

Online Conference - 2021

November 11th - 12th

New Needs for Modern Museums

& Future Steps

ICOM international
council
of museums

ICAMT ICOM
international committee
for architecture
and museum techniques

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Institutions

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The Organization

ICAMT

Board Members Involved

The year of 2021 is coming to its end soon. Unlike the previous year, it seemed better: museums have learned to adapt to the challenges brought by the pandemic, the most majority of the museums around the world reopened, museum professionals returned to their work places in the physical environment, visitors started to visit museums again... Even so, it has not been a completely good time yet, because the future and, especially, financial horizon are uncertain. Instead, it is time for new ideas, new challenges and—what is most important—cooperation, sharing knowledge and, thus, standing together.

Communication and being in touch with audience was always important, but now this became a special priority for us. Annual Conference is a long-time tradition and one of the main tools of ICAMT to share its own experience and, at the same time, support the community.

As most of you know, ICAMT is one of the first International Committees of ICOM, listed in ICOM News on October 1, 1948. Since its official date of creation (1949), ICAMT is the Committee in which information, best practices and ideas come together with aspects from the architecture, the techniques of the museum buildings and the techniques of exhibitions. ICAMT provides a forum for communication between its members and other interested persons by organizing conferences and workshops, or through the website and newsletters, social network and other means of communication. We are always happy with and proud of our Committee members from all over the world, the number of which reaches 570 at this moment.

Following such an important tradition, today we are launching our Annual Conference online. The previous one, from October 2020, was a great success. I am sure these two days we will spend together will be very exciting too.

I would like to thank each of you: keynote speakers, special guests representing their countries' museums and modern museum life (we call them "country ambassadors"), speakers and—last but not least—the audience... all of you who, though online, still are going to spend the next two days with us.

Let me declare the conference open. I wish success to each speaker. The stage is yours!

Nana Meparishvili

Chair of ICAMT



Nana Meparishvili

Chair of ICAMT

Introducer

Nana Meparishvili is the Chair of ICAMT since January 2020. She works with several Georgian museums as a consultant, mainly in the context of museums development. As an Architect, working in the field of cultural heritage, Nana Meparishvili leads the company “Georgian House”, in Tbilisi, Georgia. She studies traditional architecture and the theme of her PhD research is “Cultural Heritage Management in Open-Air Museums”. Nana Meparishvili developed the first educational course about architecture of Georgian traditional dwelling, first implemented in the Faculty of Architecture of Georgian Technical University in 2004. Nowadays, she continues to lead the same course for undergraduate students at two Georgian universities. She is also preparing a new educational course, “Museum planning, architecture and museum techniques”, for Tbilisi Academy of Fine Arts. Nana Meparishvili is a fellow of the Association of European Open-Air Museums (AEOM), since 2015, and Board Member of the ICOM National Committee of Georgia in 2019-2022 years.



Maddalena d'Alfonso

ICAMT Board Member

Conference Moderator

Maddalena d'Alfonso is an Architect. In 2019, she founded the Md'A Design Agency, a Milan based cultural consultancy and architectural design studio, offering sustainable solutions for architecture, design and cultural projects, emphasizing on accessibility to visual culture. The ICAMT Board Member is qualified Associate Professor, following the *cum laude* doctorate in Interior Architecture, Museography and Set-up. The Architect has received the 2016 Red Dot Award and the Representation Medal of the Presidency of the Italian Republic for her previous projects.



Alessandra Labate Rosso

ICAMT Secretary

Graduated in Visual Communications (1986) and Industrial Design (1987) at Armando Alvares Penteado Foundation (FAAP), São Paulo, Brazil, specialized in Museology at the Università Internazionale dell'Arte in Florence, Italy (1989). Worked at the Museum of Contemporary Art USP (1984/1987) and, since 1988, at EXPOMUS, dedicating to the technical control of collections in national and international exhibitions, management of collections, projects for the implementation of new or revitalization of existing museums and for storage areas of museums and collections. Board member of (ICAMT-ICOM) (2013-2019); secretary of ICAMT Board (2019/2022); member of ICOM Working Group on Collections in Storage and of the Registrarte – Associazione Italiana Registrar Opere D'Arte. Since its inception in 2014, she is a Technical Director of CLÉ – Reserva Contemporânea (museum and collections storage solutions).



Eeva Kyllönen

ICAMT Treasurer

Eeva Kyllönen is a museum professional with over 20 years of experience in exhibition and project management. She has managed various kinds of projects from local and international exhibitions to new museums. She has worked several years as an Exhibition Manager at Espoo City Museum in Finland, and as a Project Manager in planning and carrying out a new museum, Pentala Archipelago Museum, opened in June 2018. Now she works as a Project Manager in Inari Finland, where the permanent exhibitions of the Sámi Museum and Northern Lapland Nature Centre Siida will be renewed and opened in April 2022.

