarding decolonization. Instead of being paralyzed between opposing opinions of the public – who are both the "funders" and the "customers", another method was approached. Many museums have realized that these questions can't be ignored and will eventually have to be addressed, which we argue is true also for sustainable practices.

It is rarely possible to please everyone. Museums could instead bravely take a stand, even if it results in critique. We believe that at the NMWC, some of that bravery was found in decolonization work when the management adhered to the expertise and placed their faith in their knowledge. We suggest that this can be an inspiration for how museums work with sustainability onwards: investing confidence in the expertise in order to handle the complexity of the issues and dare to make changes.

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Kaninde educational project: experiences in the application of didactic strategies for the conservation of *Ara ararauna* in Paraguay.

Daniel Olmedo,[1] Aurora Ortega[2] & Alejandro Amarilla (Paraguay)[3]

Abstract

Canindeyú, like other departments of Paraguay, presents a gradual change in land use, constituting one of the main causes of climate change worldwide, which affects not only human well-being, but also the survival of wild species, due to the difficulty of adapting to new climatic conditions, the loss of habitat that represents this transformation of the territory, and other effects. The Canindeyú Conservation Project seeks the reintroduction of the blue-and-yellow macaw, known in Guarani as kaninde (*Ara ararauna*) in this department, part of its old natural distribution area and where it would be extinct due to habitat loss, illegal trafficking and mascotism. Within this framework, the Kaninde Educational Project is developed, whose objective is to sensitize communities about the specie, to motivate actions that promote its protection and conservation. In order to achive this, several strategies are displayed targeted to specific groups (teachers and students, indigenous communities, and authorities): the didactic game "The Kaninde's Adventure" in its table and floor versions, which aims to develop cognitive and affective skills about the biology, ecology and threats to the species; the narration "Lolo's flight", a children's story version and animated short film, whose objective is to facilitate dialogue and the proposal of solutions on illegal trafficking and mascotism; the painting workshop "Wild Colors", which uses art to promote the knowledge and appreciation of the characteristics of the *Ara ararauna*; and tree-planting campaigns, which encourage the knowledge, planting and care of forest species related to the needs of the kaninde.

[1] Educador Ambiental, ITAIPU Binacional, TEKOTOPA Centro Ambiental, Hernandarias. E-mail: arnaldoo@itaipu.gov.py
[2] Técnica del Área de Ictiología, ITAIPU Binacional, Estación de Acuicultura, Hernandarias. E-mail: antoma@itaipu.gov.py
[3] Educador Ambiental, ITAIPU Binacional, TEKOTOPA Centro Ambiental, Hernandarias. E-mail: caag@itaipu.gov.py

These strategies have led to a positive assessment of the ecological characteristics and functions of the specie in the target groups, as well as to a rapprochement and openness to dialogue on their conservation problems, which are taboo subjects despite being common, due to strongly rooted and standardized cultural issues. The project recognizes the need to optimize the design, validation, and application of more effective evaluation tools, both for the educational strategies and to measure their effectiveness in meeting educational objectives, which ultimately lead to the achievement of the conservation project's objective.

Keywords: blue and yellow macaw, Awareness-raising, Educational strategies, education for conservation, bird conservation

Resumen

Canindeyú, como otros departamentos de Paraguay, presenta un paulatino cambio de uso de suelo, constituyendo una de las principales causas del cambio climático a nivel mundial, y que repercute no solo en el bienestar humano, sino también en la supervivencia de especies silvestres, debido a la dificultad de adaptación a nuevas condiciones climáticas, a la pérdida de hábitat que representa dicha transformación del territorio, y a otros efectos. El Proyecto de Conservación Canindeyú busca la reintroducción del gua'a kaninde (*Ara ararauna*) en dicho departamento, parte de su antigua área de distribución natural y de donde estaría extinto por la pérdida de hábitat, por el tráfico ilegal y el mascotismo. En este marco, se desarrolla el Proyecto Educativo Kaninde, cuyo objetivo es sensibilizar a las comunidades sobre la especie, a fin de motivar acciones que promuevan su protección y conservación. Para ello, se utilizan estrategias con características diseñadas en función a los grupos objetivo (docentes y estudiantes, comunidades indígenas, y autoridades): juego didáctico "La Aventura del Kaninde", versiones de mesa y de piso, el cual pretende desarrollar habilidades cognitivas y afectivas acerca de la biología, ecología y amenazas de la especie; la narración "El Vuelo de Loló", versión cuento infantil y cortometraje animado, cuyo objetivo es facilitar el acercamiento para el diálogo y la propuesta de soluciones sobre el tráfico ilegal y el mascotismo; el taller de pintura "Colores Silvestres", que utiliza el arte para promover el conocimiento y apreciación de las características del *Ara ararauna*; y campañas de arborización, mediante las cuales se incentiva el conocimiento, plantación y cuidado de especies forestales afines a las necesidades del gua'a kaninde. Estas estrategias han propiciado en los grupos objetivo la valoración positiva de las características y funciones ecológicas de la especie, así como el acercamiento y apertura al diálogo sobre sus problemas de conservación, los cuales constituyen temas tabú a pesar de ser comunes, debido a cuestiones culturales fuertemente arraigadas y normalizadas.

Se reconoce la necesidad de optimizar el diseño, validación y aplicación de más instrumentos de evaluación, tanto para las estrategias educativas empleadas, como para medir su efectividad para el cumplimiento de los objetivos educativos, que redunden finalmente en el cumplimiento del objetivo del proyecto de conservación.

Palabras clave: Guacamayo azul y amarillo, sensibilización, estrategias educativas, educación para la conservación, conservación de aves

Paraguay is experiencing increasing land-use change, a phenomenon occurring in the department of Canindeyú as well as throughout the rest of the country. Globally, this is one of the main causes of climate change, whose adverse effects are seen not only in human well-being but also in the ability of wildlife species to adapt to new climatic conditions, the habitat loss resulting from such territorial transformation, and other impacts (IPCC, 2007; 2014).

The parrot species (Psittacidae: the family of parrots, macaws, and similar birds) known in Spanish as the blue-and-yellow macaw, in Guaraní as gua'a kaninde or kaninde, and scientifically as Ara ararauna, is classified in Paraguay as Critically Endangered – CR – (MADES Resolution 254/19, 2019). In addition to habitat loss and possibly changing climate conditions in its ecosystems (Renton & Salinas-Melgoza, 2004; Pimm, 2008; Sekercioglu et al., 2012; Sepúlveda Correa, 2019), the pet trade and illegal trafficking have likely caused local extinctions in Paraguay (Hayes, 1993), possibly as early as the late 1980s. Although informal sightings are reported in Canindeyú and other northern areas of the country, these are at the southern limit of its original geographic distribution (Scherer-Neto et al., 2009; Rodríguez et al., 2009).

Beyond its role in maintaining ecosystem balance—particularly through seed dispersal (Sepúlveda Correa, 2019)—this species holds cultural value for the Indigenous peoples of the region, where it is considered part of their religious worldview, as are other psittacids (Cadogan, 2007).

The Canindeyú Conservation Project by ITAIPU Binacional aims to reintroduce the kaninde in this department and eventually in other regions, through an ex situ conservation program at the TEKOTOPA Environmental Center and an in situ program in the protected areas managed by the Entity in the department.

To achieve this, not only must appropriate habitat conditions be met (such as cerrado ecosystems and forest edges), but also sociocultural conditions must be considered. This includes engaging and collaborating with local communities to unlearn a deeply rooted culture of capturing, selling, and keeping birds as pets—often illegally. According to Riquelme & Neris (2019), the kaninde ranks second among the most sought-after psittacids as pets in Paraguay, behind the blue-fronted Amazon (*Amazona aestiva*).

As part of the Canindeyú Project, the Kaninde Educational Project has been developed. Its goal is to raise awareness among communities in the Canindeyú department about the kaninde (*Ara ararauna*), in order to encourage actions that

promote its protection and conservation. Within this framework, strategies are applied that are tailored to specific target groups (teachers and students, Indigenous communities, and authorities). The number of participants in the first year of implementation (2022–2023) is summarized in Table 1 and briefly described below:

Activity	Institution/Organization	Number of participants
Kaninde's adventure	Colegio Nacional Gaspar Rodriguez de Francia (Alto Paraná)	22
	Actividad "Pequeños Turistas" por el Día del Niño 2022 en el Centro de Recepción	200
	Colegio Nacional de Enseñanza Media Diversificada Dr. Raúl Peña y Centro	59
	Playa Tacuru Pucú (Alto Paraná)	60
	Expo Regional Canindeyú 2023 (Canindeyú)	20
	Colegio Nacional Herminia Cortaza de Leite, Escuela Básica N° 4289 Sagrada	200
	Escuela Básica N° 2564 Mcal. López y Escuela Básica N° 7716 Asentamiento Isla	23
Total		**584**
Lolo's flight (story)	Actividad "Cuentacuentos" por el Día del Libro 2023 (visitantes de TEKOTOPA,	73
	Escuela Básica N° 4281 Dr. Dionisio González y Escuela Básica N° 1579 Puerto	75
	Colegio Británico (Alto Paraná)	48
Total		**196**
Lolo's flight (animated short film)	Lanzamiento a nivel nacional en la Expo Feria Mariano Roque Alonso 2023*	1200
	Actividad conmemorativa por aniversario de la ciudad Salto del Guairá en la Plaza	350
	Pasantes del Nivel Medio y Técnico en ITAIPU (Alto Paraná)	55
	Escuela Básica N° 3347 San Alberto Magno (Alto Paraná)	53
	Colegio Nacional Santo Domingo de Guzmán (Alto Paraná)	127
	Escuela Básica N° 3499 Santa Bárbara (Alto Paraná)	239
	Colegio Salesiano Don Bosco (Alto Paraná)	150
	Escuela Básica N° 1907 Santa Rosa de Lima (Alto Paraná)	46
Total		**2220**
Wild colors	Colegio Nacional Verbo Divino (Alto Paraná)	27
	Escuela Básica 4281 Dr. Dionisio González y Escuela Básica N° 1579 Puerto Adela	75
	Actividad Conmemorativa por el Día del Niño 2023 en la Playa Tacurú Pucú (Alto	210
	Escuela Básica N° 3347 San Alberto Magno (Alto Paraná)	53
Total		**365**
Arborization campaigns	Escuela Básica N° 3850 20 de Julio (Canindeyú)	26
	Escuela Básica N°2564 Mcal. López y Escuela Básica N°7716 Asentamiento Isla	23
	Escuela Básica N° 4285 Itambey (Canindeyú)	28
	Feria de emprendedores "Expo Canindé" de la Joint Commission International (JCI)	100
Total		**177**
General total		**3542**

(*):They are counted due to the participation of people from all departments of the country

Table 1. Participants in the first year of implementation (2022–2023). Compiled by the authors.

- Educational Game "The Adventure of the Kaninde": This game is designed to develop cognitive and emotional skills related to the biology, ecology, and threats facing the species. It consists of a numbered board that tells a story in which a kaninde (represented by each player) has lost its habitat and is forced to search for a new one. From start to finish, players (up to four per game) advance according to the number rolled on a die, competing to be the first to reach the goal and win. Some spaces on the board feature illustrations and attached cards with text, gradually building the experiences of

a kaninde individual through scenarios that could occur in real-life environments, validated by biologists and veterinarians.

Two versions of the game were created:

- A small tabletop board (Figure 1), where tokens represent the kaninde.
- A large floor mat (4 x 3 meters) (Figure 2), where participants themselves move across the board.

The game is aimed at teachers, students, and members of Indigenous and other communities, suitable for all ages starting from five years old.

Figure 1. Board, tokens, and cards from the tabletop game *The Adventure of the Kaninde*. Image: Environmental Education Division, ITAIPU Binacional.

Figure 2. The game *The Adventure of the Kaninde* being played in its floor mat version. Image: Environmental Education Division, ITAIPU Binacional.

- Narration "Loló's Flight": Its goal is to facilitate engagement in dialogue and the proposal of solutions regarding illegal trafficking and the keeping of wild animals as pets. It tells the story—based on a real case—of a kanindé (blue-and-yellow macaw) that, after surviving an attempted capture by poachers, is taken to TEKOTOPA. There, unable to return to its natural habitat, it becomes an "ambassador" for its species, raising awareness among visitors about the consequences of illegal practices like the one it endured.

The story was produced in two versions:

- The first is a children's storybook version, designed for printed reading material and storytelling techniques (Figures 3 and 4), aimed at children ages five to ten.
- The second is a seven-minute animated short film (Figures 5 and 6), intended for all target audiences ages nine and up.

Figure 3. Development of the storytelling session *"Loló's Flight"*.
Images: Environmental Education Division, ITAIPU Binacional.

Figure 5. Promotional poster for the animated short film *Loló's Flight*.
Figure 6. Screening of the animated short film *Loló's Flight*.
Images: Environmental Education Division, ITAIPU Binacional.

- Painting Workshop "Wild Colors": This workshop aims to use art to promote knowledge and appreciation of the characteristics of the *Ara ararauna* (blue-and-yellow macaw). It involves children observing an illustration of a *kanindé* (another name for the macaw) and coloring a black-and-white copy using painter's materials (palettes, brushes, easels) while wearing identifying outfits. This setup allows them to also role-play as visual artists, which adds an extra layer of motivation. It is designed for children aged four to ten years (Figure 7).

Figure 7. Wild Colors Painting Workshop. Image: Environmental Education Division, ITAIPU Binacional.

- Reforestation Campaigns: These aim to encourage the knowledge, planting, and care of tree species that meet the needs of the *gua'a kanindé* (blue-and-yellow macaw), specifically fruit-bearing trees (for feeding) and tall trees (for nesting), in both urban and rural areas. Activities include providing seedlings and participating in group planting events, or distributing the saplings so that reforestation efforts can be carried out later by the target groups themselves. These campaigns are intended for all target groups within communities in Canindeyú (Figure 8).

Figure 8. Reforestation with native species at an educational institution in the Canindeyú department. Image: Environmental Education Division, ITAIPU Binacional

During the implementation of these strategies, spaces for dialogue and discussion were established between participants and educators. It was observed that, in some cases, participants were unfamiliar with the species before the activities took place. However, after engaging in the activities, they expressed admiration and a positive appreciation for its characteristics (such as its vibrant colors, size, behavior, and ecological roles).

In all cases, participants showed interest in the conservation issues the species faces, along with an apparent willingness to contribute in some way to addressing them. However, these observations were mostly empirical, as the evaluation tools are still in the process of being optimized, validated, or adapted from existing methodologies to ensure reliable measurement in future applications (Soriano Rodrígues, 2015). "Loló's Flight" already has a tool designed for this purpose, currently in the application phase, to be validated later (Figure 9).

Figure 9. Evaluation tool applied to a participant of the storytelling session *Loló's Flight*. Image: Environmental Education Division

It is especially noteworthy that, following these initial experiences with the strategies, some individuals admitted to keeping birds and other wild animals as pets (without specifying whether any were *Ara ararauna*). This outcome was not anticipated. It suggests the need for a "cautious" approach in each activity to avoid generating rejection or fear among these participants, which could hinder the awareness-raising process or jeopardize potential community collaboration in other areas—such as the donation of animals they possess to help reinforce the population of kanindé under human care within the ex situ conservation program.

Preliminarily, and based on the lived experiences of environmental educators, it can be estimated that these strategies have fostered a positive appreciation among target groups for the species' characteristics and ecological roles, as well as openness to dialogue about its conservation challenges. These topics, although common, are often considered taboo due to deeply rooted and normalized cultural beliefs.

Further optimization is still needed in the design, validation, and application of more evaluation tools—first, to assess the quality of the strategies and activities themselves, and then to measure their effectiveness in achieving educational objectives. This, in turn, will be reflected in the fulfillment of the goals of the Canindeyú Conservation Project.

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Climate Action and Sustainability in Strategic Museum Leadership Plans

Alenka Černelič Krošelj (Slovenia)[1]

Abstract

Museums are deeply embedded in society. They are an integral part of this day and age as they draw ideas from the past to use them in the future. The question, however, is if this is the case also when it comes to the ever-increasing new challenges, including the climate crisis and the seeming equality in dealing with it. Even before the pandemic, which highlighted the global nature of various challenges, museums had started grappling with the tasks and responsibilities related to the climate, climate action and sharing the responsibility for sustainable development. Responsibility, which is in a way shared between various stakeholders, takes on new dimensions in matters of leadership and management, which are based on clear visions and achievable strategic plans that aptly communicate the museums' importance and tasks through requirements, and above all, through active co-shaping of both society and the so-called cultural, creative and sustainable tourisms, which cannot develop successfully without heritage and museums, especially not in the field of sustainability.

Keywords: leadership, strategic plan, climate action, responsibility

[1] Posavje Museum Brežice, Slovenia, RA ICOM SEE Chair, INTERCOM member. E-mail: alenka.cernelic.kroselj@pmb.si

Resumen

Los museos están profundamente arraigados en la sociedad. Son una parte integral de esta época, ya que extraen ideas del pasado para usarlas en el futuro. La pregunta, sin embargo, es si este es el caso también cuando se trata de nuevos desafíos cada vez mayores, incluida la crisis climática y la aparente igualdad a la hora de abordarla. Incluso antes de la pandemia, que puso de relieve la naturaleza global de diversos desafíos, los museos habían comenzado a abordar las tareas y responsabilidades relacionadas con el clima, la acción climática y compartir la responsabilidad por el desarrollo sostenible. La responsabilidad, en cierto modo compartida entre los diversos actores, adquiere nuevas dimensiones en materia de liderazgo y gestión, que se basan en visiones claras y planes estratégicos realizables que comunican adecuadamente la importancia y las tareas de los museos a través de requisitos y, sobre todo, a través de co-configuración activa tanto de la sociedad como del llamado turismo cultural, creativo y sostenible, que no puede desarrollarse con éxito sin el patrimonio y los museos, especialmente en el ámbito de la sostenibilidad.