**Danusa Castro***ICAMT Board Member*

After her graduation in Communication Sciences and postgraduation in Marketing in Brazil, in 1993 Danusa moved to Italy where, in 1998, she concluded *cum laude* her Specialization in Art History and Museology & Museography with a thesis on the origins and architecture of the Brazilian art museum MASP. Since 2000, she has worked as Catalogue Manager and Registrar for an important Italian private art collection. In 2019, she was elected Board Member of ICAMT and currently takes part at the ICOM Lombardy working group “Recycling of museum exhibition fittings”. Danusa also works as a Museology Consultant for FTG-Arte and as a Project Manager for Hoxby.



2021 Online Conference













Final Program













Invited Speakers and Keynote Speakers
Speakers

Session 1

11 November, 2021

ZOOM Platform (previous registration)

Time (GMT+1)	The People	Topic
13:00 - 13:05	 Nana Meparishvili	Opening and Welcome Words
13:05 - 13:15	 Diana Pardue	Welcome Speech
13:15-13:35	 David Lordkipanidze	Keynote: Two new museums were opened while pandemic - Bolnisi Regional and Vani Archaeological museums
13:35-13:55	 Sonia Beatrice Calzoni	Keynote: Novecentopiùcento - Conversion and annexation of "Second Arengario" at the Museo del Novecento
13:55-14:10	 Martina Lehmannová, Alžběta Horáčková	ICOM Prague 2022: The Power of Museums. The 26th ICOM General Conference
14:10-14:20	 Stefano Della Torre	Towards an integrated management of cultural institutions
14:20-14:30	 Maddalena d'Alfonso	ICAMT Podcast
14:30-14:35	 Manuel Furtado Mendes	New Museums in Portugal. Requalification and exhibitions
14:35-14:40	 Lana Karaia	Short summary on pandemic impact in Georgian Museums
14:40-14:50	 Poornima Sardana	Contextual Modernism in Museums
14:50-15:00	 Anika Ohlerich	Temples of Malta: Designing for prehistory with today's technology
15:00-15:10	 Iraklis Kalogeropoulos	Exposing Natural History. Natural History Museum of Crete. Natural History Museum of Lesvos Petrified Forest
15:10 - 15:20		Q&A

Time (GMT+1)	The People	Topic
13:00 - 13:05	 Maddalena d'Alfonso	Opening
13:05 - 13:20	 Giovanna Forlanelli Rovati, Mario Cucinella	Keynote: The Museum of Fondazione Luigi Rovati
13:20 - 13:25	 Dexter Kandhlela	Museum experience post covid-19 pandemic
13:25 - 13:30	 Kiem-Lian The	Museum Projects in the Netherlands
13:30 - 13:40	 Viktorija Mangaroska, Liljana Mangaroska, Kosta Mangaroski	Virtual network modeling of museums as part of the cultural route in Skopje, North Macedonia
13:40 - 13:50	 Olivera Nikolić, Milena Milošević Micić	Museum exhibitions in Serbia – Small space and low budget
13:50 - 14:00	 Bianca Manzon Lupo, Letícia Nascimento do Carmo, Raíssa Pereira de Arruda	The museum experience: Architecture and technology at the MIS-Copacabana
14:00 - 14:10	 Wang Chang-Hwa	Taiwan's Museums under the epidemic: Becoming closer through isolation
14:10 - 14:20	 Clara Mosquera-Pérez	The architecture of the Prado Museum on display: exhibition review and future perspectives
14:20 - 14:30	 Gabriele Toneguzzi	Museum storage and robotics
14:30 - 14:40	 Marzia Loddo	DIPOT: Digital depot. Computer-generated simulations of museum storage facilities using 360° photography and virtual reality
	 Marie-Thérèse van Thoor	
14:40 - 14:50	 Antony Vayssettes	Les Étincelles du Palais de la découverte
14:50 - 14:55		Q&A
14:55 - 15:00	 Nana Meparishvili	Conclusion



Diana Pardue

Chair of ICOM-DRMC; Chief of Museum Services Division, Statue of Liberty NM and Ellis Island at National Park Service; Treasurer and then Chair of ICAMT from 2001 to 2007 years; ICOM Executive board member from 2013 to 2019.

Invited Speaker

Diana Pardue is a chair of ICOM-DRMC (International Committee on Disaster Resilient Museums), a new International Committee of ICOM, unveiled at the 25th ICOM General Conference in Kyoto in the wake of a decade, which has seen some of the sector's worst losses of collections and architecture. It was created to support museums and heritage sites beset by human-caused or natural disasters. The Committee's primary aim is to create a new space for those engaged in cultural disaster risk management and improve sectoral collaboration with the international disaster risk management community. She was ICOM Executive board member from 2013 to 2019 years, a treasurer and then Chair of ICAMT from 2001 to 2007 years.



Prof. David Lordkipanidze

Georgian National Museum

Keynote Speaker

Prof. David Lordkipanidze is the first General Director of the Georgian National Museum that unifies major museums of the country and research institutions. Under his leadership (since 2015) the Museum is gradually transforming from a Soviet-type institution into a vibrant space for culture, education and science. Eight Museums have already been renovated and two of them - Svaneti Museum of History and Ethnography (in 2016) and Bolnisi Museum (in 2022) were nominated for the European Museum of the Year Award (EMYA). Prof. Lordkipanidze's professional activities are connected with Dmanisi, the world famous archaeological site. He has authored over 120 scientific articles published in widely respected and well-known scientific journals such as *Nature*, *Science Magazine*, *Proceedings of the National Academy of Sciences of USA*, *Journal of Human Evolution* and more. Among the awards and memberships received by Prof. Lordkipanidze for his groundbreaking discoveries and leadership are few to mention that he is a Member of the Georgian National Academy of Sciences; Member of the Academy of Europe (Academia Europaea); foreign associate member of the US National Academy of Sciences.



Arch. Sonia Beatrice Calzoni

Founder Calzoni Architetti

Keynote Speaker

Arch. Sonia Calzoni was born in Milan, where she works as a designer on different levels. With her firm, Calzoni Architetti, she develops projects for apartments, residential, offices, commercial spaces as well as entertainment, environment architecture and preservation of historic buildings. She carried out teaching and research activities in the field of architectonic renovation at the Politecnico di Milano, teaching Architecture and Urban Design. In 2010 she won the international contest "The Door of Milan" for Malpensa airport and in 2015 she won the competition for the realization of the new TIM Headquarter in Rome. In July she results the winner of the "Novecentopiùcento" International Competition for the extension of the Museo del Novecento in Piazza del Duomo. Actual President of In-Arch of Lombardy.



Martina Lehmannová

ICOM Prague 2022

Keynote Speaker

Martina Lehmannová is the Managing Director of the Office of ICOM Czech Republic for the preparation of the 26th ICOM General Conference Prague 2022. She has been a member of ICOM since 2007 and from 2015-2020 she was the chairwoman of the ICOM Czech Republic. She participated in the preparation of the Recommendation Concerning the Protection and Promotion of Museums and Collections, their Diversity and their Role in the Society approved by UNESCO in 2015. She graduated from the Faculty of Arts of Masaryk University in Brno in the field of history and art history in 2002. From 2001-2011 she worked at the Moravian Gallery in Brno as a curator of furniture and textile collections, and from 2006 as a curator of the Josef Hoffmann Birth House in Brtnice and Dušan Jurkovič's Own Villa in Brno. From 2012-2014 she served as a curator of the collection of applied art at Prague City Museum. In the years 2015-2017, she worked at the Museum of Decorative Arts in Prague. From 2017-2020 she was the Director of the Lidice Memorial. She is the author and co-author of several temporary and permanent exhibitions, professional texts on architecture, applied art, design, and collecting of the 19th and 20th centuries.



Alžběta Horáčková

ICOM Prague 2022

Keynote Speaker

MgA. Alžběta Horáčková (*1996) studied at the Faculty of Art and Design at Jan Evangelista Purkyně University in Ústí nad Labem. During her master's studies, which were the Curatorial studies of contemporary art, she co-founded the creative platform called 3Kurátorky (3Curators). The platform's mission is to create a place for the creation of authentic art, encourage emerging artists and raise awareness of the contemporary cultural scene. The platform organizes exhibitions, connects artists, produces its own podcast, and publishes about contemporary art. Personally Alžběta is interested in female sculptors focused on figure creation. Since February 2021, Alžběta has been working as a coordinator for the ICOM International Committees and the scientific programme of the 26th ICOM General Conference in Prague. She perceives her work for ICOM as a unique opportunity for establishing relations with Czech and foreign experts from all over the world.



Giovanna Forlanelli Rovati

Fondazione Luigi Rovati

Keynote Speaker

After graduating in Medicine and Surgery and a professional career in the pharmaceutical sector, since 2015 she holds the position of General Manager and is a member of the Board of Directors of the scientific research company Rottapharm Biotech S.r.l.

Passionate and art collector, in 2005 she founded the publishing house “Johan & Levi S.r.l.” In 2016 she established with her husband Lucio Rovati and daughter Lucrezia the “Fondazione Luigi Rovati” of which she is President, and started the project to open a private museum in Milan. She is vice-president of the Advisory Committee of the Peggy Guggenheim Collection and a member of the Advisory Council of the Zeri Foundation. She is president of the UCID Lombardia Board of Arbitrators.

Since May 2021 she has been a member of the Committee of the territorial office of Monza and Brianza of Assolombarda.