Palabras clave: liderazgo, plan estratégico, acción climática, responsabilidad

Leaders, Leadership and Strategic Plans that Include Climate Action and Sustainability

Successful leadership and management rests on taking on various responsibilities and on cooperation that is based on trust and respect for the profession. And most importantly, leaders both in Southeast Europe and the world over are expected to demonstrate the following qualities and competencies in all areas:

- Vast knowledge
- Boundless energy
- Being fearless when it comes to taking on and performing various duties
- Being empathic and always better than others
- Having access to relevant information
- Having the right network and support from various stakeholders at different levels.

The role of leaders in Slovenia and in the area co-shaped by RA ICOM SEE is characterised, among other things, by having to constantly juggle between founders, employees and users, and the satisfaction of everyone involved in new/old crisis situations is an ever-present challenge.

As leaders, we need to have a vision and a clear plan for the present and the future. With different experiences in building the way to a leading position, different jobs and responsibilities, we try to follow a personal and recognisable path that also gives us plenty of opportunities for change and inclusiveness. A leader has to be knowledgeable and proactive, not dealing with problems in the same way and always using the old methodology. In Slovenia and in most ICOM SEE countries, we have annual funding and therefore the plans are adopted on a yearly basis. On the one hand, this is an obstacle, but also an advantage, as flexibility is greater and contemporary issues can be addressed more quickly. A disadvantage and an obstacle is that our programmes need to be adjusted to the budget structure and the expectations of having to have a comprehensive programme with excellent exhibitions year after year, etc.

The one thing that has proven helpful is a mandatory strategic plan that directors have to deliver at the beginning of the mandate, i.e. every five years. According to the Slovenian legislation, strategic plans have to be in accordance with the provisions of the fourth paragraph of Article 35 of Exercising of the Public Interest in Culture Act. They must include the programme orientations, the expected scope of the programme, organisational aims, the basis for the personnel plan, the investment scheme and investment maintenance.

This is a content frame that is eligible for the Ministry of Culture. Every cultural institution, including museums, are obliged to prepare it and implement it.

Public accessibility of strategic plans is compulsory and a brief review of the selected museums' strategic plans with a focus on inclusion of sustainability and climate action shows that only the strategic plans adopted over the past three years have some content that is focused on this important topic.

In strategic plans, sustainable development is mainly expressed through the emphasis on the importance of being actively involved in co-shaping the relationship with the environment, including the Agenda 2030 goals and some crucial sustainability-related content, such as providing conditions for sustainable preservation and care of collections, which is related to responsible and sustainable collection policies. The second area is aimed at facilities management by incorporating and monitoring climate change, by keeping track of and observing principles of sustainability in dealing with maintenance, restoration and co-shaping successful energy efficiency models. This is a particularly vital task, since most museums in the area in question are located inside immovable heritage monuments (e.g. castles, old towns etc.). An important part is aimed at implementing programmes and staging exhibitions, where the zero-waste strategy must be followed and principles of sustainability must be taken into account when it comes to the methods of communication with the public. It is necessary to change or update visitor management strategies, as well as the topics and narratives related to museum communication.

For the sake of motivated and creative work, it is also important to create a sustainable environment for employees and sustainable management. An important part are the answers to the following questions: how should we work, how should we change, in what way should we adapt to make sure we are hopeful and not fearful of the existing changes that require museums to be an active part of climate action and sustainability.

Therefore, the first action, already taken in Slovenia, is reshaping the methodology; in fact, the Slovenian Museum Association has already prepared a special educational programme for leaders. As opposed to plans being written and prepared by a single person – the leader/the director, who is responsible for these plans – there has now been a switch to the so-called community planning. A special group that includes the director, museum employees and the usual stakeholders (founders as the local community, the ministry etc.) is now open to the representatives of visitors and users. They can be involved not just by giving them questionnaires to fill out, but also through a full membership and an active role in developing a new strategic plan.

This is a new situation that gives more social relevance to museums and provides leaders with an opportunity to experience shared responsibility. It is also a time consuming venture, as many directors have responded to the new suggested methodology. This is, however, one of the most important skills – to give the voice and to share the power. It is even more important, if museums aim to be active and seen as one of the drivers of sustainability and climate action.

Community Collection and Museum in Črneča vas

The example is based on the Posavje Museum Brežice's commitment, which is laid down in its Strategic Plan:

The vision for the Posavje Museum Brežice's future work includes new trends followed by both regional and other museums, as well as various tasks presented by contemporary society and modern times. A vital part of the museum and its cultural landscape is the museum's involvement in the local community, engagement, co-shaping the cultural landscape and heritage communities, innovation, sustainable perception of museum materials, the mobility of people and collections, as well as physical, virtual and intellectual accessibility of cultural heritage. Such approaches promote the museum's active involvement, thus increasing its social visibility and power.

The project titled Community Collection and Museum in Črneča vas, a small village in the Gorjanci mountains on the border between Slovenia and Croatia, gives the Posavje Museum Brežice as a regional museum the opportunity to have a special impact on the museum landscape with a focus on sustainability and climate action. A small community – miles away from urban centers, yet with a great desire to preserve the local heritage, and even more so, eager to manage it and have a say in the ways it is presented and communicated – has created a community collection for the premises of the former village primary school, important for the life of the

village, which due to its geographical location on the border and up in the hills, had defied global influences for a long time. It is precisely these foundations for cooperation with the regional museum that highlight the commitment to sustainability in the field of preserving the community within the original environment.
This kind of cooperation, and above all the way cooperation with diverse communities is understood, is an effective way of strengthening the position and perception of museums as important/key sustainability stakeholders.

Conclusion

Strategic plans are the key to incorporating and advancing eco-friendly missions, values, practices and improving infrastructure. Through careful planning, accessible climate actions can be included in museum programmes aimed at different target groups. Interdisciplinary projects can be used to share our heritage-related knowledge with NGOs, companies and societies. And most importantly, with a strong commitment to implementation, we can shape our board, our partners and our supporters.

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Climate Action through Plastics Reduction

Elka Weinstein[1] and Antonio Machado[2] (Canada)

Abstract

ICOM Canada in collaboration with the Coalition of Museums for Climate Justice and Ocean Wise Conservation Foundation (Vancouver) is developing a special program for institutions in the museum and heritage sector to take climate action now. ICOM Canada is spearheading the development of a Plastic Reduction action plan designed specifically for museums and heritage institutions, large and small, based on Ocean Wise's tested tool kit for measuring plastic footprint and eliminating plastics from the supply chain. By reducing the use of plastic - fossil fuels' other product - in operations, exhibitions, cafés, gift shops and programs, and in collections management, museums and heritage institutions can be leaders in the move to a carbon neutral Canada by 2030.

Keywords: Plastics reduction, Ocean Wise, toolkit

[1] Elka Weinstein is a skilled and experienced museum and heritage specialist. She has worked in Canada, Latin America and Spain, and has created art exhibitions and museum programming as an independent curator and educator. She currently works full time as the Museum and Heritage Programs Advisor at the Ministry of Tourism, Culture and Gaming for the Province of Ontario. She is a member of ICOM Canada, and a member of the Board of North York Arts.

[2] Antonio has always dedicated himself to Museum Studies and Cultural Management. After graduating from Architecture in Venezuela, he then moved to Italy to study Museology and principles of Conservation in Florence. He worked at the Venezuelan National Museums Foundation, at the Ministry of Culture as head of Culture. Antonio graduated from the Arts Management Program (RAMP) in Calgary and is currently Vice Chair of the Immigrant Council for Art Innovation. He owns a private gallery and framing service in Calgary. E-mail: antomach@gmail.com

Resumen

ICOM Canadá, en colaboración con la Coalición de Museos por la Justicia Climática y la Fundación para la Conservación Ocean Wise (Vancouver), está desarrollando un programa especial para que las instituciones del sector de museos y patrimonio tomen medidas climáticas ahora. ICOM Canadá encabeza el desarrollo de un plan de acción de reducción de plástico diseñado específicamente para museos e instituciones patrimoniales, grandes y pequeñas, basado en el conjunto de herramientas probado de Ocean Wise para medir la huella de plástico y eliminarlos de la cadena de suministro. Al reducir el uso de plástico (el otro producto de los combustibles fósiles) en operaciones, exposiciones, cafés, tiendas de regalos y programas, y en la gestión de colecciones, los museos y las instituciones patrimoniales pueden ser líderes en el camino hacia una Canadá neutral en carbono para 2030.

Palabras clave: reducción de plástico, Ocean Wise, herramientas

Climate change is a defining issue in our lives today, we need urgent and ambitious action at every level. The cultural sector has reached a point where the need for participation and change is urgent to enable transformational climate solutions within the institutions.

ICOM Canada, in its new strategic plan and considering the new museum definition, is advocating for the contours of a museum sector that has sustainability, greening and climate change clearly in its focus. In our submission to the Federal government about the new National Museum Policy, we recommended that the Federal government increase infrastructure funding for green re-construction/upgrades to achieve Canada's infrastructure climate targets (and the greening of museum operations) and increase funding for exhibitions about climate change and STEM education around global warming.

Around the globe museums are working to improve their operations and reduce their carbon emissions. ICOM Canada has been working to implement some changes in our museum's operations, one of them is the plastic reduction program presented during the International Conference Museum Leadership in Climate Action in the city of Hernandarias, Paraguay at the ITAPU Museum.

In partnership with the Coalition of Museums for Climate Justice and Ocean Wise Conservation Foundation (Vancouver) ICOM Canada is developing a special program for institutions in the museum and heritage sector to take climate action through plastic reduction.

Our partner, The Coalition of Museums for Climate Justice (CMCJ) was formed in 2016 to build museums' capacity to promote community awareness, mitigation, and resilience in the face of the growing climate crisis.

As for Ocean Wise Conservation Foundation is a global conservation organization whose mission is to create communities that take meaningful action to protect and restore our oceans and it is an institution with valuable experience in managing and reducing the use of plastics developing tool kits for individuals and business to help them reduce their plastic footprint.

When we talk about sustainability, we need to mention three major summits that have outlined and committed most of the world's countries to reducing and limiting gas emissions, sustained through three decades already:

- The Rio summit (1992) creates a new international plan of action on the environment to achieve sustainable development.
- The Tokyo Protocol (1997) commits countries to reducing greenhouse gas emissions that cause global warming.
- The Paris Agreement (2015) sets specific objectives to achieve climate neutrality by 2050. The importance of this agreement is that it is a legally binding agreement and makes it mandatory to comply by the signatory countries.

As a result of the agreement signed in Paris, seventeen sustainable development goals were established, including the actions needed to address climate change. Canada, as a signatory to the Paris agreement established a legally binding commitment to the world in reducing greenhouse emissions and start its transition to a low-carbon energy economy.

ICOM, as part of the international community, established an agenda at its General Assembly in Kyoto (2019) that supported this global movement as an agent of change, recognizing that all museums have a role to play, shaping and creating a sustainable future. This way the foundations for a new development model was set.

Plastic pollution is one of the biggest environmental challenges, affecting our biosphere on land and sea. Canadians throw away over three million tonnes of plastic waste every year, and only a small part gets to be recycled. Canada has already begun to implement standards and regulations to reduce plastic pollution, eliminating the unnecessary use of single-use plastics (cups, plastic bags and plastic wrapping, or cutlery, among others), contributing to reach the goal of Zero Plastic Waste by 2030 and net zero emissions by 2050.

To address this critical issue, ICOM Canada is working on a program specially to reduce the use of plastics in museums and the heritage sector. ICOM Canada, the Alberta Museums Association (AMA) and the British Columbia Museums Association (BCMA) are collaborating with Ocean Wise and the Coalition of Museums for Climate Change developing a Plastic Waste action plan designed specifically for museums, adaptable to large as to small institutions.
To become a partner in the Ocean Wise Plastic Reduction Program, the participant institutions are going to follow three basic steps:

- Using our simple tool to measure your plastic footprint.
- Setting targets to refuse, reduce, reuse, or better recycle plastics.
- Reporting your progress and share your success.

The results will give those institutions the opportunity to:

- Understand where you are unnecessarily using plastic.
- Identify cost savings by reducing waste disposal fees and single-use plastic expenses.
- Get recognized for the steps you have taken to cut your plastic footprint.

This program will be developed between 2023 and 2026 in three phases:

Phase 1: With the support of Ocean Wise, we began to measure the plastic footprint in the selected institutions to eliminate the use of single-use plastics and establish the objectives to reduce the use of plastics. This process helps them understand where they are using this material unnecessarily and establish the necessary steps to reduce their plastic footprint as much as possible, reducing its use in operations, exhibitions, cafes, gift shops and collection management.

The pilot project is being developed at the Aga Khan Museum in Ontario and Highland Village in Nova Scotia, two institutions of large and small size, respectively. In addition, there are other institutions such as Toronto's Thunder Bay Art Gallery and Montreal's McCord Museum who are also interested in the program.

Phase 2: Based on the experience obtained from the pilot project, a methodology and toolkit will be developed that can be applied in museums at the national level. The application will be assessed in other museums and cultural institutions and its effectiveness will be evaluated and measured.

The Plastic Reduction Program will be developed as a sector-specific Tool Kit and incorporated into the Resource Libraries and Services of Provincial and Territorial Museums Associations and deployed to member institutions.

Phase 3: Museums and heritage facilities use plastic items in exhibitions, restoration, conservation, preservation, and storage. During this phase we will work with university research departments and the Canadian Conservation Institute to develop new materials to seek innovative and inclusive solutions for minimal use and re-use of plastics and to preserve heritage objects in these institutions.
To facilitate this process, ICOM Canada has created an email account has been created where museums can request meetings and information directly with Ocean Wise. We can be reached at: icomcanplasticsreduce@gmail.com.

In conclusion there is an urgent need to change the way we work in museums to be sustainable; we have a significant role to play in mitigating climate change. The implementation of the program will require a change in habits, new knowledge, skills, and a different way of thinking, to figure out how to forge a new and more sustainable relationship with plastic.

Canadian museums need to align with the commitment Canada made to the world by signing the Paris agreement, climate change requires rapid actions in all sectors including museums, not only as sites to accelerate climate change education but as permanent institutions in the services of society and its development.

How should museums be prepared to face the future as change drivers to build a sustainable future? This plastics reduction project is just the beginning towards implementing changes in museum operations in Canada. We have an ecological, social, and moral duty to enable transformational climate change solutions within our institutions.

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Information about Ocean Wise Plastic Reduction program for Individuals and Businesses could be found in this site: https://ocean.org/pollution-plastics/

Using the past to safeguard the future: the impact of spotlighting cultural superheroes as guides for climate action

Carolyn Mwenda[1] and Yvonne Wambui Githiora[2] (Kenya)

Abstract

This article has three core objectives. It seeks to elucidate the importance of indigenous stewardship in conservation of natural and cultural heritage for positive climate action. Secondly, the paper examines the ways in which indigenous stewardship can be communicated as relatable information by way of cultural superheroes, highlighting examples from Kenya and linking this to the global context. The authors conclude the need to make the content less scientific and doom and gloom phrased.

Keywords: cultural superheroes, climate action, Kenya, sustainable development goals

[1] National Museums of Kenya, Head of Marketing Department, P.O. Box 40658 – 00100, Nairobi. E-mail: cmwenda@museums.or.ke
[2] Department of Earth and Climate Sciences, University of Nairobi. P.O. Box 29053-00100 Nairobi, Kenya. E-mail: y.githiora@gmail.com

Resumen

Este artículo tiene tres objetivos centrales. Busca dilucidar la importancia de la administración indígena en la conservación del patrimonio natural y cultural para una acción climática positiva. En segundo lugar, el artículo examina las formas en que la gestión indígena puede comunicarse como información identificable a través de superhéroes culturales, destacando ejemplos de Kenia y vinculándolos con el contexto global. Los autores concluyen que es necesario hacer que el contenido sea menos científico y menos pesimista.

Palabras clave: superhéroes culturales, acción climática, Kenia, objetivos de desarrollo sostenible

Introduction

The Anthropocene is now upon us and climate change is a critical factor affecting the world. This article argues that supporting the critical role of indigenous stewardship of natural and cultural heritage is essential for achieving sustainable development goals. The article examines the ways in which indigenous stewardship can contribute to sustainability through the role of cultural superheroes, highlighting examples from Kenya and linking this to the global context.

The article will explore the policies and papers on the protection and promotion of indigenous knowledge by the United Nations and the African Union. The article will also evaluate the drivers of global change that have accelerated climate change and understand the social, cultural, health, and well-being outcomes from environmental stewardship relating to indigenous people.

Further, the article will explore the popularity of superheroes in the modern-day culture and analyse digital success of two superhero campaigns; Shujaa stories highlighting different Kenyan ethnic champions in battle, divinity, architecture, or indigenous medicinal practices; and the United Nations Sustainable Development Goal superheroes who champion different causes in protecting the environment. The authors will discuss some of the work of The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) in line with the UN Declaration on the Rights of Indigenous Peoples in demonstrating the fact that indigenous stewardship is critical in conserving ecosystems for climate action.

The intention of the research is to determine the potential efficacy of using the Superheroes as channels for communicating the role of indigenous knowledge in combating climate change.

Literature review

The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) was, as detailed by (Hill, 2020), set up in 2012 for *"…the purpose of the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, and long-term human wellbeing."* The article goes further to explain that IPBES demonstrates the recognition and respect for the contribution of indigenous and local knowledge in conservation and sustainability (Hill, 2020).