Her philanthropic activity is carried out among numerous projects, including participation as a member of the Executive Board of the Monza and Brianza Onlus Community Foundation and President of Guarantee Committee of the project “Il Paese Ritrovato” of the La Meridiana Social Cooperative.



Mario Cucinella

Hon FAIA, Int. Fellow RIBA

Keynote Speaker

Mario Cucinella is the founder and creative Director of MC A - Mario Cucinella Architects, an international design studio, based in Bologna and Milan, specializing in research-based architectural design linked to sustainability issues according to a holistic approach.

In 2015 he founded SOS - School of Sustainability, a post-graduate training center aimed at training professionals in the field of sustainability. In 2018 he was curator of the Italian Pavilion at the 16th International Architecture Exhibition of the Venice Biennale with the exhibition “Arcipelago Italia”.

In 2019 he founded MC D - Mario Cucinella Design, a product design department, with numerous productions, including the collection of “Building Objects” vases, and many collaborations with the most famous companies on the Italian scene focused on principle of circular economy.

The impact and importance of his work, both from an environmental and social point of view, as an architect and educator has been recognized with the Honorary Fellowship of the American Institute of Architects (2017) and with the International Fellowship of the Royal Institute of British Architects (2016).



Day 1 - November 11

Time: 14:10 CET

Stefano Della Torre

Milano Politecnico

Stefano Della Torre is a full professor in Conservation. Graduated in Civil Engineering and in Architecture, in 2012-2019 he served as the Director of the Department of Architecture, Built Environment and Construction Engineering in Politecnico di Milano. Stefano Della Torre is a President of the Italian Scientific Society for Architectural Restoration (SIRA). He is the author of more than 380 scientific publications.



Day 1 - November 11

Time: 14:20 CET

Maddalena d'Alfonso

Md'A Design Agency

Maddalena d'Alfonso is an architect. In 2019, she founded the Md'A Design Agency, a Milan based cultural consultancy and architectural design studio, offering sustainable solutions for architecture, design and cultural projects, emphasizing on accessibility to visual culture. The ICAMT Board Member is qualified Associate Professor, following the *cum laude* doctorate in Interior Architecture, Museography and Set-up. The architect has received the 2016 Red Dot Award and the Representation Medal of the Presidency of the Italian Republic for her previous projects.



Day 1 - November 11

Time: 14:30 CET

Manuel Furtado Mendes

ICAMT Ambassador of Portugal

PhD in Museology at Lusophone University of Humanities and Technologies (ULHT) since 2011, his main area of research is museums and sustainability and the use of renewable energy in museum buildings. He is an Integrated Researcher at Center for Interdisciplinary Studies in Education and Development (CeIED). Professor at ULHT in Lisbon and recognized at the same University as a Specialist in the field of Civil Construction and Civil Engineering (CNAEF 582), he was recognized by the Order of Engineers as a Specialist in Construction Management. He published articles in specialized magazines, co-authored scientific works and has 13 items of technical production. He received four awards in the field of Rehabilitation of Historical Heritage, area in which he has an extensive experience, as well as in Technical and Economic Evaluation of Urban and Rustic heritage. He works in the areas of Engineering and Technology with an emphasis on Civil Engineering and Social Sciences.



Day 1 - November 11

Time: 14:35 CET

Lana Karaia

ICAMT Ambassador of Georgia

Lana Karaia is Museologist, cultural manager and art historian. She is a Board member of ICOM Georgia, Georgia National Coordinator of the European Museum Forum. Lana Karaia got an MA degree in Art history and theory at Tbilisi State Academy of Art, currently, she is working on her PhD dissertation in Museology at Tbilisi State University. Lana Karaia's ongoing activities cover museum audience development and capacity-building projects focused on contemporary museum challenges in Georgia and neighbouring countries (Armenia and Azerbaijan). She is also working on several research projects, including a scientific fundamental grant project on researching Georgian collections in St. Petersburg museums, and "Integration and identity" on researching Georgian immigrant artists in Europe and USA. Since 2019 Lana Karaia runs a 3-year consortium Project BE MUSEUMER funded by EU Creative Programme, focusing on a long-term learning programme for South Caucasus Museum workers and covering research components of museum challenges in all three countries. Lana Karaia is a lecturer on museum management and marketing at the Museology MA programme of Tbilisi State Art Academy and museum studies at the Cultural tourism faculty of Saba University.



Day 1 - November 11

Time: 14:40 CET

Poornima Sardana

Museum Consultant

Poornima Sardana is an independent museum consultant based in New Delhi. She designs museum strategy for education, development & community engagement. She develops and facilitates programs that focus on building people's relationship with museums & each other. She is currently researching and experimenting on museums' contribution to society's well-being, particularly emotional through her consultancy, Museums Of Hope, and has co-founded Museums Mazzedaar Collective with Dr. Anaja Joshi. She has a background in Design, studied MA in Museum Studies at NYU as a Fulbright-Nehru Scholar and has been a Young India Fellow.



Day 1 - November 11

Time: 14:50 CET

Anika Ohlerich

*Studio Archetypisch/Reinwardt Academy,
Academy of Architecture*

Anika Ohlerich is an art historian and exhibition designer. She graduated in 2004 with a Bachelor's degree in Architectural design from the Gerrit Rietveld Academy in Amsterdam. Prior to that she received a Master of Art in Art History and Theatre Studies from the University of Cologne. Her studio Archetypisch, founded in 2007, is an agency for spatial design that specializes in exhibitions and installations for cultural institutions.

Next to the design work she is a lecturer at various academies for art and culture (Rietveld Academy, Reinwardt Academy, Academy of Architecture, Amsterdam).



Day 1 - November 11

Time: 15:00 CET

Iraklis Kalogeropoulos

Tetragon S.A.

Mr. Iraklis Kalogeropoulos is an architect and museologist, collaborating with Tetragon S.A. since 2014. He received his MA in museology from the Aristotle University of Thessaloniki (2013-2014) and his architecture degree from the Polytechnic faculty of the same university (2006-2012). He took part in the museological and museographic design of the exhibition space of the projects: "Expo Dubai 2021 Greek Pavillion" (2021), "Museological design for the configuration of the exhibition space of the Medicine Museum of Crete" (2018), "Temporary exhibition, the History of the Chios Mastic Producers Union, PIOP" (2018), "Relocation of the Tobacco Museum to the Municipal Tobacco Warehouse of Kavala" (2017-2018), "Design, organization, production and exhibition of environmental interpretation of the Information Center of Leonidio for the Parnon flora" (2015-2016), "Creation of an exhibition from the nature of the "Messiou Nerou" Bourinos valley at the Trampantzio Siatista High School" (2017), "Exhibition design of Natural History Museum of Crete" (2016), "Exhibition of traditional architecture at the Tsikaliotis Mansion of Leonidio" (2015), "Re-exhibition of the Petralona Museum" (2014), "Museographic design of the permanent exhibition of the Archaeological Museum of Alexandroupolis" (2014).



Day 2 - November 12

Time: 13:20 CET

Dexter Kandhlela

ICAMT Ambassador of Zimbabwe

Dexter is a Maintenance Officer at the Zimbabwe Military Museum located in the Midlands Province of Zimbabwe. He has worked for the National Museums and Monuments of Zimbabwe for the past 12 years. His work interest focuses architectural designs, exhibition designing and civil engineering. He has participated in a number of museum projects and one of them was the restoration of Naletale dry stone walled structure, a project funded by the American Ambassador for Cultural Preservation in 2014, and the designing and construction of the interpretive centre at the Naletale National Monument. He has participated in a number of temporary exhibitions, the latest being the exhibition on minerals in Zimbabwe. He has over the years been responsible for the day to day maintenance of museum structures, buildings, showcases and grounds.



Day 2 - November 12

Time: 13:25 CET

Kiem-Lian The*ICAMT Ambassador of The Netherlands*

Ms Kiem-Lian The, MSc LL.M (1972) is Director and Senior Consultant/Project Manager at ToornendPartners in Haarlem, The Netherlands. Having obtained a Master's Degree in Architecture, Urbanism and Building Sciences at the Delft University of Technology, she joined this project management and building consultancy company in 1998. Since joining, she has worked on a wide variety of building and consultancy projects, with an increased focus on buildings for the arts.

Her fields of expertise include theatre and museum techniques, project planning, feasibility studies, long term maintenance planning as well as legal and contracting strategies. Having recently delivered restoration of the Pieter Teylers Huis for the Teylers Museum in Haarlem and the renovation of the Stedelijk Museum in Alkmaar, she is currently working on the new Natural History Museum of Denmark in Copenhagen, the development of a new museum building for Space Expo in Noordwijk, the centralized art storage facility for the Municipality of Haarlem on behalf of the Frans Hals Museum and the Noord Holland Archief, and the development of the National Slavery Museum in Amsterdam.



Day 2 - November 12

Time: 13:30 CET

Viktorija Mangaroska*International Balkan University, Faculty of Architectural Engineering*

Prof. PhD Viktorija Mangaroska is an Associate Professor at the Faculty of Architectural Engineering at the International Balkan University, Republic of N. Macedonia, where she teaches courses for architectural engineering at the Bachelor's and Master's Program. She holds a PhD degree in Technical Sciences from the Faculty of Architectural Engineering at the SS. Cyril and Methodius University in Skopje, Macedonia. Her PhD thesis research consisted of "Virtual Modeling of spatial and programme organization of cultural institutions in Skopje". Her Master of science thesis research theme was titled