This same article by (Hill, 2020) brings to light the 5th IPBES Plenary meeting which adopted, *"Approach to recognizing and working with indigenous and local knowledge" in line with the UN Declaration on the Rights of Indigenous Peoples which states that "…Indigenous people and local communities have the right to be meaningfully engaged in decision-making processes that impact their livelihoods, cultures and societies."*

Indigenous and local knowledge systems are in general understood to be bodies of integrated, holistic, social and ecological knowledge, practices and beliefs pertaining to the relationship of living beings, including people, with one another and with their environments. Indigenous and local knowledge is grounded in territory, is highly diverse and is continuously evolving through the interaction of experiences, innovations and various types of knowledge (written, oral, visual, tacit, gendered, practical and scientific). Such knowledge can provide information, methods, theory and practice for sustainable ecosystem management. Most indigenous and local knowledge systems are empirically tested, applied, contested and validated through different means in different contexts.

Methodological Approach

The study used a mixed methods approach (qualitative and quantitative) to determine the awareness of and potential uptake of cultural superheroes as stewards of natural and cultural heritage among youth in Kenya.

The study used web analytics to document the reach of cultural superheroes by determining how many people are aware of the superheroes. It was found that although the "Shujaa stories" (stories of the cultural superheroes) make up a small percentage of all the content on the National Museums of Kenya's Google Arts and Culture page at an average of 10%, they account for over one third (38.2%) of total views.

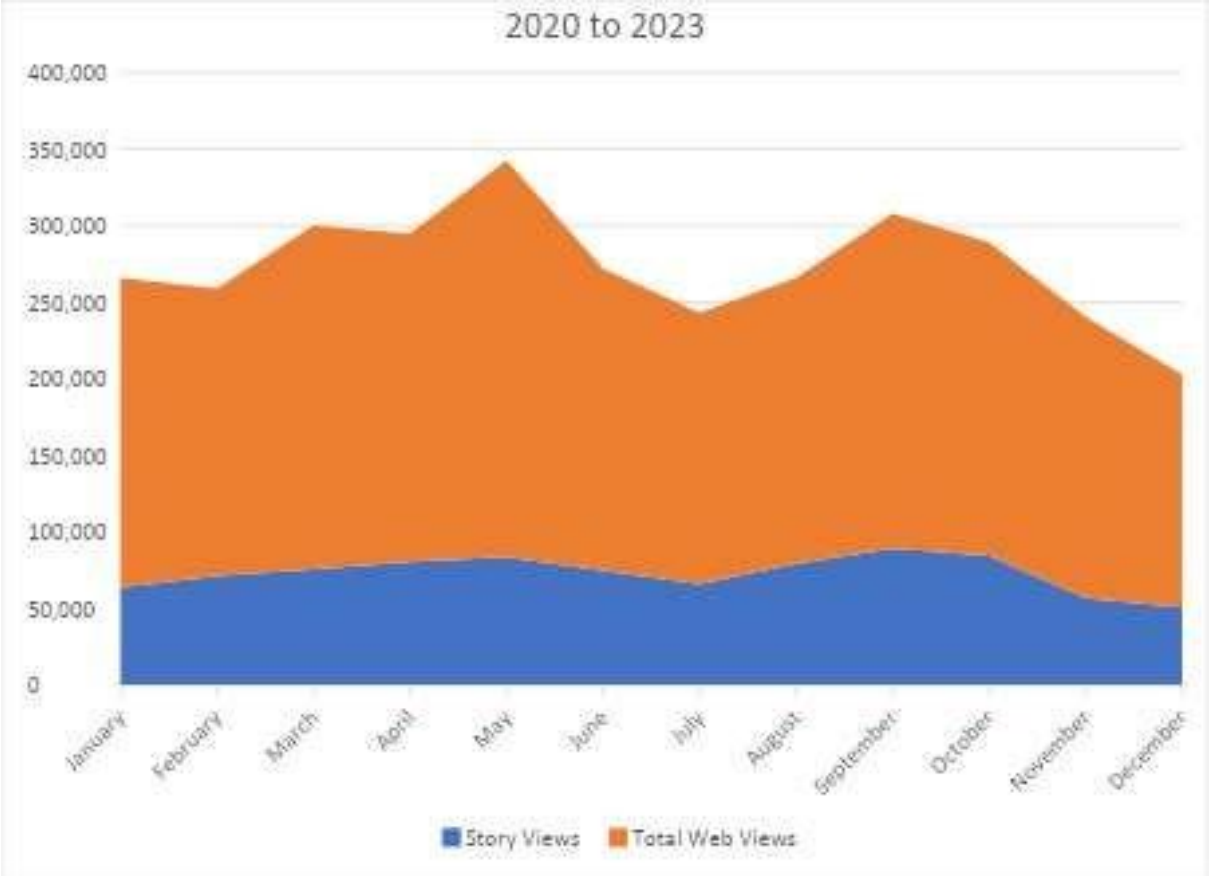

Figure 1: Google Arts and Culture - Shujaa Stories Page Analytics

It was also determined that while the majority of the page views were from Kenya, the two other countries with the highest hits were the United Kingdom and United States of America; the two countries with the highest number of Kenyans in the diaspora.

Analysing the United Nations' Climate Action Superheroes online performance, the site was translated in three languages; English, French and Spanish. The page views were notably highest in the English version. It was also notable that the site experienced the most hits during Earth Day in April when the UN team invested more in promotion and engagement.

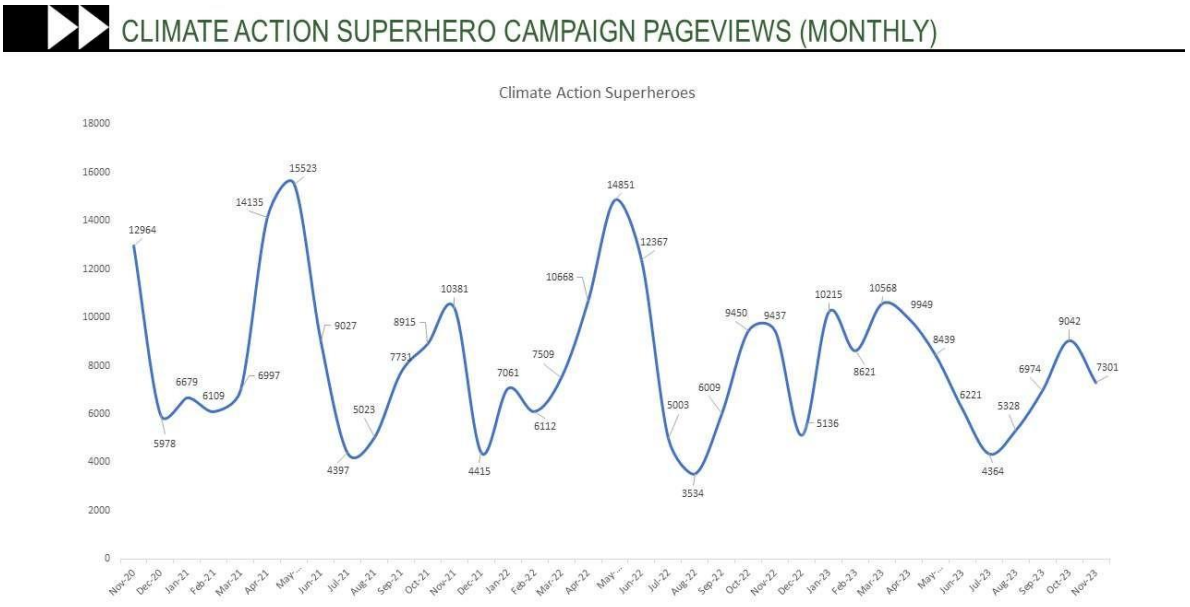

Figure 2: United Nations Climate Action Superheroes Page Analytics

The study also assessed the engagement beyond the online platforms and noted a spike in online engagement around the times of notable international days of recognition; Earth Day and Kenya's Heroes' Day. This is a clear indicator of the popularity of the superheroes in engaging in social impact issues with the power to effect behavioural change.

The second objective of the study is to explore the policies and papers on the protection and promotion of indigenous knowledge in the promotion of climate action. The study looks into reports such as (United Nations Educational, 2014, p. 10) which focuses on "…integrating the principles and practices of sustainable development into all aspects of education and learning, to encourage changes in knowledge, values and attitudes with the vision of enabling a more sustainable and just society for all." The report focuses on Education for Sustainable Development, and lays particular emphasis on the fact that (United Nations Educational, 2014, p. 29), "…quality education is about what and how people learn, its relevance to today's world and global challenges, and its influence on people's choices." There is also the key trends that the report focuses on in Education for Sustainable Development.

Specific objective 2: I will investigate the perceptions of cultural superheroes as stewards of natural and cultural heritage among Kenyan youth using interviews/ questionnaires. Sample size for the questionnaires will be calculated based on website hits, and interviews will be conducted online using online survey instruments shared through social media and the Shujaa stories website.

Specific objective 3: I will use literature to examine the role of the SDG climate action superheroes to inform how Kenyan cultural superheroes can be used to promote action towards attainment of the SDGs.

Discussions

The analytics from the web platforms have shown a keenness on the superheroes for both cultural and social impact messaging and the desire to have a symbol that can be connected with a specific messaging.

The objective of this article is to analyse the influence cultural superheroes would have as embodiments of stewards of cultural and natural heritage.

In order to grasp the impact of the illustrated cultural superheroes and the potential to influence climate action the author intends to:

- To document the awareness of cultural superheroes among the Kenyan audience
- To investigate perception of cultural superheroes as stewards of natural and cultural heritage among Kenyan youth
- To determine how cultural superheroes can be used in effective branding in the context of climate change
- To determine how the corporate sector can effectively partner with governments, NGOs, and other stakeholders to support indigenous stewardship to create awareness and contribute in communicating environmental initiatives; and
- To determine the impact of brands in aligning their actions with their messaging through the animated cultural superheroes to build credibility with consumers and gain their trust.

Expected results and conclusion

Our findings will demonstrate the role of folk superheroes as a culturally appropriate and innovative way to engage youth in climate action and environmental stewardship. The study will also provide recommendations on how the role of cultural superheroes as stewards of nature and cultural heritage can be improved.

To achieve this, effective communication strategies should focus on creating awareness about the severity of the problem, highlighting the potential consequences of inaction, and emphasizing the urgency of acting. Additionally, messaging should be delivered in a way that resonates with audiences and motivates them to take positive steps towards sustainability.

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Sustainable exhibits in Copenhagen Art Museums: the crucial role of aesthetics

Ginevra Addis[1] (Denmark)

Abstract

2030 SDGs have been questioned at multiple levels in the field of art, from arts management to art curatorship. For several years, art institutions such as museums in cities that have emerged as international capitals of sustainability have been orienting their curatorial practices towards challenging climate change. Among such cities Copenhagen and its museum institutions lead the international scene by thought-provoking aesthetics in relation to the 2030 SDGs also thanks to the different networks established in the surrounding area that challenge artists, museum directors, and curators themselves on this issue. Copenhagen museums had begun to address the issue of climate change even before the adoption of the SDGs by the United Nations e.g., SMK The National Gallery of Denmark pioneered the scene since 2009 by showing contemporary artworks that invited to reflect on how global warming required new way of conceiving the world. This paper aims to trace the evolution of sustainability oriented contemporary art exhibitions in Copenhagen's art museums by researching their impact on the local area and visitors. This paper's methodology will particularly examine the number of visitors for such exhibits and will question how aesthetics can be a key factor to change people's behavior toward climate change and museums' practices in these terms.

Keywords: Contemporary Art, Art Aesthetics, Exhibits, Copenhagen Art Museums, 2030 SDGs.

[1] Ginevra Addis, Ph.D. Postdoctoral fellow, Sustainability, Biodiversity, Art and the Territory in EU and non-EU countries – NBFC (National Biodiversity Future Center) at UNIMIB (Università degli Studi di Milano-Bicocca); Adjunct Professor of Systems for the Management of Contemporary Art, UCSC (Università Cattolica del Sacro Cuore di Milano). E-mail: ginevra.Addis@unicatt.it

Resumen

Los SDGs 2030 han sido cuestionados a múltiples niveles en el ámbito del arte, desde la gestión artística hasta el comisariado de arte. Desde hace varios años, instituciones artísticas como los museos de ciudades que se han convertido en capitales internacionales de la sostenibilidad han orientado sus prácticas curatoriales hacia la lucha contra el cambio climático. Entre estas ciudades, Copenhaguen y sus instituciones museísticas lideran la escena internacional al reflexionar sobre la estética en relación con los 2030 SDGs, también gracias a las diferentes redes establecidas en los alrededores que interpelan a artistas, directores de museos y a los propios comisarios sobre esta cuestión. Los museos de Copenhague habían comenzado a abordar la cuestión del cambio climático incluso antes de la adopción de los SDGs por parte de las Naciones Unidas, por ejemplo, SMK La Galería Nacional de Dinamarca fue pionera en la escena desde 2009 mostrando obras de arte que invitaban a reflexionar sobre cómo el calentamiento global requería una nueva forma de concebir el mundo. El objetivo de este artículo es trazar la evolución de las exposiciones orientadas a la sostenibilidad en los museos de arte de Copenhague investigando su impacto en el área local y en los visitantes. La metodología de este trabajo examinará en particular el número de visitantes de tales exposiciones y cuestionará cómo la estética puede ser un factor clave para cambiar el comportamiento de la gente hacia el cambio climático y las prácticas de los museos en estos términos.

Palabras clave: Arte contemporáneo, Estética del arte, Exposiciones, Museos de arte de Copenhague, 2030 SDGs.

This research stems from a number of studies that investigated how 2030 SDGs have been questioned at multiple levels in the field of art, from contemporary art to arts education and by art curators as well, in particular looking at the convergence of art aesthetics and SDGs. This article's methodology adopted a literature review and a case study approach, in particular by gathering data on the number of museum visitors in art museums based in Copenhagen. The analysis of the current literature review in relation to this topic reveals how over the past ten years, discussions on sustainability and art aesthetics, a branch of philosophy that studies people's reactions to artworks, have become an essential component of what constitutes a museum itself, especially after the ICOM's inclusion of the term sustainability in the very definition of the term museum in August 2022 in Prague (Brown, 2023; Addis, 2023; Addis &Vest Hansen, 2022).

Before being related to contemporary art, aesthetics has been questioned with regards to its relationship to sustainability from different perspectives. For instance, studies considered the role of aesthetics in relation to industrial design and building materials (Pooya, 2023; Zhang et al., 2023, p. 483); to food and human rights (Bottinelli, 2023; Duarte, 2023, pp. 325-354); as an internal component in management organization, and as a factor for transformation in relation to arts education (Jörissen et al., 2023). Simultaneously, since the European adoption of the UN 2030 SDGs' (Sustainable Development Goals) agenda in 2015, curators and artists themselves have begun to inquire more about the aesthetics of contemporary art itself, seeking to understand how aesthetics can be a constructive vehicle for sustainability. Indeed, early creative endeavours saw artists direct their choices toward sustainable materials or cutting-edge sustainable technologies (e.g., the artists Sarah Hall's Solar Projects, and Lyman Whitaker's Wind Turbines), such as the creative use of wind turbines and photovoltaic panels. Additionally, companies and industries provided sustainable materials for the artists to utilise (e.g., the company StonePine, offered two photovoltaic panels to artist Maria Teresa Ortoleva for the art exhibit Creative Energy. Arte per il rinnovabile, 2016) (Addis, 2023; Addis, Di Raddo, 2016).

For several years, art institutions such as museums in cities that have emerged as international capitals of sustainability have been orienting their curatorial practices toward challenging climate change. Among such cities Copenhagen and its museum institutions lead the international scene by thought-provoking contemporary art aesthetics in relation to the 2030 SDGs also thanks to the different networks established in the surrounding area. Copenhagen currently is the leading model of urban sustainability in Europe (Addas, 2023; Krähmer, 2021; Liu and Jensen, 2017), it received the European Green Capital Award in 2014 and has the ambition to become the first carbon-neutral capital by 2025. At the cultural and governmental level, agencies such as The Danish Agency for Culture (which began in 2012) have been created to increase cooperation, inter alia, in the fields of education, research, the environment, nature, and museums. Additionally, the issue of international dialogues on sustainability has been discussed in meetings e.g., the Culture and Arts Policy Dialogues between Canada and the Nordics, entitled Changing the system-promoting cultural sustainable development and diversity, which took place in Copenhagen in 2021 from September to December and was organized by the Nordic Council of Ministers and the Nordic Council Secretariat (VC 2021).

In response to the 2030 SDGs goals, museums in Copenhagen began projects, such as The Green Academy promoted by the Augustinus Foundation, to qualify and coordinate the green conversion of the museums in Copenhagen and create a forum for the museums' knowledge exchange and capacity building. Also, non-profit art organizations such as ART 2030 (based in Copenhagen as well) have been working to unite art with the United Nations 2030 Agenda for Sustainable Development and its 17 Global Goals (ART 2030, 2023). All these cultural policies and initiatives illustrate how Copenhagen's museums and art institutions have the potential not only to become pioneers in defining the role of aesthetics, but also to transmit this knowledge to art practitioners in general and curators in particular.

Among the Copenhagen art museums that have dealt with contemporary art, 6 were selected for this study according to the ways in which they have responded with their exhibits to the issues of sustainability and SDGs. The National Gallery of Denmark (SMK) since 2010 has pioneered the climate change discussion in relation to exhibitions following the United Nations Climate Change Conference in Copenhagen (COP15) in 2009 (UNFCC, 2020). In 2010, the SMK organised an international symposium titled Museum climate seen in the context of Global Climate change in partnership with The Association of Danish Museums (ODM) and supported by the Heritage Agency of Denmark (KUAS) (SMK, 2019). The symposium's purpose was to challenge museums to create exhibitions and explore their common cultural heritage in sustainable ways. Additionally, at this event, the SMK organised the exhibit Exhibit rethink relations, a contribution by the SMK to the exhibition RETHINK Contemporary Art & Climate Change [Figure 1], made in collaboration between the SMK, Nikolaj Copenhagen Contemporary Art Centre, Den Frie Centre of Contemporary Art and The Alexandra Institute all in Copenhagen (Rethink, 2009). Among the SDGs addressed by the museums, gender equality has been considered one of the most important goals.