"Cultural Tourism as a factor for regional development, with special emphasis of the city of Skopje". Her Diploma research project was titled "Architectural Project of Cultural Center with Mediateque in Skopje, Macedonia". Assoc. Prof. Dr Viktorija Mangaroska was coordinator of independent research theme that was awarded from IMG (International management group) named "Rediscovering the Cultural Route in Skopje, Republic of Macedonia". She has been involved in several international studies related to virtual digitization in museums, International Committee for Architecture and Museum Techniques ICAMT seminars, international ENCATC Academy of Cultural relations International Cultural Cooperation: Renew,



Day 2 - November 12

Time: 13:30 CET

Liljana Mangaroska*National Museum of Republic of North Macedonia*

Reimagine, Reconnect, active member at the Balkan Museum Network in organization of ChwB Cultural Heritage without Borders, New Practices in Museums - Transitions to New Museums Symposium in organization of International Foundation Forum of Slavic Cultures, Urban Concept of Cultural Development International Symposium on Management and Conservation of Macedonian Cultural Heritage.

Liljana Mangaroska is an active ICOM member and a member at the International Committee for Architecture and Museum Techniques ICAMT. She has been working as a Chief Museum architect at the National Museum of Republic of Macedonia and has developed architectural concepts for architectural presentation and design of exhibitions of multiple permanent collection and occasional exhibitions held within the country and abroad. She has an active working experience in the field of archaeological research, architectural presentation and architectural documentation of cultural heritage multiple archaeological sites in Macedonia. Liljana Mangaroska was awarded an international grant from ChwB Cultural Heritage without Borders for architectural project for accessibility platform implementation and remodeling of sanitary for people with disabilities, as well as inclusive accessibility museum projects. Liljana Mangaroska was awarded the prestigious ICOM award for Museum Professional for 2014. She has been involved in several international studies related to virtual digitization in museums, International Committee for Architecture and Museum Techniques ICAMT seminars, active member at the Balkan Museum



Day 2 - November 12

Time: 13:30 CET

Kosta Mangaroski

SS Cyril and Methodius University, Faculty of Architectural Engineering

Network in organization of ChwB Cultural Heritage without Borders, New Practices in Museums - Transitions to New Museums Symposium in organization of International Foundation Forum of Slavic Cultures, Urban Concept of Cultural Development International Symposium on Management and Conservation of Macedonian Cultural Heritage.

Prof. PhD Kosta Mangaroski is Full Professor at the Faculty of Architectural Engineering at the SS Cyril and Methodius University, Republic of N. Macedonia, where he teaches courses for architectural engineering at the Bachelor and Master's Program. He holds a PhD in Technical Sciences from the Faculty of Architectural Engineering at the SS. Cyril and Methodius University in Skopje, Macedonia. He is Head of the Department for Computer Designing of Architectural Projects at the Faculty of Engineering. He was awarded for the independent research theme from IMG (International Management Group) named "Rediscovering the Cultural Route in Skopje, Republic of Macedonia". He has been involved in several international studies related to virtual digitization in museums, International Committee for Architecture and Museum Techniques ICAMT seminars, international ENCATC Academy, Urban Concept of Cultural Development International Symposium on Management and Conservation of Macedonian Cultural Heritage. He was coordinator of multiple architectural projects at the National Museum of Macedonia, incorporation of architectural permanent and occasional exhibitions, architectural project for protecting and safeguarding the roof structure in the permanent exhibition in the National Museum of Macedonia, as well as projects for cultural institutions in Skopje.



Day 2 - November 12
Time: 13:40 CET

Olivera Nikolić

*University of Niš, Faculty of Civil
Engineering and Architecture*

Olivera Nikolić, architect, PhD student of architecture and assistant at the Faculty of Civil Engineering and Architecture, University of Niš, has been dealing with interior design since 2006, and with the design and realization of museum exhibitions and museum storages since 2014. She is permanent collaborator of many museums in Serbia, mainly in the south and east of the country. Until now, she designed and realized seven permanent and many temporary museum exhibition. She is the winner of the prestigious award of the Aleksandar Radović Foundation, which is, in Serbia, awarded for overall work and merits in the protection of cultural and architectural heritage, to architects up to 40 years of age. The exhibition she designed, which is part of the project "Album of memories of our ancestors from the First World War", except in Serbia, could visit and public in Paris, Moscow, Chicago, Podgorica, Banja Luka. She is the author of many scientific papers. She is a member of the Society of Architects Nis, BIM Serbia, SUGIG, Balkan Museum Network.



Day 2 - November 12
Time: 13:40 CET

Milena Milošević Micić

Homeland Museum of Knjaževac

Milena Milošević Micić, M.A. art historian & museum professional, works as a museum advisor at the Homeland Museum of Knjaževac.

For 20 years she has been a dedicated curator, educator, PR, project manager, museum director with the main goal to develop a new role of the museum in the local community. She believes that museums are public spaces open for everyone, forums for open dialogs or debates, places of unique values of common heritage.