Figure 1: Exhibition view - RETHINK Contemporary Art & Climate Change, 2009 - SMK, Copenhagen. Courtesy of SMK.

The Arken Museum provides a further instance on such a convergence e.g., with 1) art exhibits that reflect on eco-activism, nature and the dimension of gender that have been proposed such as Hundertwasser. Artist and eco-activist, 2014; Naturally, 2014; Love me gender, 2014; Qiu Anxiong: The New Book of Mountains and Seas II, 2013. 2) The conference Rewilding the Museum Arken, organised in collaboration with The Royal Danish Academy of Fine Arts, on June 1-2, 2022 (Arken, 2022).

The conferences investigate purpose focused on analysing how the artistic gaze extends beyond the gallery and includes the current planetary condition as authored or impacted by human activities and social formation. Such a perspective is meant to serve as a challenge and constitutes an expanded curatorial mandate: beyond the walls of the museum, the Earth itself should be conceptualized as a total exhibition of human influence and artifice. Conceiving the Earth as a fraught conceptual, political, and material territory has allowed contemporary art to intervene by shaping cultural engagements with the ecological crises of our own making (Arken, 2022).

Ordrupgaard since 2016 owns a few permanent site-specific installations that interact with nature in a section named Open Air Art, in the garden of the museum – e.g., Olafur Eliasson, Weather the weather, 2016, where visitors are in the middle of the weather, until the work's surroundings change and alter character, by creating an unpredictable and indefinable experience that is different every time; and Doug&Mike Starn, Geometry of Innocence, 2018, that give the viewers an opportunity to move high above the Park's terrain along surprising paths, where visitor's expectations towards the route are continually being revised (Ordrupgaard, 2016; Ordrupgaard, 2018). In 2016 NY Glyptoteket organised the exhibit Théodore Rousseau. Unruly Nature, with included this artist's landscape paintings; in 2022, the one titled Suzanne Valadon: model, painter, rebel about the French artist Valadon, who defied her background in terms of class, gender, and lifestyle with her uncompromising portraits (Glyptoteket, 2022; Glyptoteket, 2016).

The Louisiana Museum of Modern Art in 2019 hosted the exhibit Homeless souls, on theme of exile, expatriation, and identity. The museum is also currently hosting the exhibit Pussy Riot in 2023-2024 about the feminist activist art collective, formed in Moscow in 2011, known for its actions against the Russian regime [Figure 2] (Louisiana Museum of Modern Art, 2023; Louisiana Museum of Modern Art, 2019). Finally, the museum owns works of eco-activists: one example is Ai Weiwei's 2009-2010 Trees, meant to warn people about what they risk losing; another is Joseph Beuys' 1974-1977 Honey Pump at the Workplace, meant to inspire people to reflect on the environment by displaying how the production of honey and the organisational system of bees in a hive are on a par with human social systems. The Hirschsprung Collection in 2020 organised the exhibit Kristian Zahrtmann. Queer, Art and Passion which was a rediscussion of Zahrtmann art under the queer perspective. In 2022 promoted the exhibit Marie Emilie. Queering the collection, about the artists Marie Luplau (1848-1925) and Emilie Mundts (1842-1922), who fought for equality in art and life (Marie Emilie, 2022; Kristian Zahrtmann, 2020).

Figure 2: Exhibition view - Pussy Riot, 2023-2024 - Louisiana Museum of Modern Art, Copenhagen. Courtesy of Louisiana Museum of Modern Art.

Investigating data about the number of visitors for their museums exhibits in relation to those themes and issues which concern 2030 SDGs, only one of the 5 museums examined (1 of the 6 did not provide visitors' numbers) counted visitors for each specific exhibit, while all the other museums were able to provide an overall number of visitors per year or for more exhibits at the same time [Figure 3]:

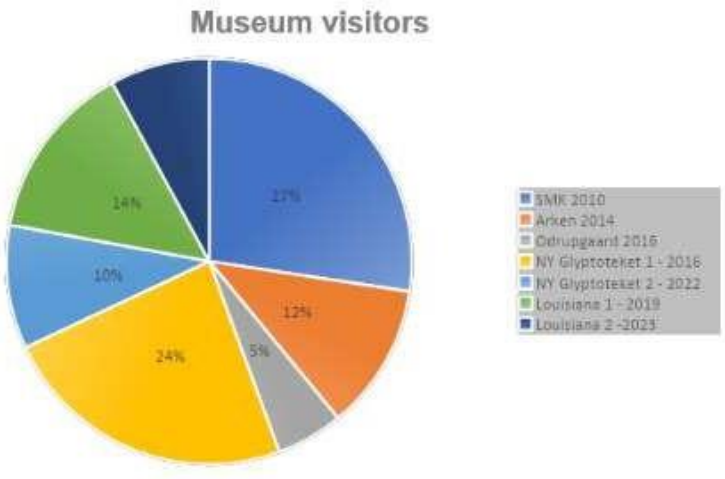

Figure 3. Source: own elaboration of data gathered by art museums in Copenhagen.

- In 2010 SMK had 448.342 visitors (overall number per year).
- In 2014 the Arken had 190.867 visitors (overall number per year).

- From 2016 Odrupgaard, in its Open Air Art section included site specific installations of Olafur Eliasson, Weather the Weather (2016), and Doug&Mike, Geometry of Innocence (2018). Odruupgaard estimates around 75.000-100.000 visitors per year when the museum has been fully open. The museum said that it's challenging to determine how many of them have interacted with the installations Weather the Weather and Geometry of Innocence as it does not have staff counting visitors in front of these installations.
- In 2016 NY Glyptoteket, for the exhibit Théodore Rousseau. Unruly Nature, 2016 counted 387.263 as the total number of visitors at the museum during the exhibition period, while counted 1.083 as the total number of visitors at the museum during the exhibitions opening day. In 2022 for the exhibit Suzanne Valadon: model, painter, rebel 2022 the museum counted 161.196 as the total number of visitors at the museum during the exhibition period, and 1.795 as the total number of visitors at the museum during the exhibitions opening day: 1.795.
- In 2019 the Louisiana Museum of Modern Art, for the exhibit Homeless Souls had 232.467 visitors; in 2023 for the exhibit Pussy Riot (that is currently running until January 2024, meaning that it can only share the number of visitors from its opening until today) the museum counted 129.791 visitors. Both visitors' number are an overall number for all the museums' exhibits, i.e., a ticket to Louisiana grants access to all ongoing exhibitions, meaning that the museum does not count visitors for each specific exhibition. It assumes that most of the museum's guests see all the exhibitions when they visit.

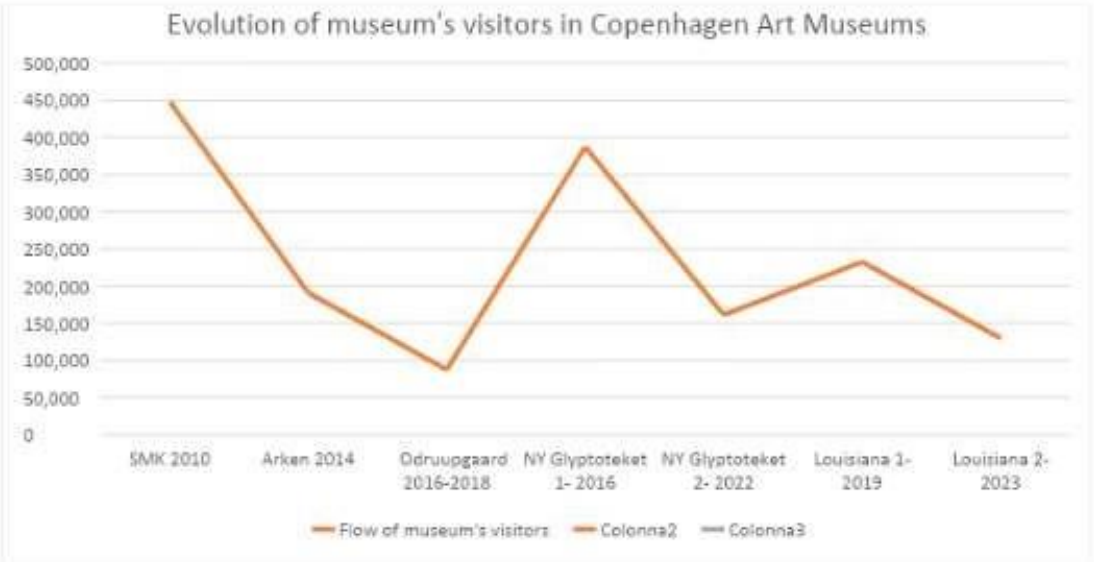

Figure 4. Source: own elaboration of data gathered by art museums in Copenhagen.

By considering such data it is difficult to measure the impact that the aesthetics had in relation to sustainability in the surrounding museum's community, especially because even the analysis of the flow of visitors does not provide an accurate number of museum's visitors for each exhibit [Figure 4]. However, such data, can help museum's scholars and practitioners to know the current state of the art of art museums in relation to contemporary art aesthetics, sustainability and SDGs and, as a consequence, to help them to adopt practices on how to measure the role of art aesthetics in relation to its surrounding territory given the crucial role that art aesthetics has been playing thus far and can be played e.g., by replying to the following questions. 1) What if museums count visitors for each exhibit to measure people's interest; 2) what if those data gathered could be considered by the museum's practitioners in their selection of exhibits and artworks to expose? Since the consideration of contemporary artistic aesthetics has been growing among museums that are selecting different exhibitions in relation to sustainability and the SDGs, and since the driving role of the aesthetic factor offers unexplored potential for change and sensitization of people in relation to this convergence, this paper aims to be a case study to be broadened by academics and museums professionals and to offer insights for this enhancement.

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Social sustainability and heritage management. Is street art a participatory tool for tourism development? Case studies in Lisbon and Rome

Lisa Pigozzi[1] (Italy)

Abstract

Sustainability is based on three balanced pillars: economic, environmental and social. Even if culture is not usually included, it could be fundamental for an equilibrium. The role that museums, as cultural organizations, play for reaching sustainability, is now internationally recognized and growing. The last ICOM definition (2022) describe museums as an institution at the service of society, capable of fostering sustainability. In this sense, it is peculiar the role of ecomuseums, which can locally empower people in the sustainable use of their heritage and promote a culture of sustainability (Duarte, 2012; OECD and ICOM 2018; Brown 2019; Riva, 2020; Dal Santo, 2021 quoted in Pigozzi et al. 2023) For facing contemporary crisis, it is more and more considered the role of local practices, which is a common feature of Socialmuseology. Nevertheless, for a holistic sustainability, it is necessary to understand in which ways communities are really involved in the decision making processes, and street art seems an interesting point of view for exploring this phenomenon. This paper aims to investigate how ecomuseums and potential Social Museological projects can contribute in the development of a bottom-up heritage management, which will foster sustainable tourism for socio-economic sustainability in marginal areas. The role of street art, as a valuable formal and informal artistic expression, will be explored as a public policy for urban requalification, and as a tool for tourism promotion, understanding its impact on communities. Two case studies will be presented for underling the different approaches and results of street art policies:

[1] PhD student at Lusofona University (Lisbon, Portugal), and research fellow at Milan Bicocca University (Milan, Italy)

Quinta do Mocho district (Sacavém, Loures, PT), and Ecomuseo Casilino Ad Duas Lauros (Rome, IT). They seem to be the perfect example for studying how participatory heritage management could have positive impacts for reaching global and holistic sustainability.

Keywords: Sociomuseology, street art, sustainable tourism, participatory heritage management, local governance.

Resumen

La sostenibilidad se basa en tres pilares equilibrados: económico, medioambiental y social; aunque la cultura generalmente no se incluya, podría ser fundamental para un equilibrio. El papel que los museos, como organizaciones culturales, desempeñan para lograr la sostenibilidad, es ahora reconocido internacionalmente y está creciendo. La última definición de ICOM (2022) describe a los museos como instituciones al servicio de la sociedad, capaces de fomentar la sostenibilidad. En este sentido, es peculiar el papel de los ecomuseos, que pueden fortalecer localmente a las personas en el uso sostenible de su patrimonio y promover una cultura de sostenibilidad (Duarte, 2012; OECD e ICOM 2018; Brown 2019; Riva, 2020; Dal Santo, 2021 en Pigozzi et al. 2023). Para enfrentar las crisis contemporáneas, se considera cada vez más el papel de las prácticas locales para abordar problemas globales, que es una característica común de la Museología Social. Sin embargo, para lograr una sostenibilidad integral, es necesario entender de qué manera las comunidades están realmente involucradas en los procesos de toma de decisiones, y el arte callejero parece un punto de vista interesante para explorar este fenómeno. Este documento tiene como objetivo investigar cómo los ecomuseos y los posibles proyectos de Museología Social pueden contribuir al desarrollo de una gestión del patrimonio bottom-up, que fomente el turismo sostenible para la sostenibilidad socioeconómica en áreas marginales. El papel del arte callejero, como expresión artística valiosa formal e informal, se explorará como una política pública para la requalificación urbana y como una herramienta para la promoción del turismo, comprendiendo su impacto en las comunidades. Se presentarán dos estudios de caso para resaltar los diferentes enfoques y resultados de la implementación del arte callejero: el distrito Quinta do Mocho (Sacavém, Loures, PT) y el Ecomuseo Casilino Ad Duas Lauros (Roma, IT). Parecen ser el ejemplo perfecto para estudiar cómo la gestión participativa del patrimonio podría tener impactos positivos para alcanzar la sostenibilidad global y holística.

Palabras clave: sociomuseología, arte callejero, turismo sostenible, gestión participativa del patrimonio, gobernanza local.

Introduction

This paper aims to analyse the role of street art implementation and its consequences towards sustainability, in particular, within social aspects, and sustainable tourism. In the first paragraph will be explored the three pillars of sustainability (social, economic and environmental), and how culture could represent a fourth column for an equilibrium. In the second paragraph, will be discussed which role can be played by museums, as cultural institutions, for a broader achievement of sustainable development. It will be also examined, in depth, the social role of museum in a Sociomuseology perspective. The third paragraph is centred on how street art could be or not a Social Museology expression for implementing inclusive narratives and sustainable tourism. The last paragraph is dedicated to field research at Ecomuseo Casilino Ad Duas Lauros (Rome, Italy) and Quinta do Mocho district (Sacavem, Loures, Lisbon, Portugal). A comparison of street art policies in these areas will present interesting results about the role of this kind of art in sustainable tourism development and urban requalification.

The methodology implemented is comparative; to gather information were used qualitative tools: unstructured interviews (online and in presence), and participant observation. In particular, between November 2022 and March 2023, in Quinta do Mocho there was a participation in a street art tour, and were collected 5 interviews: 1 with a street artist; 2 with street art guides; 1 with a municipality culture professional; 1 with a local theatre training leader who was involved in an educational project in the district. The material at Ecomuseo Casilino was gathered between November 2021 and December 2023. After the first interviews in 2021, was redacted a case study[2], and there were a participation on two tours (one related on street art), and two events at the ecomuseum. The interviews were 11: 3 with street artists; 1 with the ecomuseum's president; 1 with ecomuseum's boarding member; 5 with different ecomuseums collaborators; 1 with a municipality officer; and a collective interview with a local stakeholder. Informal conversation with tour participants were also collected.

The difficult balance of sustainability: culture as a pillar for equilibrium?

One of the first documents related to sustainable development is the Brundtland Report (1987), which defines it as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The metaphor of the three pillars - social, economic, environmental - is often used to describe sustainability and sustainable development (Purvis et al., 2019), and all three must be present to achieve a balance. Although culture is not explicitly included among the "supports" of sustainability, it could represent a fourth. Franz (2019, pag. 92-93) asserts that the omission of culture in the Brundtland Report is an inconsistency, and demonstrates the difficulty of dialogue between "technical" (measurable) and humanistic (non-measurable) sciences.

[2] Ecoheritage project: https://ecoheritage.eu/

This separation does not allow the measurement of culture, which would be necessary to advance ideas on the development of a culture of sustainability. Also De Varine (2019) includes, in the development framework, cultural aspects along with social, environmental, and economic dimensions, emphasizing both the difficulty of interaction between them, and also the need for collective actions to distribute responsibilities. He also underlines that sustainable heritage requires care and vitality through the collaboration between authorities and local communities, as happens in ecomuseums.

If culture is a potential element for the full achievement of sustainability, it is necessary to understand what is meant by culture, who decides what is included and considered culture, and what role museums play in this regard. Often, through the dominant discourse is defined what is considered culture, and museums, if they do not adopt a polyphonic narrative, become vehicles for an excluding narrative. Indeed, according to Kilomba (2022, p. 24), who draws on Hooks (1989), the transition from object (told by others) to subject is both a political and decolonization act. Often in museums, collections that do not belong to the subjects themselves are exhibited and narrated (for example, objects collected during colonial wars). It should not be forgotten that there is also a pedagogy of power in museums, which are not accessible to everyone. The power of the museum is both internal (with the creation of narratives) and external (communication of narratives to the public). The museum is seen as a place of truth, and in this way its power, and the narratives that it produces are legitimised, so the élite and middle class feel reflected in museum discourses, while others are excluded, being not represented. The museum has a symbolic power in representing what is culture. Indeed, according to Bourdieu (1989, pg. 11):

"Symbolic systems are structured and structuring instruments of communication and knowledge, fulfilling their political function as instruments of imposition or legitimisation of domination, which help to ensure the domination of one class over another (symbolic violence), reinforcing the power relations that underlie them, thus contributing to the unconscious subjugation of the dominated"

Therefore, museums create a symbolic system that disseminate a certain concept of culture; Davis (2011, p. 33) underlines that in the western-centred approach, everything that is not included in museums, means that does not exist for their public. Foucault (2004, p. 193) emphasises that power must be analysed as a chain, which functions and is exercised in a network. People are transmission centres of power, which passes through individuals, it is not exercised by them. For this reason, if museums represent a unique model of culture, that visitors legitimate and think that this is the only version of culture. Museums represent the cultural institution that holds the symbolic power to disseminate, safeguard, and communicate cultural heritage (ICOM Italy, 2017). Therefore, they are a preferential channel for transmitting it to people. Museums embody the cultural changes of a society in continuous evolution (Moutinho, 2007), and should thus be a reference point for people. To promote cultural sustainability, or rather a culture that is sustainable and embraces society in all its facets, they should adopt an inclusive and polyphonic narrative that addresses the needs of society – according

to the principles of Sociomuseology. Ecomuseums, defined by Maggi and Murtas (2004 pag. 8) as a "pact by which a community takes care of its territory," represent an expression of Social Museology that supports all pillars of sustainability. By implementing participatory processes that involve the local community first-hand, they become containers of a culture "from below" and represent what people consider heritage, and consequently, local culture. Heritage, whether tangible or intangible, is a means to convey local identity, which does not always find space in traditional museums.