Fields of expertise: art history, museum studies, heritology, collection management, accessibility and social inclusion, marketing in culture, cultural&educational tourism...

Membership: ICOM, MDS, BMN, BMAG, AAM, AAMC.



Day 2 - November 12
Time: 13:50 CET

Bianca Manzon Lupo

Universidade de São Paulo, Faculdade de Arquitetura e Urbanismo/UMC/UNINOVE

Bianca Manzon Lupo is professor in the undergraduate courses of Architecture and Urbanism at Universidade de Mogi das Cruzes (UMC) and Universidade Nove de Julho (UNINOVE). PhD researcher and Master in History of Architecture and Urbanism from the Faculdade de Arquitetura e Urbanismo of the Universidade de São Paulo (FAU USP). Specialist in Museology, Collecting and Curatorship by the Centro Universitário Belas Artes de São Paulo (FEBASP). Graduated in Architecture and Urbanism (FAU USP), passing through Politecnico di Milano (POLIMI, Italy). Member of the Brazilian Committee of the International Council of Museums (ICOM-BR). Her research about the relationship established between museum architecture and technological museography has generated several articles and publications in scientific journals of national and international relevance, such as: *Herança* (Revista de História, Patrimônio e Cultura - Portugal), *Patrimônio e Cultura* - Portugal), *Agathón* (International Journal of Architecture, Art and Design Italy), *Anais do Museu Paulista* (São Paulo, Brazil), *Revista Prumo* (Rio de Janeiro, Brazil) and others.



Day 2 - November 12
Time: 13:50 CET

Letícia Nascimento do Carmo

Universidade de Mogi das Cruzes

Letícia Nascimento do Carmo is an Architecture and Urbanism student at Universidade de Mogi das Cruzes (UMC), and currently a scientific initiation researcher on “Integrating Exhibition Design in MIS Copacabana”. Her work analyzes the impacts of technology for the dissemination of culture on society.



Day 2 - November 12
Time: 13:50 CET

Raíssa Pereira de Arruda

Universidade de Mogi das Cruzes

Raíssa Pereira de Arruda is an Architecture and Urbanism student at Universidade de Mogi das Cruzes (UMC). She is currently a scientific initiation researcher on “Integrating Exhibition Design in MIS Copacabana”, which aims to investigate the integration between expography and the building design.



Day 2 - November 12
Time: 14:00 CET

Wang Chang-Hwa

*National Museum of Prehistory, Taiwan/
Chinese Association of Museums*

Wang Chang-Hwa is the Director of the National Museum of Prehistory, Taiwan. She is also active as the Vice President of the Chinese Association of Museums, Taiwan, and Chairman of the Chinese Association of Museums' Committee for Access and Equality. She served as the Director of the National Museum of Taiwan History, Deputy Director of the National Museum of Prehistory, Chief of the Exhibition and Science Education Sections at the National Science and Technology Museum, as well as the Acting Director-General of the Kaohsiung County Government Bureau of Cultural Affairs. Fluent in Chinese and English, she is well connected to the museum world around Asia and Pacific, namely Taiwan, Japan, Palau, etc.

Ms. Wang received her PhD degree in Adult Education from the National Kaohsiung Normal University. She was trained as an anthropologist at the National Taiwan University. Her academic expertise spans the fields of Taiwanese aboriginal social and cultural studies, cultural administration, museum management, and multiculturalism in museums. She is also the author of many books and articles: *The Rukai People* (2002), *Taiwan Craft Map- Kaohsiung* (2002) and *Cultural Communication* (2003).



Day 2 - November 12

Time: 14:10 CET

Clara Mosquera-Pérez

*University of Seville, Department of History,
Theory and Architectural Composition*

Architect (2015) and Master in Architecture and Historic Heritage (2016), Clara Mosquera-Pérez started her professional career working at international architecture offices in France (Dominique Perrault Architecture) and Spain (MGM - Morales de Giles Arquitectos). Currently completing her doctoral studies, with an agreement for a double supervision between the universities of Seville and Paris 1 - Panthéon-Sorbonne. The thesis "Contemporary Interventions in Historical Museums" is being conducted under the supervision of professors Dominique Poulot, Eduardo Mosquera and Francisco Montero. The research is framed in the field of the history of architecture, heritage and museum studies. In particular, it explores the different ways in which their transformation as contemporary institutions is expressed, from the more conservative positions of historical monuments to the most innovative registers of new architectures, with case studies in France and Spain. The PhD has been fully funded by a predoctoral contract (2017-2021), ascribed to the History, Theory and Architectural Composition Department of the University of Seville.