The relationship between museology, heritage, and life, highlighted by some authors, is particularly interesting. According to Navajas-Corral (2017 in Riva), "ecomuseums, community museums, and cultural landscapes tell the simple life of people," their traditions, and their daily life that reflects their identity. They are inclusive and, therefore, representative of sustainability in all its aspects. The living heritage is a concept that concern people identity and culture (UNESCO, 2003; Heritage Saskatchewan, 2017; Massey, 2018 pag 30-38) and it is fundamental for building community roots with a sense of identification. When museums promote it, (Massey, 2018 pag 30-38), they contribute in building the pillar of cultural sustainability and, consequently, fairer societies. Chagas (2017 in Murta 2019) emphasizes that: "museology that does not serve life, serves for nothing." Sustainability and museology, to be effectives, should indeed encompass all aspects of people's lives and their culture.

The responsibility of museums in sustainable development

Sustainability is a field that embraces different topics and aspects of our world and society. The effort of a collective answer for reaching a balanced sustainability is needed, therefore also museums are asked to play a role for reaching this goal.

Although the key words of the ICOM 2022 definition of museums ("in the service of society; open; accessible and inclusive; foster diversity and sustainability"[3]) suggest that they should answer to the needs of society, and consequently of sustainability, the debate on the social role of museums is not new. Indeed, new functions of these cultural institutions have been sought since the 1960s and 1970s.

[3] "A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing."
https://icom.museum/en/resources/standards-guidelines/museum-definition/

At the end of the 1960s, the world went through many social transformations[4] where began the debate on the role of museums, and how they should survive and evolve: society was putting pressure on museums to change and find new answers for new needs.

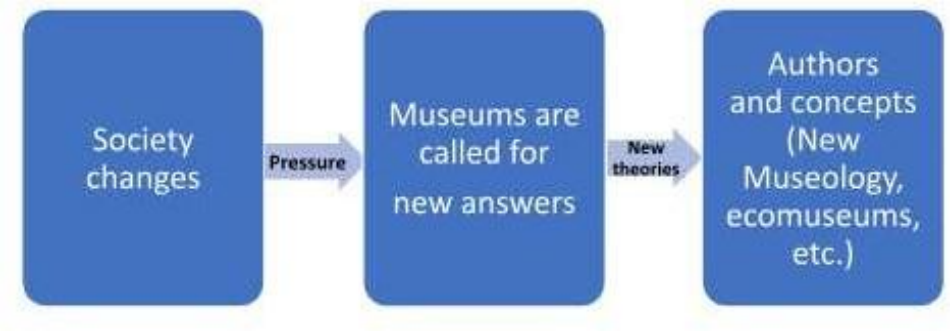

Image 1. Social transformations and the need for new answers from museums. Author's elaboration.

According to ICOM, the functions performed by the museum are research into the tangible and intangible heritage of mankind and its environment, collection, conservation, communication and exhibition (ICOM Museum Definition Report, 2021). As an institution recognised for its power to disseminate culture, the new role of the museum appeared therefore fundamental. One event that changed the classical paradigms of museology was the Round Table in Santiago de Chile (1972), which is a result of national and international cultural-research seminars organized by UNESCO since 1952, to build a new sensitivity towards museums. The roundtable was organized in Chile for the favorable political situation, with Allende[5]; even if, for the first time, people from Latin America took part in the debate, some fundamental scholars of new museum concepts, such as Paulo Freire[6], were unable to participate for political reasons. In the Declaration of Santiago, the concept of "integral museum", a museum at the service of society, was coined.

[4] The post-war effervescence in Europe; the decolonisation process in Africa; the struggles against dictatorship in Latin America.

[5] Salvador Allende (1908–1973) was a politician who co-founded Chile's Socialist Party and ran for the Chilean presidency several times before winning the 1970 election. His regime was supported by working-class constituencies, but was opposed in covert actions by US President Richard Nixon. Following a military coup led by General Augusto Pinochet, Allende took his own life on September 11, 1973.

[6] Paulo Freire (1921–1997) was a Brazilian educator and philosopher who was a leading advocate of critical pedagogy. He is the creator of an innovative methodology for adult education. In 1963, he led a literacy process for some sugarcane workers in the state of Rio Grande do Norte, which was interrupted in 1964 due to the beginning of the dictatorship. After being arrested and then exiled, Freire briefly took refuge in Bolivia and then in Chile, where he remained until 1969, teaching at the University of Santiago. For more information: https://edu.inaf.it/approfondimenti/personaggi/paulo-freire/

However, manifestations of Social Museology were already alive and present in many areas without the need for definitions; Sociomuseology is a school of thought that studies these practical forms of museology linked to society. It is a critical museology that constantly questions the role of museums in the territories to which they belong, suggesting an interdisciplinary approach for the museum curator (Davis, 2011, pag. 33)- the latter defined as a "social worker" (Brayner, 2022) -.

An important event for New Museology was the 1st International – Ecomuseums / New Museology Workshop in Quebec (Canada, 1984), when museologists from 15 countries adopted The Quebec Declaration. It underlined specific topics: the processes of collective memory; changing the museological object: community development through participatory processes for memory representation; the spatiality of museums, no longer closed in buildings; popular participation; the museological narrative in transformation and no longer crystallized; no longer collections but experiences and themes, such as itineraries in the nature; the involvement of the visitor, who, from this moment, is defined as "the user". For consolidating the basis of this new theories, in 1985, in Lisbon, was founded the MINOM (International Movement for a New Museology)[7], aimed to recognise a new role for the museum.

Sociomuseology has been concerned with understanding the social role of museums, trying to answer social questions. According to Moutinho and Primo (2018) Sociomuseology: "should be understood as a multidisciplinary approach to doing and thinking about museology", a tool for human sustainable development that is founded on equality and inclusion, so it is accessible and rooted on an interdisciplinary approach. To pursue the 'social role of museology' and consequently decolonise the heritage, there are several questions to be asked: what collective struggle is being fighted? Is it the museum that changes the world or vice versa? Where is the critical transformation of reality? Why people need to establish museums? Sociomuseology wants to respond to the ever-changing needs emerging from a society in continuous transformation. Ecomuseums are one of the practical expression of Social Museology, and they try to build a participatory narrative, involving the local community (or part of it), giving them the power for self-narration of their heritage. In Riviere's words, the museum is the mirror of the community (Riviere, 1985, in Muscò 2007). Therefore, a museum should be a space of experimentation and reception for everyone's subjectivity and individuality, because although it is an island, instead of being part of society.

To understand the difference between "traditional" museology and "Social Museology," it is interesting to compare the different focuses of museums. Rivard (1984, pp. 43-53; 1988, pp. 123-4) underlined the differences between the 'traditional' museums (building + heritage + collections + expert staff + public visitors) and ecomuseums (territory + heritage + memory + population). Brito (2019), which redesign Rivard theory, affirm that there are different museological paradigms (image 2). A museum can be at the service of the collections (such as the traditional one); at the service of the heritage (such as ecomuseums).

[7] For more information: http://www.minom-icom.net/

It can be also at the service of the differences, and it is therefore focused on problems or topics, and formed by social protagonists, or groups of interest, and it can be territorialized or not (such as "pontos de memoria" program in Brasil[8]).

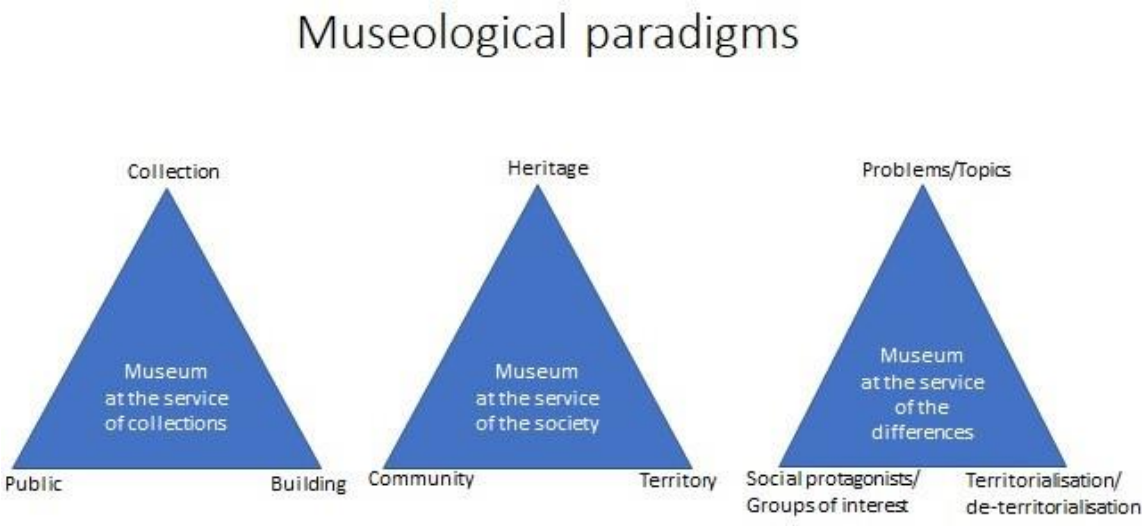

Image 2. Museological paradigms. Author's elaboration.

Museology should give space to a plurality of voices, and the museologist should act as a mediator. Social museology is a collective work ('multi-voice') which involves the protagonists to tell their stories in the first person. According to Davis (2009):

"Museums (…) construct a version of truth for consumption by museum audiences. Museums curators may carefully choose (…) from their collections to create a narrative (…) but place itself lies outside the museum and needs to be experienced to begin to be understood. (…) Local museums see themselves as "representing" a group of people or a place, providing a locality with identity. (…) Any museological approach demands that local voices need to be heard. (…) Ecomuseums provide an inclusive process for rescuing fragments of heritage (…) and lead to the development of a tangible expression of their sense of place, a means of celebrating their heritage."

Ecomuseums are therefore the voice of communities and their territory, developed with the intention of learning about the past in order to properly address the problems of today and the future.

[8] "The Points of Memory Programme brings together a set of actions and initiatives to recognise and value social memory, so that museum processes led and developed by peoples, communities, groups and social movements, in their various formats and types, are recognised and valued as an integral and indispensable part of Brazilian social memory". https://www.gov.br/museus/pt-br/acesso-a-informacao/acoes-e-programas/programas-projetos-acoes-obras-e-atividades/pontos-de-memoria

Street art, a form of grassroots cultural expression that has resisted classification over the years, can represent a form of Social Museology. It originated as a form of expression in the marginalized neighbourhoods of New York and spread across the city, decorating public spaces that become open-air museums or a "moving museum" (subway trains). Initially demonized, this art form has also been exploited by urban redevelopment policies to create tourism attractiveness. In the described case studies, it is interesting to understand how street art can (or cannot) be a vehicle for sustainability and sustainable tourism.

The Casilino Ecomuseum and Quinta do Mocho represent two emblematic neighbourhoods to explore the different ways of implementing urban art (bottom-up and top-down approaches). However, even when it is a top-down policy, we will see how street art has the potential to promote the pride and sense of belonging (and place) of local residents. Social Museology, being a spontaneous form of bottom-up organization for the conservation and promotion of local heritage, thus represents a way to make culture and museology sustainable in a holistic sense. Indeed, if sustainability must firmly rely on various pillars, it is also true that the museological processes, to be sustainable, must be capable of building its work on social, economic, environmental, but above all, cultural sustainability.

Street art as an expression of Social Museology. How it can be a tool for sustainable development?

If museological processes and museums are an expression of the cultural change itself (Moutinho, 2007), street art is an interesting point of view for many observations. Indeed, graffiti art, originated in 1970s in New York, as an expression of writers from stigmatised neighbourhoods, were a movement that brought the ghetto to the city. Artists made themselves heard through their tags on underground cars: there was no more way to ignore these immense works that often covered entire trains. Writers, to claim their provenance, sign themselves with their postal code. In 1971, thanks to the artist Taki, writing was transformed from an almost clandestine activity into a major competitive performance, and the first crews were born, reflecting the interracial character of this movement (Lucchetti, 1999, pag. 4-5). In 1972, the United Graffiti Artist (UGA) was founded, based on the idea of Hugo Martinez, a sociologist at the New York City College, who inaugurated the first exhibition bringing together different writers (idem, p. 12). Continuously evolving to not being labelled into the 'recognised' arts, street art began to spread quickly. The techniques and the writers' desire for fame managed to break the mould and gradually become accepted, until today, where street art is often sought after by public institutions for decorating the cities. Campos (2021) argue that street art is an integral part of the urban fabric, and city's public authorities, who can't stop writers, have been forced to deal with this type of artistic expression, and have implemented a strategic-utilitarian attitude (Campos et al., 2021).

Recently, in addition, culture has been a key element in the promotion of city images, and public institutions that want to convey its aesthetic criteria and themes, legitimate street art (idem). The attitude of institutions appears dual: on one hand, they shape their narratives through commissioned works, confining artists to designated spaces; on the other hand, they still do not accept unauthorized graffiti. It is not coincident that many street artists are currently in legal disputes with the same municipality for unauthorized art, and at the same moment are hired by them for other commissioned projects[9].

Street art could represent and disseminate sustainability at different level. Although institutions, with commissioned works, have the power to 'carve out' narratives, street art represent a re-appropriation of public spaces, often abandoned by artists. In this case, it represents a contrast to land consumption and the embellishment of existing buildings - lesser impacts on the ground: a reuse of public spaces signifies sustainability. Make street art means also reclaiming urban spaces, asserting one's right to the city: indeed, "art contributes to the realization of urban society, creating appropriated spaces that are not merely experienced but transformed into works of art"[10] (Lefevre, pag. 132).

Even when it is contracted by institutions, it could represent the identity of a place, which is reinterpreted by artists. Furthermore, street art, as is in open air environment, is transformed into a public good, accessible to the local community, which can identify itself in the works. With the knowledge of a territory, of the people who live there, urban art becomes a common good with which to identify and feel a bond. Through the representation of local identity, street art could be a tool for the creation of sustainable tourism. According to Seok, Joo and Nam (2020) graffiti tours relate to sustainable tourism for: the revitalization of socio-cultural functions through their aesthetic; the requalification of urban environment (environmental functions); the improvement of local economy functions (job creation, tourism, citizen and artist cooperation).

Practicing street art can enhance the well-being of both the artist and residents, because the artworks have the ability to generate attractiveness to a place (e.g., tourist tours for enthusiasts, which could bring economic benefits to businesses along the route). Additionally, inhabitants feel a sense of pride and belonging when they see their neighbourhood being part of an artistic manifestation. Their sense of place grows, especially when artists are sensitive and aim to represent and reinterpret local identity. The sense of place is tied to social relationships that can shape it through interactions with others and the environment (Low&Altman, 1992).

[9] This information was gathered through an interview in 2023 with a street artist who prefers to remain anonymous.
[10] Author's translation from Italian.

What happens if people cannot find a place to refer to? A space to express their voices, to feel recognized? In this regard, the graffiti movement can be considered an action to assert one's sense of place: through the marks on the wall, artists create their own path, their narrative becomes an itinerary, and it expands to create a sense of belonging in the painted locations.

Being on the field: clues of social sustainability in Quinta do Mocho and Ecomuseo Casilino

In the Casilino and Quinta do Mocho neighbourhoods, street art has been implemented with different approaches. While the former involves a bottom-up construction resulting from a territorially-focused research thread, the latter saw a non-participatory political decision to redevelop the neighborhood.

Quinta do Mocho is a popular neighborhood inhabited by approximately 3000 people, predominantly from former Portuguese colonies, mainly of African origins. Located in the municipality of Loures, a metropolitan city near Lisbon, the neighbourhood, over the years, gained a negative reputation, due to geographic isolation, instances of crime, and a socially disadvantaged fabric for various reasons. In response of it, in 2014, the municipality of Loures, in collaboration with Teatro Ibisco, initiated an artistic festival ("O bairrio e o mundo"), when the first six street art pieces were painted, commissioned by the municipality. These murals began attracting tourists, prompting the municipality to increase such works and transform Quinta do Mocho into the GAP: Galeria de Arte Pubblica. Subsequently, guided street art tours led by local youth were organized from 2015. Raposo (2023) suggests that involving "native" guides became essential for the viability of this public policy, as they knew how to explain the potential benefits to the residents, facilitating their acceptance.

The municipality continued this "aesthetic" policy in 2016 with the event "Loures Arte Publica," significantly increasing the number of artworks. Currently, there are 114 murals covering all the buildings, making Quinta do Mocho the largest public art museum in Europe[11]. Despite conflicts between the municipality and the guides, mainly caused by the lack of economic recognition, street art generated positive aspects. In the neighborhood, there has been a re-appropriation of images through the work of guides who continue to conduct tours, that also to narrate the life of the inhabitants. Unfortunately, this process has not been balanced. While achieving greater social and cultural sustainability (residents are no longer ashamed to belong to the neighborhood, and it has gained a better external image with increased logistical services), there has been no improvement in infrastructure and economic conditions. Neighborhood problems persist, such as a broken children's playground, mosquito infestations, and deteriorating construction materials.

[11] "By the end of 2017, the GAP had collected 82 works, painted by 75 artists of 11 different nationalities. Since its creation (2015), 152 guided tours had taken place, involving around 6,400 people." https://obs.agenda21culture.net/es/good-practices/galeria-de-arte-publico-quinta-do-mocho

It can be asserted that political actions, despite originating from a participatory project - "o bairro e o mundo: showcasing the neighbourhood to the world and opening it to the world" - have been more about beautification than comprehensive redevelopment encompassing all sustainability pillars. As neighborhood guides told, the effects of tourism have been controversial. On one hand, it contributed to generating small economic incomes for the guides (organized independently without municipal involvement), but these were insufficient for economic independence. On the other hand, tourists were often perceived as intrusive with their cameras, because the street art covers entire building facades.

In contrast, the Italian case is different. The Casilino Ecomuseum "ad Duas Lauros" is an urban ecomuseum located in the municipality V of the city of Rome, considered, for different reasons, a marginal area. It was established in 2016, following resistance to real estate speculation in certain areas of the municipality. Over the years, through participatory local heritage studies, the ecomuseum has identified themes and research lines to enhance the territory, one of which is art. Various street art projects, in collaboration with local stakeholders, national and international artists, have allowed the ecomuseum to create itineraries dedicated to urban art (independently accessible through online apps). These routes, capable of conveying local identity, have generated comprehensive sustainability: economic (tours are free, but the ecomuseum pays the guides; visitors walking in the neighborhood can bring economic benefits to local businesses, which sometimes are stops during the tour); environmental, and cultural (thanks to the embellishment of walls with artworks, and the reuse of public space converted into an open-air museum); and social (through collaboration with local associations, guides and other stakeholders).

One of the most striking examples of how street art has had effects on social sustainability can be primarily found in three projects. The first, "Muri Sicuri[12]," a charity and street art festival born in 2016 for enhancing peripheral areas, was organized and financed by tourist guides collaborating with the ecomuseum. The second, MurO[13,] originated in 2010 in the Quadraro neighborhood (which belongs to the ecomuseum's territory) in collaboration with the artist Diavù. He describes it as an experiment to create museum paths through street art. The artist further explains that the artworks were created non-invasively and over several years to represent local identity without engulfing the neighborhood and its inhabitants, with the aim of having people themselves request additional artworks. Finally, the M.A.U.M.I, realized at Casa Scalabrini 234[14] in collaboration with CSER (Centro Studi Emigrazione Roma) and the ecomuseum, is the first street art museum dedicated to migrations. This theme is celebrated through artworks highlighting the historical presence and contribution of foreigners in the city of Rome, particularly in the ecomuseum's territory.

[12] https://www.murilab.it/murisicuri/

[13] http://muromuseum.blogspot.com/p/m-u-r-o-f-e-s-t-i-v-l.html

[14] Casa Scalabrini is a place of passage where migrants, after having been in refugee centres, are helped to become independent. It is also one of the care communities of the Casilino Ecomuseum.More information at: https://www.ascs.it/casa-scalabrini-634/

Chiara, an operator at Casa Scalabrini, recounts how CSER conducted research on migrations and then provided themes to street artists.

Conclusions

In the currently debated theme of sustainability, culture emerges as an additional factor capable of balancing the classic pillars (environmental, economic, social). The role of museums, as cultural institutions, in an ever-changing scenario due to the global poly-crisis, appears crucial and necessary to meet the needs of communities. The New Museology movement, dating back to the 1980s, recognizes the social role of museums and its practical manifestations (including community museums and ecomuseums, grassroots museological processes in general), considering the concept of culture in the broadest and most inclusive sense. Street art, born as an art and expression form from New York ghettos to the city, has the potential to be considered a form of Social Museology. Indeed, it can convey local identity and act as a tool for the democratization of public spaces that become open-air museums through the artworks.

However, in the analysed case studies (Quinta do Mocho and Casilino Ecomuseum), the need to go beyond the aesthetic factor generated by street art is highlighted. There is also an urgency to create bottom-managed structures (such as an ecomuseum) to leverage public policies aimed at implementing urban art. Furthermore, if managed in a participatory manner, this art form can generate sustainable tourism capable of conveying the identity and culture of places, representing a form of economic sustainability and attractiveness for marginalized neighbourhoods.

Art can also be a good tool to increase social sustainability. Social Museology practices can manage art as a sustainability factor, applying various participatory methodologies. Socio-expography (involving the local community in the management, promotion, and safeguarding of local heritage); educational actions aimed at involving people in heritage management; meetings between artists and communities that allow active exchange and interpretation of local identity through street art that reflects the local inhabitants; the selection of narrator-artists capable of having a sensitive listening attitude towards the local context; the training of guides to convey the cultural identity of places.

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From Avant-Garde Painter to Climate Action Inspiration at FeliX Art & Eco Museum[1]

Sergio Servellon[2] (Belgium)

Abstract

The FeliX Art & Eco Museum is an atypical museum, just as was Felix De Boeck (1898-1995), a painter-farmer whose work, home, and spiritual legacy form the compass for an operation where avant-garde art, ecology and sustainability take centre stage. De Boeck was a man in his twenties in the 1920s, a rebel who opposed the conventional, disillusioned after World War I, seeking new ideals and community building for a better and more conscious society. Today his avant-garde ideas are surprisingly topical. In the museum building, avant-garde contemporaries, and young talented artists, driven by ecological concerns, get deserved attention at innovative exhibitions. In the farmstead, visitors are sensitised to conscious and simple living, through a throwback in time to the essentials. On the farmyard, intangible heritage contributes to community building. With participative picking moments in the protected orchard, allotments, and herb gardens we re-engage local habitants and schools into ecological and sustainable agriculture. The cows in the meadow trigger a shared social concern among residents, regardless of language and cultural background. Our museum grew into a contact zone, a true community museum, where local associations and initiatives find a home. A home that we also make our infrastructure ready for the ecological challenges of the 21st century, aiming for resilience, cost-effectiveness displays, solar panels, rainwater recovery as well as optimisation of the HVAC systems. We support social-ecological employment for nature conservation, raising awareness of ecology and biodiversity, community building, and poverty alleviation.

[1] This paper is an adapted and abridged version of: S. Servellón & L. Van de Weghe, 'Avant-garde & Status Quo: the FeliXart Museum and its paradoxical legacy', Volkskunde. Tijdschrift over de cultuur van het dagelijks leven, 2020/3, jrg. 121, Kontich, 2020, pp. 443-454.

[2] Director of the FeliX Art & Eco Museum in Drogenbos. Chair of ICOM Belgium Flanders and member of the Executive Board of NEMO, the Network of European Museum Organisations. E-mail: sergio.servellon@felixart.org

The painter-farmer Felix De Boeck ploughs on, and so do his rebellious ideas of the time. An avant-garde legacy re-enacted, with a participative basis. Our micro-project can be exemplary on a macro level, with respect for the values of the past and looking optimistically towards a brighter and more conscious future.

Keywords: art, ecology, inspiration, eco-museum, avant-garde

Resumen

El FeliX Art & Eco Museum es un museo atípico, como lo fue Felix De Boeck (1898-1995), un pintor-campesino cuyo trabajo, hogar y legado espiritual forman la brújula de una operación donde el arte de vanguardia, la ecología y la sostenibilidad toman protagonismo. De Boeck era un hombre de veintitantos años en la década de 1920, un rebelde que se oponía a lo convencional, desilusionado después de la Primera Guerra Mundial, que buscaba nuevos ideales y la construcción de comunidades para una sociedad mejor y más consciente. Hoy sus ideas vanguardistas son sorprendentemente actuales. En el edificio del museo, los contemporáneos de vanguardia y los jóvenes artistas talentosos, impulsados por preocupaciones ecológicas, reciben la merecida atención en exposiciones innovadoras. En la granja, los visitantes son sensibilizados a una vida consciente y sencilla, a través de un retroceso en el tiempo a lo esencial. En el corral, el patrimonio inmaterial contribuye a la construcción de comunidad. Con momentos de recolección participativa en huertos y jardines de hierbas protegidos, volvemos a involucrar a los habitantes y escuelas locales en la agricultura ecológica y sostenible. Las vacas en la pradera provocan una preocupación social compartida entre los residentes, independientemente del idioma y el origen cultural. Nuestro museo se convirtió en una zona de contacto, un verdadero museo comunitario, donde las asociaciones e iniciativas locales encuentran un hogar. Una casa en la que también preparamos nuestra infraestructura para los desafíos ecológicos del siglo XXI, buscando resiliencia, exhibiciones de rentabilidad, paneles solares, recuperación de agua de lluvia y optimización de los sistemas HVAC. Apoyamos el empleo socioecológico para la conservación de la naturaleza, creando conciencia sobre la ecología y la biodiversidad, la construcción de comunidades y el alivio de la pobreza. El pintor y granjero Felix De Boeck sigue adelante, al igual que sus ideas rebeldes de la época. Un legado de vanguardia recreado, con una base participativa. Nuestro microproyecto puede ser ejemplar a nivel macro, respetando los valores del pasado y mirando con optimismo hacia un futuro más brillante y consciente.

Palabras clave: arte, ecología, inspiración, ecomuseo, vanguardia.

The FeliXart Museum wishes to reconcile the artistic and the ecological because both are inseparable in the figure of Felix De Boeck (1898-1995), who charms by his authenticity as an artist-farmer. A soft anarchist who preferred the rhythm of nature to profitability and an avant-gardist who was at the cradle of a new pictorial language. By remaining faithful to and inspired by the tangible and intangible legacy that Felix De Boeck and his generation offer us, the museum site is becoming a mediation zone at the crossroads of urbanism and agricultural heritage in a little municipality bordering the metropolitan capital of Brussels. This location is at the center of issues between two language communities. We translated the many challenges by defining the objectives in a two-track policy, art and eco, with the second 'eco' track helping the 'local anchoring' and 'regional embedding' of the institution. For this we organize participatory activities and make use of our facilities in such a way that they enable social justification.

It seems paradoxical that De Boeck's conservative reflex, the bequest to preserve an oeuvre and a life, is at the heart of a new museological impetus. The type of legal protection enjoyed by De Boeck's farm and orchard has given rise to fears that a 'bell jar', immovable preservation, is being maintained. The conservation of a place enforces the 'status quo', yet it enables at the same time the activation of the 'spirit' of what caused the artist to donate it to the community. If the protection took place without questioning the (potential) users, our ambition is to build a future exploitation that will be all the more participatory.

The search for 'core' museum values now coincides with the, often polemical, question about the essence of museums. Is sticking to internal logic, growing from a constraining donation, combinable with a truly participatory and even activist path bridging existing social and communitarian problems? Can preservation be the fundament of social accountability and sustainability? The FeliXart Museum can experiment within the experimental Flemish cultural heritage policy context. We try to outline our positioning based on two opposing aspects of heritage accessibility; from preservation to participation. This means we work around the tension of an object-driven museum and the support of intangible heritage practices at the farm and orchard. The future will tell how far the one will influence the other, but both can gain pace based on one inspiring legacy.

Felix De Boeck: start and vanishing point?

The legacy that the FeliXart Museum manages includes the totality of the artist's life and work. Felix De Boeck, the artist, and farmer from Drogenbos was aware of the idiosyncratic heritage he left behind: in his will he let it be known that in addition to a new museum building where his work was to be on permanent display, his house and adjoining grounds also needed to be given a museological context.

Until 2004, the museum focused on the management, conservation, and presentation of De Boeck's collection. The classification as a 'recognized' museum by the Flemish government was questioned by the expert committee because of the strict monographic policy[3]. Sustainability was considered fragile in the first place due to the diminishing reputation of the artist and the paradigm shift that started to take place within the heritage sector. Although there were some plans for the integration of the museum into a museum site grouping the new museum building, the 18th-century farmhouse, and the 'protected' orchard, conservative management and an unclear strategy made it difficult to materialize this idea. But the elements were there, and so was the potential.

De Boeck's values and ideologies, both in his art and in his way of life, are still very much alive today: they are reactivated by the work of the FeliX Art & eco Museum. A first theoretical exercise consisted of a 'cross-grid of oppositions' where on the one hand art and ecology were thematically opposed to each other and on the other hand, an 'elitist' museological service and 'popular' accessibility were positioned against each other. The center of all these contrasting forces should be the base for a new museum identity. It soon became clear that, if we wanted to set up a fully-fledged operation, we would have to carry out an in-depth study of both the object-oriented museum and the value-driven second track around the farmstead and the orchard. Just as we benefit from the research of the avant-garde for our exhibition policy, with ever-new perspectives on the cultural-historical importance of abstract art and constructivism, showcasing the generation of De Boeck and other generations from the neo-avant-garde of the 1950s to more contemporary uses of abstraction, the period of the 1920s might inspire us to create a research-driven approach to the ecological track.

It would be too far-reaching to claim that De Boeck created a commune on his own. But what is certain is that all the ideals from his youth were influential in his choices later in life. After the decline of the avant-garde, from the mid-1920s onwards, De Boeck retreated to his farm where he would earn his living as a farmer for the next decades. In the meantime, he continued to receive contemporaries and new friends in what was mythically called a 'magical place'[4]. He kept his activities small-scale and although mainly focused on self-supply, during difficult times he made his land available to his neighbors for allotments. Self-reliance and social commitment, small scale, and local production: these are current 'hot topics' that we can distill from the period when De Boeck made his most important abstract works.

[3] The Flemish Government credits museum institutions with different labels going from 'basic, 'regional', 'nationwide', and 'cultural heritage institution'.

[4] At this moment David Veltman is finishing a PhD research with a biography of Felix De Boeck at the Biography Institute of the Rijksuniversiteit Groningen, The Netherlands.

FeliX FeliX Art & Eco: eco- sustainability

Since 2022 we have laid the foundations on how to give substance and, above all, 'meaning' to the overall project. The original 2.5-hectare orchard was suddenly doubled in a biodiversity project for the benefit of the population with the realization of Het Moeras/ The Swamp developed together with the Regional Landschap Pajottenland en Zennevallei. The question remains on how to integrate these opportunities into our daily operations. As a first task, we translated the challenge by defining the objectives of our ecology track into 'local anchoring' and 'regional embedding of the institution'. In other words: to organize activities and make use of our facilities in such a way that they enable social justification. Under the title of 'I FeliX – We FeliX' the two-trace policy is taking a more practical turn. With the campaign we want to show that the FeliX site belongs to, is made by and exists for everyone. This means that, again parallelly, next to an 'elitist' research-driven art museum, a community museum is being set up around the farm as a place where schools, social services, or associations feel at home and can organize activities. In this trajectory, the contribution of the local population is not only limited to their own story, but it is our ambition to create meta-reflections on contemporary forms of living and propel community building together. It could show how participation can be an important instrument to implement the museum's mission and have an impact on its own future.

The FeliX Art & Eco Museum positions itself in a dynamic and contemporary way as an example of integrated cultural experience where art, ecology and heritage provide connections across the boundaries of different communities and sectors. The work, home and spiritual legacy of Flemish painter-farmer Felix De Boeck form the compass for an operation where avant-garde art and sustainability take centre stage. As a contact zone and meeting place between the metropolitan and the rural, the museum inspires togetherness: we help give a future to heritage objects, intangible heritage and nature experiences of the region. The work, home and spiritual legacy of painter-farmer Felix De Boeck provides an opportunity to establish a contemporary and socially relevant operation around themes such as: avant-garde art as a critical window on society, sustainability and ecology, social cohesion, connection with nature. Efforts to raise awareness about art, ecology and biodiversity, foster community building, and alleviate poverty have been prioritized. On the side of art program, we started a series of thematic exhibitions with a focus on the ecological engagement in contemporary art practices. This led in 2021 to the creation of the broader initiative of intermunicipal cooperation a partnership that wants to realize projects that strengthen the cultural, ecological and economic development in the southern canal zone of the Senne river. Within this partnership, the first edition of the triennial festival was created. GIST is a new triennial where art, theater, literature, music, nature, gastronomy and industry meet at iconic locations on the Senne. You experience theater on an old industrial site, discover visual art along the waterfront, listen to literature to the rhythm of the freeway and the rippling Senne.

In an effort to promote sustainable management and social employment, various initiatives have been implemented. One example is the practice of water buffering in marshlands to create habitats for fauna. By strategically managing water levels in marsh areas, not only are wildlife species provided with suitable environments, but it also contributes to the overall ecological balance. Another example of sustainable social employment is the ecological conservation project that focuses on planting trees of local rare authentic fruit varieties. This not only helps preserve biodiversity but also creates social employment opportunities for individuals involved in the planting and maintenance of these trees. Sustainable farming practices within inclusive community projects are also being embraced, where communities come together to take care of our cows, to cultivate crops using environmentally friendly techniques, ensuring food production while promoting social cohesion and inclusivity.

Relightning projects aim to enhance energy efficiency by using more efficient lighting systems, reducing energy consumption and promoting sustainability. As part of the sustainable energy approach, solar panels have been installed on the roof of the museum building. Additionally, there are plans to transform a nineties building into a modern museum of the 21st century by replacing the low-performing glass bricks with high-performance ones and reorienting the corridor to optimize natural lighting and climate control. Furthermore, future opportunities for hydroelectricity generation from a repurposed heritage site and the reuse of exhibition furniture showcase a comprehensive approach to promoting sustainability and minimizing waste. This steps towards self-sufficiency through renewable energy sources and material re-use not only reduces the museum's carbon footprint but also sets an example for other institutions.

The FeliX Art & Eco Museum was also part of the Resilient Storage research project. This project was aimed to develop a methodological approach adapted to the Belgian context in order to optimize the operation of climatic systems in museum reserves. The initiative, supported by Royal Institute for Cultural Heritage and the University KU Leuven, brings together an interdisciplinary team of regional heritage organisations and experts in energy performance and preventive conservation. This project has laid the foundations for a common language between infrastructure managers and collection managers and, above all, to gain a better understanding of the obstacles that cultural institutions encounter when they wish to implement such a climate optimization project.

Sustainable development in sports museums on the horizon of the 2024 Olympic Games

Marie Grasse (France)[1]

Abstract

The National Sports Museum, operates under the dual supervision of the Ministries of Culture and Sports. The latter has successfully positioned itself and worked towards a comprehensive sustainable policy. Since 2017, the Ministry of Sports and the Olympic and Paralympic Games has implemented the Charter of 15 eco-responsible commitments for organizers of sports events. In the same vein, the Organizing Committee of the Games has participated in the "Sports for Climate Action" initiative of the UNFCCC (United Nations Framework Convention on Climate Change). In addressing the challenge of Sustainable Development for its 33rd Olympiad, the International Olympic Committee emphasizes the frugality and eco-responsibility of the Games; 95% of the events will take place in existing venues or temporary, dismantlable, and reusable infrastructure. At the conclusion of the Games, the National Sports Museum will benefit from the donation of some of these temporary structures and will present them for educational purposes, highlighting the significance of the Games in Paris and the values they promote.

Keywords: Eco-responsible, Sustainability, Olympics, Sports Heritage

[1] Director General and Chief Heritage Conservator at the Musée National du Sport in France. Board member of ICOM – ICMAH. E-mail: marie.grasse@museedusport.fr

Resumen

El Museo Nacional del Deporte funciona bajo la doble supervisión de los Ministerios de Cultura y Deportes. Este último se ha posicionado con éxito y ha trabajado por una política sostenible integral. Desde 2017, el Ministerio de Deportes y Juegos Olímpicos y Paralímpicos ha implementado la Carta de 15 compromisos eco-responsables para los organizadores de eventos deportivos. En la misma línea, el Comité Organizador de los Juegos ha participado en la iniciativa "Deportes para la Acción Climática" de la CMNUCC (Convención Marco de las Naciones Unidas sobre el Cambio Climático). Al abordar el desafío del Desarrollo Sostenible para su 33ª Olimpiada, el Comité Olímpico Internacional enfatiza la frugalidad y la ecorresponsabilidad de los Juegos. El 95% de los eventos se desarrollarán en sedes existentes o infraestructura temporal, desmantelable y reutilizable. Al finalizar los Juegos, el Museo Nacional del Deporte se beneficiará de la donación de algunas de estas estructuras temporales y las presentará con fines educativos, destacando la importancia de los Juegos de París y los valores que promueven.

Palabras clave: Eco-responsable, Sostenibilidad, Olimpiadas, Patrimonio deportivo

The role of the museum is not only to recount the past but, akin to scientific and technical heritages, to select and preserve expressive elements of contemporary productions that can contribute to the information and education of future generations. It is therefore important for sports events and society museums to collaborate, document, and analyze the measures taken by these Games, in this specific case, in favor of Sustainable Development at the national level, gradually extending into the private sphere of everyone. One of the main missions of a museum remains education. By documenting and presenting actions for change, sports, history, and society museums, in collaboration with states, contribute to the education of a generation of climate-committed actors. The goal of the Paris 2024 Olympics is to organize the "first ethical, responsible, and sustainable Games." Consequently, France has set a target to reduce carbon emissions by 55% compared to the Olympic and Paralympic Games in London 2012 and Rio 2016.

The consideration of sustainable development in sports and the Olympic Games has evolved gradually:

- In 1994, the International Olympic Committee (IOC) added the environment as the third pillar to the Olympic spirit.
- In 1999, the IOC published and adopted its Agenda 21, titled "Sport for Sustainable Development."
- In 2014, sustainability is incorporated into the Olympic Agenda 2020: The International Olympic Committee (IOC) regards the environment as an integral part of Olympism, alongside sports and culture.

- In 2015, the United Nations proposed a project for a better and more sustainable world through sports.
- In 2016, the IOC established a Sustainability Strategy, which extensively discusses the contribution of the Olympic Games to the Agenda 2030 and the Sustainable Development Goals (SDGs) adopted by the UN in 2015.
- In 2017, the Organizing Committee of the Tokyo 2020 Olympic and Paralympic Games (TOCOG) released an initial Sustainability Plan (updated in June 2018).

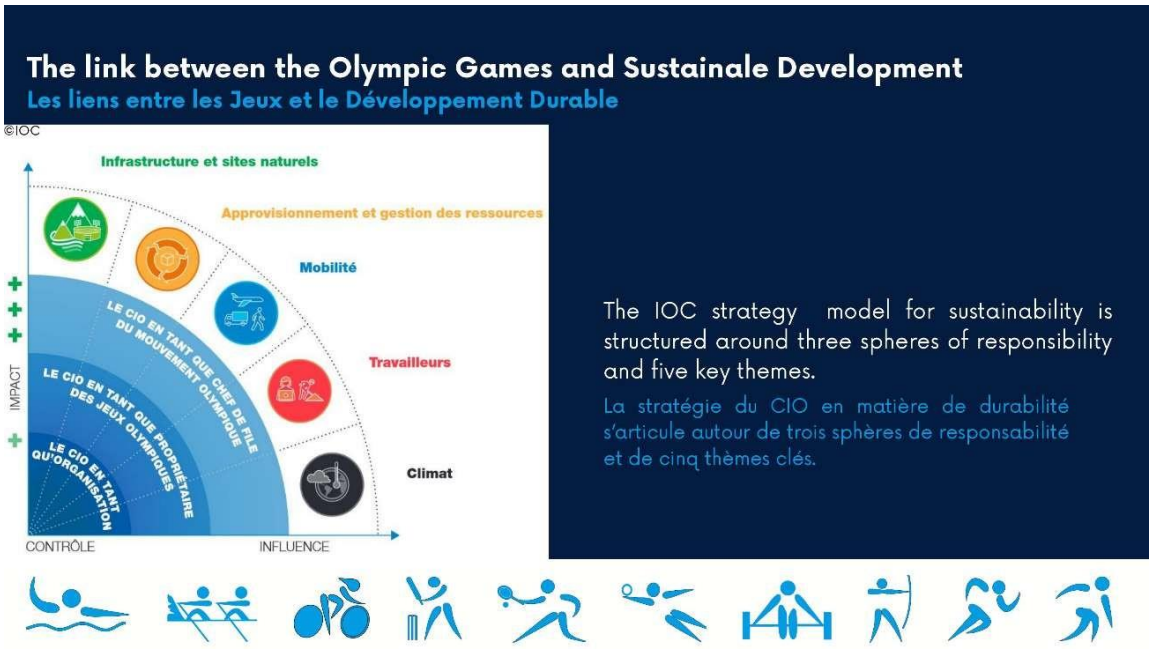

Image 1. WWF & Paris 2024 : https://www.wwf.fr/projets/vers-les-premiers-jeux-alignes-avec-les-objectifs-de-laccord-de-paris

This plan outlines the contribution of these Olympic Games to the Sustainable Development Goals, including specific targets and measures related to them. It establishes the main sustainability focus areas for the Tokyo Olympics: climate change, resource management, nature and biodiversity, human rights, labor and fair trade, participation, cooperation, and communication.

Two Olympic host cities have played pioneering roles in environmental protection: Lillehammer (Norway), which aimed to make the 1994 Winter Olympics a showcase for the country's environmental policies, and Sydney (Australia) in 2000, which set new environmental standards in energy, water conservation, waste reduction, pollution prevention, and the protection of the natural environment. Since then, the environmental aspect has gained momentum, from the bid procedure to the organization and delivery of the Olympic project.

The 2010 Vancouver Winter Games and the 2012 London Summer Games are respectively the first Winter and Summer Olympics to be recognized as having considered sustainable development. In 2020, the Tokyo Olympic Games fall within this framework, demonstrating Japan's commitment to hosting the "first Olympics of the SDGs (Sustainable Development Goals)."

The Paris 2024 Olympics aim to organize the "first ethical, responsible, and sustainable Games." Consequently, France has set a target of reducing carbon emissions by 55% compared to the 2012 London and 2016 Rio Olympics and Paralympics. The sustainability strategy developed by Paris 2024, supported by WWF France, the Yunus Centre, and UNICEF France, aligns entirely with the Paris Climate Agreement and the Sustainable Development Goals (SDGs) of the 2030 Agenda.

To achieve these goals, several actions are planned:

- Limiting the use of spaces (combatting urban sprawl): Paris 2024 will utilize 95% of existing or temporary sites and consolidate competition venues, reducing the need for new construction and limiting urban expansion.
- Locating competition venues near the Olympic Village to reduce travel and greenhouse gas emissions.
- Constructing with a focus on sustainability: Few new constructions (Olympic Village and swimming pool) using bio-sourced materials and enhanced construction standards (environmental norms and energy performance).
- Sourcing 100% renewable energy and adopting sustainable practices for food supply (short supply chains).
- Implementing clean transportation (public transport, Olympic Line 16, cycling, walking).
- Waste reduction: 100% of materials used for temporary equipment and furniture will be reused after the Games. The Olympic Village will be transformed into a sustainable mixed-use neighborhood called "Eco-City."

In addition to serving as a witness to these initiatives by exhibiting torches or posters illustrating these games and providing commentary through guided tours, museums can delve into the phenomenon of sports from historical, sociological, anthropological, and economic perspectives. This goes beyond the performances of athletes or the creation of national heroes, even though measuring the societal impact of a sports event can be challenging at times. For this reason, the National Sports Museum sees itself as a workshop for reflection, presenting broad issues from which temporary exhibitions are developed.

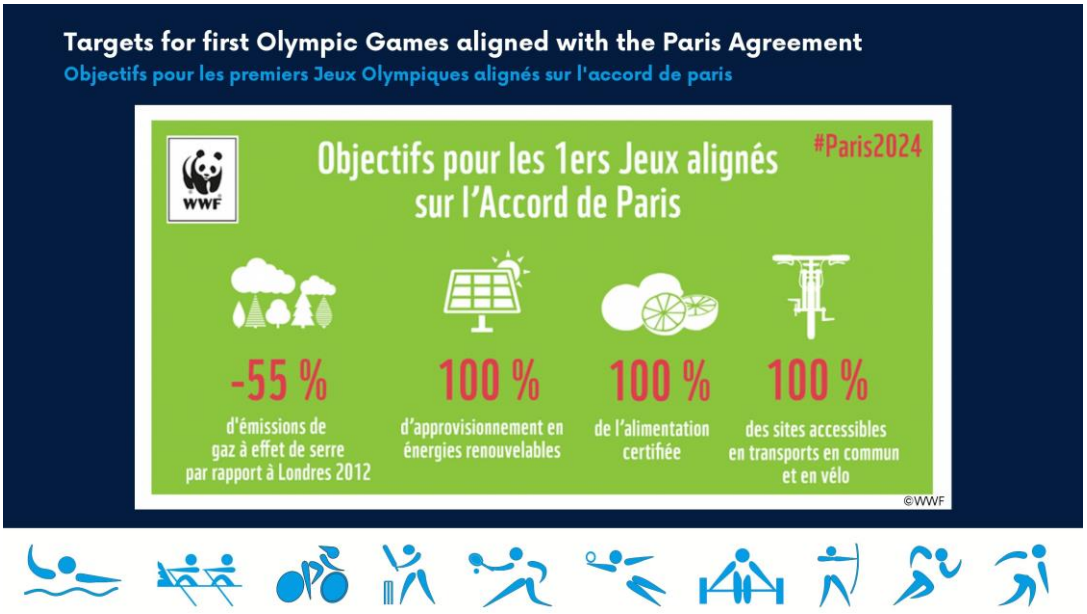

Image 2. IOC's Sustainability strategy
: https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/Factsheets-Reference-Documents/Sustainability/IOC-Sustainability-Strategy-Long-version.pdf

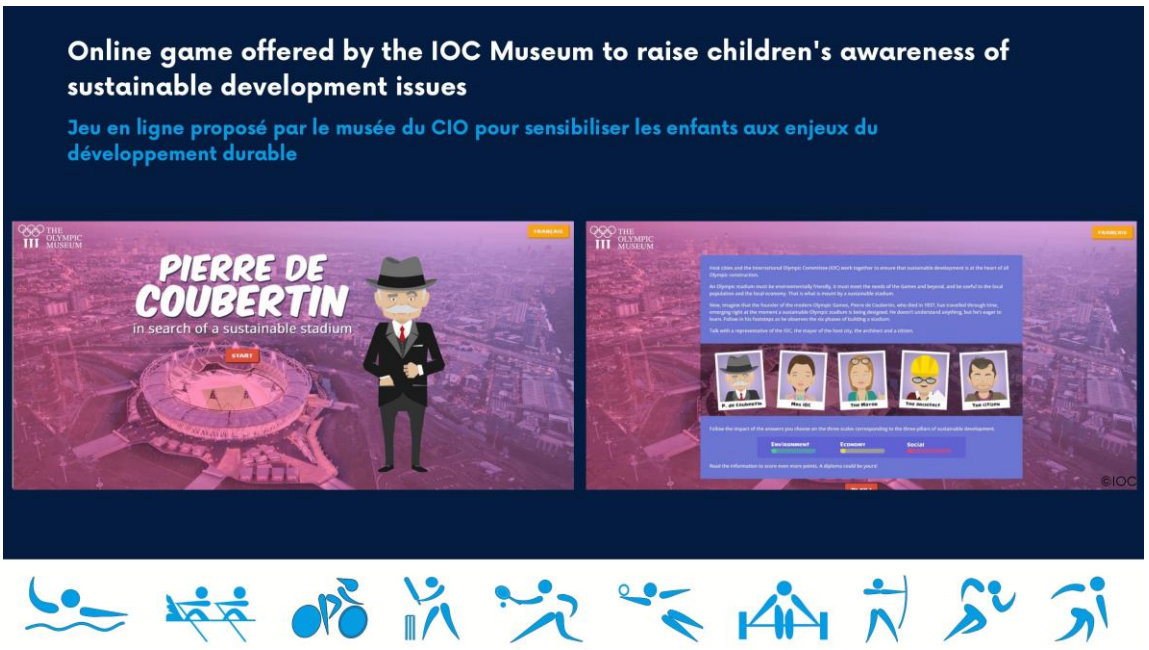

Image 3. Pierre de Coubertin interactive game : https://olympics.com/ioc/news/-stadiums-past-and-future-head-to-the-olympic-museum-for-an-exciting-new-exhibition-and-a-whole-lot-more

Taking into account the climate change in exhibitions

Myriame Morel-Deledalle[1] (France)

Abstract

Tools for youth's education, awareness and education, and for the general public, museum collections and temporary exhibitions, and their educational derivatives, have an increasingly important social role to play. It will thus be interesting to analyse, in our current framework, how the issue of climate change, reserved for specialists and ignored by the general public, was not presented thirty years ago- and how, over time, this event has become central in museum reflection and museology. I will present, among others, a case in point with the example of the Cosquer cave, discovered 30 m. under the sea in Marseilles in 1991. It was the subject of various temporary exhibitions in various forms and contents; the first in the form of photographic panels and scientific posters at the Musée d'Histoire de Marseille in 1992, a second by the CCSTI scientific center, in a commercial place, Les Docks, with a large setting and a large display in a blue pseudo submarine space, and then again, in the Musée d'Histoire in 2000, in another form: a film-walk in the cave, with voice-over commenting the motifs of the engravings and paintings of the cave, streaming in the auditorium including a device for the deaf and hard of hearing. Finally, after several years of "in situ" surveys, the manufacture and realization of a "fac-simile" of the cave opened to the public in 2022, with various devices including an interpretation room which largely takes into account the aspects of climate change underway, them main cause of the impossibility of visiting the cave itself, which in the short term will disappear under the rising waters.

Keywords: climate change, exhibitions, new museology, comparisons.

[1] Historian, archaeologist, teacher, University director, museum director, museum and exhibitions curator/ several scientific articles, catalogues about history, archaeology, waterlogged wood treatment. Currently chief curator at MUCEM. E-mail: myriame.deledalle@gmail.com

In terms of heritage, the question of the degradation of the property once excavated and delivered to the public is increasingly being raised. On monumental sites which had been covered by layers of occupation and are brought to light, to preserve them and expose them to the public, various solutions have been adopted: sheet metal coverings, integration into the building, construction of a dedicated compartment, and often not at all: the remains are exposed to the open air.

On the photo of the Greek walls under snow (Image 1), can you imagine that we are in the south of France in January 2009? The walls were erected to protect the Greek city of Marseilles during the 3rd century BC, then were probably re-used and buit over. They might have been covered with snow during antic times. But since they were re-discovered and exposed to the air (around the end of the1960), nobody had thought about their fragility or possible damage of one of the most ancient monuments in France. There was no reflexion about the impact of climate on re-emerged remains from the past. During the long centuries covered under the earth, which had protected them, the equilibrium of the monuments (built with stones, bricks and mortar) was stable. Their sudden discovery was a climatic shock.

Image 1: Crinas Wall under snow, Marseille, January 2002, photo Myriame Morel-Deledalle.

Archaeological excavation is already a destruction process in itself. Remains exposed without protection suffer damage from bad weather. It has long been thought that underground remains, such as prehistoric caves, were naturally protected. However, this is not the case, because these oldest human testimonies are subject to specific anthropogenic deseases: let us focus on a few cases dating from the Upper Paleolithic.

- 40,000 to -9,500 BP, is the period related to the known expansion in Europe of the Modern man, during the last Ice Age. Traces of occupation have been discovered in several painted and engraved caves: Altamira (bisons), Lascaux (horses), Chauvet (bears), Cosquer (penguins). The amazing bison of Altamira cave in Spain (-35 000 BP), was discovered in 1868 (Image 2). The cave was opened to visitors who came in mass to look at the splendour of the paintings, the impressive drawings, the colours of animals that had totally disappeared from the contemporary landscape. In fact, the bisons drawn were the ones that people could see just out of the cave in their environment and landscape at the time of the Late Ice Age and the expansion of the modern Man. The cave was inscribed on the World Heritage UNESCO list in 1985.

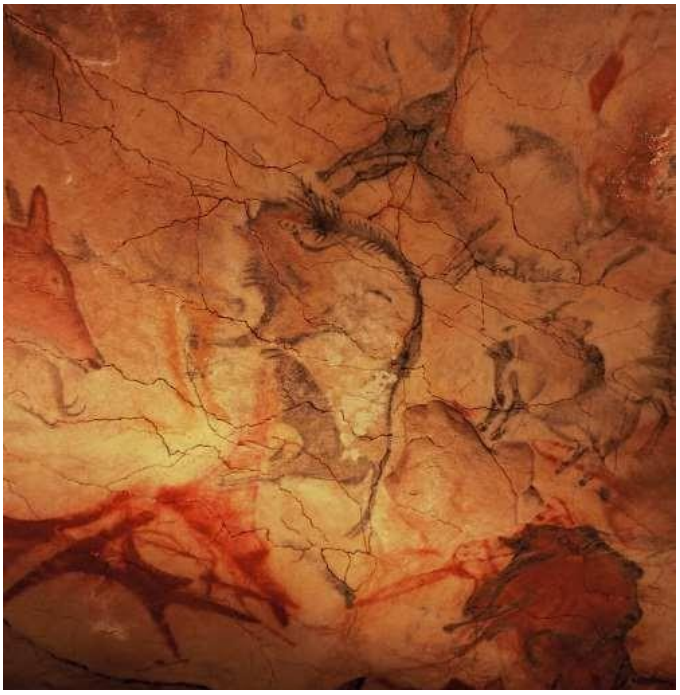

Image 2: Altamira Cave, photo UNESCO, Yvon Fruneau.

Due to carbone dioxide, the paintings altered and began to faint; this marked the beginning of research in this matter since nothing was known so far about conservation-restauration-preservation in this domaine. The origins of those damages were rapidly discovered and the cave was closed to the public in 1982; but under the touristic (and economic) pressure, it opened again with limited public, as an experiment; however, it was soon obvious that if the paintings were to be protected in the long term, the cave had to be really closed in 2002. Other solutions had to be found, and this marked the beginning of the creation of replicas. A contemporary building was placed just outside the cave with copies of the paintings placed on walls having the same volume of the authentic cave, and a research center was created. But nothing replaces authenticity and so a new idea emerged: when buying the tickets to visit the replica, visitors could have the chance to be part of the 5 visitors a day who are allowed to enter the original cave.

This initiative constitutes a thrill for the visitors, but still remains very risky to the conservation of the paintings.

The same situation happened with the Lascaux cave in France (Image 3), dated around -20 000 BP and discovered in 1940, inscribed in the UNESCO World Heritage List in 1979. The fauna represented there, showcases a great number of "chinese" horses and other classical animals of that Age. Called the "Sixtine Chapel of Prehistory", Lascaux cave became world famous and over-visited. White and green mold as well as fungies appeared on the walls, leading to the realization of chemical test and the implementation of preservation- and restauration efforts. One of the first measures were to limit the number of visitors and then to close the cave in 1963.

Image 3: Lascaux Cave, photo UNESCO, Francesco Bandarin.

A first replica (Lascaux 2) was buit in front of the cave in 1983; it was a plain covered space with enlarged photos of the main paintings. A brand new itinerary photo exhibition (Lascaux 3) was made and transported all over the world up to China. The current version, Lascaux 4 (Image 4), is a complete reproduction of the cave with the help of advance technology and an international parietal center opened to visitors in 2016. There, visitors can also experience a 3D visit recreating the real environmental conditions of the cave, completed by a fresh atmosphere, dampness and humidity.

Image 4: Lascaux IV, photo Club Innovation & Culture CLIC France.

The fascination with prehistoric art around the world, paired with a significant media coverage, has led to the development of increasingly sophisticated technologies in the field of replicas. Currently, all the large caves have one.

This is also the case of the Chauvet Cave (France), -37 000 BP, discovered in 1994, and inscribed in the UNESCO World Heritage List in 2014 (Image 5). But for the first time, there was an inmediate awareness for the need of conservation. The first decision of the Ministry of Culture was to not open at all to the public, but work rapidly to understand a maximum about its occupations, limit the intrusions and act as a medical professional as well as pre-historians. Only the research team was allowed to go in and do the minimal damage.

Image 5: Chauvet Cave, photo SRA DRAC RA, MCC/DRAC

Of course, Chauvet has its replica (Image 6) with specific aspects: scientific, historic, geographic and climatic contexts are more in the heart of the project.

Image 6. Chauvet Replica, photo by Patrick Aventurier.

The last one to open to the public in France was the Cosquer replica. The site of the Grotte Cosquer in Marseille, France, is a step forward in raising awareness and taking into account the effects of climate change. It was discovered 30 m below the sea level, so the question of its public visit was posed differently; access was sought from the top of the cliff or through parallel tunnels, until it was wisely decided not to open it to the public.

Why is this cave under the sea? Because of the effect of climate change in the past. In – 33 000 BP, the entrance of the cave was 38 m above the current sea level. At the end of the small Ice Age, sea level raised up and today, we must dive 38 m under the sea level to find the entrance. The discovery of the cave was accidental and was revealed to the public in 1991. It was inscribed as a Historical Monument but not on the UNESCO World Heritage List, because of its innacesibility in the future, although it should have been put on the World Heritage in Danger List. The only possible access would be maritime, after a deep dive and a narrow and dangerous passage through a long underwater gallery. There, a huge 'cathedral" is found with hundreds of paintings and engravings from the Upper Paleolithic with geometric figures and negative hands as well as drawings of contemporary species like horses, chamois, goats, seals and penguins.

The depiction of penguins excited the scientific world and the general public. This species of penguins is extinct and currently penguins are more representative of the artic climate than of the Mediterranean. The painting was strange enough to accuse the discoverers of the cave of falsification! But those "old" penguins" were really a part of the contemporary fauna present in a very cold climate in the Mediterraum during the Upper Paleolithic. Furthermore, the commercial business is happy to sell so many stuffed penguins in the boutique.

Image 7. Cosquer Cave, Penguins, photo by DRAC SRA PACA, Michel Olive, 2013

Image 8: Cosquer Replica, shop, photo by Myriame Morel-Deledalle

Cosquer Cave has also its replica on the border of the sea together with an interpretation center mainly focused on environment and climate changes, which is a new and original approach compared to the other replicas. In the center the public gets information about the enrironmental context of this cave (flora, fauna), its occupation and of the actual climate context which is a strong menace to its conservation since the cave is now invaded by the sea, and the paintings will disappear rather soon without a permanent solution.

Conclusion

So, are replicas a satisfactory answer to conservation issues and the dissemination of knowledge about climate change? Obviously not because they are something else, a new production equivalent to Museums "objets dérivés", and a new commercial market.

Scientific informations and part of the knowledge linked to this process can be transmitted through Interpretation Centers, Parietal centers, etc, but what about the tangible evidence of the human past? Pragmatically, the experience through 40 years show the importance of dissemination, but anthropocene behavior is not stopping, and climate change increase the risks of heritage destruction.

It is not realistic and it is unfair to discover, uncover and look for new "Heritage" when we do not anticipate its protection, conservation, perenisation. It is time for us to think about the interest in excavating heritage sites; let us try, as a priority, to safeguard and transmit the Heritage that we already inherited.

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CLOSING WORDS OF DEBORAH ZISKA CHAIR,
ICOM COMMS (FORMER MPR)

The *Museum Leadership in Climate Action* conference collaboration of four international committees hosted by ICOM Paraguay and ITAIPU Binacional was an opportunity for ICOM COMMS members to present and publish how meaningful dialogue and innovative engagement with our stakeholders, audiences, and media channels can make an impact. In opening remarks, I reminded everyone that the museum sector still needs to do more to respond the climate emergency.

MPR's keynote speaker Dr. George Jacob, former President & CEO of BayEcotarium in San Francisco, California, responded by speaking about the emergence of climate literacy living museum initiatives, such as Bay Ecotarium that will engage "native American indigenous voices" and bring "awareness to climate change, its cumulative impact, the price of inaction, innovation and Green-Blue economies, leading to informed action."

Innovative climate actions revealed how museums are listening and engaging with stakeholders. Katrina Orsini, programs associate at The George Washington University Museum and The Textile Museum in Washington, DC, focused on a student-led initiative in fashion sustainability that resulted in a popular campus clothing exchange and a new undergraduate course. Sergio Servellón, director of the FeliX Art and Eco Museum in Belgium explained how the estate of avant-garde painter Felix De Boeck (1898-1995) has become a lively center for art and ecology.

Carolyn Mwenda, head of marketing, National Museums of Kenya, imagined how the positive stories of cultural superheroes can communicate indigenous stewardship of our planet and reach young audiences. TV journalist Nicolás Rojas Inostroza, Entrada Liberada, presented a selection of clips about museums in Chile that are addressing climate change. Antonio Machado spoke about ICOM Canada's development of the Plastic Reduction Action Plan designed for museums and heritage institutions. Daniel Olmedo, Aurora Ortega, and Alejandro Amarilla of Paraguay described how the Canindeyú Conservation Project's reintroduction of the blue-and-yellow macaw to its native habitat is leading to positive responses from local communities.

Challenges of the Anthropocene were explored by Ayelet Aldouby, social practice art curator, United States, and Dominique Paul, multidisciplinary artist, Canada, through *Silent Fall*, an emotive environmental justice multimedia exhibition. Niveen Nabil-Algharbawy, archaeologist and marketing coordinator, Grand Egyptian Museum, discussed how sustainable cultural events are addressing climate change.

ICOM COMMS' workshop—*We're ready! Are you? Climate Protesters are about to knock at YOUR door!*—developed by COMMS board member Luis Marcelo Mendes, Cultivia, Brazil, and James Heaton, Tronvig, United States, was co-led by Mendes and COMMS Board chair Deborah Ziska of Washington, DC. It included a virtual presentation by Elke Dehner, director of marketing and communications at the Rubin Museum of Art, New York, about the surprising twists and turns regarding the return of relics to Nepal covered by the world press. The workshop ended on a high note as attendees participated in hands-on controversy and crisis communication simulations.

Four travel grantees—María Teresa Moya Malfavón, Museo Diego Rivera Anahuacalli, Mexico; Alessane Ouedraogo of Burkina Faso; and Andrea Lombardi, Inhotim Institute, Brazil; along with Nicolás Inostroza of Chile, mentioned earlier, made videos posted on ICOM COMMS' YouTube channel about how they, like their colleagues at the conference in Hernandarias, Paraguay, became reenergized to save the planet where they live and work.

KEYNOTE ADDRESS
Climate Museums: Awareness to Action

George Jacob[1] (USA)

According to the UN, with the global population now at eight billion and growing, action or inaction by the world's largest G20 economies and their demands on energy consumption, will be critical to our collective futures. Secretary General Antonio Guterres ascribes the upcoming G20 and COP 28 Summits as Ground Zero for discussions.

For deliberations and discourses to translate into an agreement that eventually becomes policy, stakeholders need to be informed and educated, both on the problems and the solutions. That is where the Climate Literacy Living Museum initiatives come into play. Curating Climate has been an on-going challenge at many science and natural history museums where millions of visitors flock to gain experiential learning insights. While statistics, graphs, facts and numbers associated with sea-level rise, carbon emissions, regulations, policies and pollution are synonymous with UN SDG 30x30 by 2030 over-arching macro targets, what is missing from the equation is the emotive human element that is at the core of sustainable symbiotic synthesis with the natural world. While I am the President & CEO of the San Francisco based Bay Ecotarium- the largest watershed conservation group in California, I also lead the transformation of the Smithsonian Affiliated Aquarium of the Bay in San Francisco into a $260 million Climate and Ocean Conservation Living Museum engaging native American indigenous voices to bring awareness to climate change, its cumulative impact, the price of inaction, innovation and Green-Blue economies, leading to informed action.

The Bay Ecotarium strives to be a leader in leveraging environmental science to illustrate the consequences of human actions on the Earth's ability to sustain and nurture life and create a grassroots movement to enable change. We recognize that climate change and environmental sustainability are among the greatest challenges facing humanity today.

[1] Dr. George Jacob FRCGS, Former President & CEO, Bay Ecotarium

Embracing our role as an educational and social institution, the Ecotarium is addressing these issues head on by creating an evolving exhibit experience and developing educational resources based on field research, data analysis, convening discussions, engaging environmental experts, and taking significant steps to reduce our environmental footprint across multiple institutional branches.

The Bay Ecotarium will offer the visitor an immersive and entertaining experience of the Bay ecosystems from Sierra to the sea. Its design elements will bring human interaction with nature into a compelling narrative to inspire environmental stewards of the future.

The exhibit experience will include both virtual and augmented reality adaptations to engage, immerse and interact with diverse audiences incorporating new biotechnologies inspired by complex ecosystems, and highlight the lifestyle this fertile bay area offers to the cradle of the Silicon Valley. The Ecotarium will strive to be its own catalyst for participatory innovation to preserve nature and build a new sustainable future of co-existence with our environment. Biomimetic organic design elements embedded with exhibits will harness energy from the sea and the sun, its water recycled by bacteria and its luminescent lighting using microalgae.

The experience will potentially consist of a series of spaces built around the original aquarium tunnels which will be retained in the new facility. Its unique pre-fab architecture, distinguishes itself as a landmark within the skyline of the city. Moreover, its appealing silhouette and its iridescent envelope transfer the building's physical body into a biomimetic icon that embodies the circle of life from the underwater habitat to on-shore and air. The outside of the BayEcotarium consists of a multi layered scale cover that reflects the impinging sunrays into iridescent spectral colors of greens and blues. By night the scale cover is illuminated—in different shapes, patterns and colors – transforming the envelope of the building into a pulsing object that slowly but constantly changes its appearance. The light conception of the Ecotarium is inspired by the natural phenomenon of bioluminescence taken from the animal kingdom connecting sea, onshore and air – from bioluminescent plankton to fireflies. Numerous single light spots cover it, creating a mesh. From a distance these single spots visually cluster to design a coverture of light emphasizing the unique architecture of the building, leading it to merge with the environment of the bay. Each single light spot can be controlled individually. By a mobile application, the citizens of the bay and others can control the spot lights and through that, influence the illumination of the building. Each spot of light of the facade can be purchased according to a crowdfunding campaign to finance the cost expenses for the illumination of the envelope of the Ecotarium. Significantly, according to the New York Times (May 2017), "California is emerging as the nation's de facto negotiator with the world on the environment."

Under the leadership of Governor Jerry Brown, the state has recently (June 2017) signed agreements with both China and Germany, which expresses their continued commitment to working collaboratively with other countries to reduce the effects of climate change for future generations. The state has enacted legislation, regulations and executive orders, all of which aim to respond to climate change. Most recently,

in October 2015, the Senate passed the Clean Energy and Pollution Reduction Act (SB 350), which established targets now contained within the Governor's six key climate change strategies. These strategies are designed to achieve the vision of "reducing greenhouse gas emissions to 40% below 1990 levels by 2030:"

- Increase renewable electricity production by 50%
- Reduce petroleum use by 50% in vehicles
- Double energy efficiency savings at existing buildings
- Reduce greenhouse gas emissions from natural and working lands
- Reduce short-lived climate pollutants
- Safeguard California

In addition, in February 2015, the California Environmental Protection Agency produced the Climate Change Research Plan for California, which illustrates the centrality of research to achieving the state's targets and vision in response to climate change. The plan sets out the state's climate-related research priorities, including monitoring, climate projections, GHG accounting, reducing GHG emissions, preparing for a changing climate, socio-economic effects and synergies. The Bay Ecotarium gives the opportunity to assess California's progress in reducing greenhouse gases and focus on development, shared experiences, lessons learned, challenges ahead, as well as the importance of partnership, research and innovation in reducing emissions and securing a sustainable future. Visitor experiences will include:

- Immersive interactivity and scenario building
- Evaluate the potential for California to play an important role on the international stage through agreements, collaboration and innovation
- Explore ways other states can learn from California's climate change policies and strategies
- Gain insights into the value of research in responding to and reducing the effects of climate change
- Assess the role of businesses in building a clean energy economy, promoting renew-able energy use and committing to reducing emissions
- Assess the social vulnerability to climate change across California and the needs of vulnerable communities
- Consider ways to increase the awareness and engagement of young people in preparing for climate change and securing a sustainable future
- Understand the role of community groups in tackling climate change at the local level
- Have the opportunity to interact with colleagues, global leaders, ocean elders, scientists, environmentalists; share best practice and discuss lessons learned in overcoming challenges and looking towards the future in tackling climate change.

Every exhibit experience has the potential to seamlessly integrate with mobile devices keyed in with custom applications that enable climate consciousness beyond the museum experience transcending geo-political boundaries.

ITAIPU BINACIONAL

MUSEO de ITAIPU Tierra Guaraní

ICOM consejo internacional de museos Paraguay

ICMAH ICOM international committee for museums and collections of archaeology and history

INTERCOM ICOM international committee for museum management

ICTOP ICOM international committee for the training of personnel

COMMS ICOM comité internacional de comunicación, marketing y participación del público

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ICOM international council of museums