Day 2 - November 12

Time: 14:20 CET

Gabriele Toneguzzi

Iuav University of Venice

Gabriele Toneguzzi, PhD in design and MSc eq. in architecture, work mainly in the fields of museum, exhibit design and architecture. He has taught especially museum design and exhibit related themes but some other subjects in many universities, including University of Rome 'La Sapienza', Florence, Ferrara, Padua, Iuav University of Venice, in Italy, San Marino State University and has collaborated also with the Chalmers Tekniska Högskola (Chalmers Technical University) of Göteborg. He has recently appointed visiting professor and researcher in cultural heritage on the first semester of 2022 at the Instituto Politécnico de Bragança, Portugal. Alongside of academic teaching, his professional twenty-year-old activity, concerns mainly the museums exhibits project and cultural heritage development plans.



Day 2 - November 12
Time: 14:30 CET

Marzia Loddó

Delft University of Technology

Marzia Loddó has worked as an expert in applied arts conservation in several Italian museums. She holds the European title of Doctor of Preservation of Architectural Heritage (2019, Politecnico di Milano). In 2020, she published her first monograph "Storage Facilities for the Collections of Art Museums. A Focus on the Italian Context" on the topic of art collections storage. She is currently Affiliated Researcher with the Centre for Global Heritage and Development with the Art, Heritage and Science group; and the International Council of Museums (ICOM). In September 2021, she finished her postdoctoral research as at the Delft University of Technology, with the Faculty of Architecture and the Built Environment as part of the Marie-Sklodowska-Curie, Horizon 2020 Project. Marzia is currently based in the Netherlands, where she works as a consultant and researcher in the field of collections management.



Day 2 - November 12
Time: 14:30 CET

Marie-Thérèse van Thoor

Delft University of Technology

Marie-Thérèse van Thoor is architectural historian. In 1991 she became University Lecturer in the history of modern architecture at Utrecht University. She wrote her PhD on the 'Dutch identity' in the Dutch pavilions on international exhibitions, *Het gebouw van Nederland. Nederlandse paviljoens op de wereldtentoonstellingen 1910-1958* (1998). Since 1999 she also worked as an architectural historian in the Heritage Department of the city of Amsterdam (BMA). At BMA she worked as one of the main organizers and editors of *The Future of the Historic Inner City of Amsterdam* (international conference and publication) and as editor of *Amsterdam Monumenten & Archeologie* 1-5.



Day 2 - November 12

Time: 14:40 CET

Antony Vayssettes

MOA/Universcience

After obtaining the title of Urban Planner and Geographer, Antony Vayssettes joined Universcience in 2013 as a project manager in charge of the renovation project of the Palais de la découverte. From the international architecture competition to the early renovation of the roofs of the Grand Palais, he has been able to go through the different parts of the project owner's job. The latest project is the delivery of the Etincelles du Palais de la découverte.



Session 1

New Needs for Modern Museums & Future Steps

New Needs for Modern Museums & Future Steps

Welcome Speech by Diana Pardue

1. David Lordkipanidze | Two new museums were opened while pandemic – Bolnisi Regional and Vani Archaeological museums
2. Sonia Beatrice Calzoni | Novecentopiùcento – Conversion and annexation of the “Second Arengario” at the Museo del Novecento
3. Martina Lehmannová, Alžběta Horáčková | ICOM Prague 2022: The Power of Museums. The 26th ICOM General Conference
4. Stefano Della Torre | Towards an integrated management of cultural institution
5. Maddalena d'Alfonso | ICAMT Podcast
6. Manuel Furtado Mendes | New Museums in Portugal. Requalification and exhibitions
7. Lana Karaia | Short summary on pandemic impact in Georgian Museums
8. Poornima Sardana | Contextual Modernism in Museums
9. Anika Ohlerich | Temples of Malta: Designing for prehistory with today's technology
10. Iraklis Kalogeropoulos | Exposing Natural History. Natural History Museum of Crete. Natural History Museum of Lesvos Petrified Forest

It is great that we are able to meet at the ICAMT Annual Conference, that we manage to hold this conference online and not depend on traveling from different locations. I think the pandemic, on the one hand, brought some good results for museum professionals, because now everybody can access a variety of conferences and meetings, that before required receiving funds for travel, and this lack of travel really helps the sustainability goals of ICOM. I know that one of the topics that the conference speakers are going to talk about is sustainability and its application in museums. So, I just would love (very shortly) to welcome everybody and I'm looking forward to hearing these papers the next couple of days.

Diana Pardue

ICOM - DRMC / Museum Services Division, Statue of Liberty NM and Ellis Island at National Park Service

Two new museums were opened while pandemic – Bolnisi Regional and Vani Archaeological museums.

Prof. David Lordkipanidze

General Director

Georgian National Museum, Georgia

Throughout 15 years of its establishment, the Georgian National Museum has opened the doors of 7 renovated or newly established museums to the public across the country's capital and regions: New Bolnisi Museum opened in 2020.

Bolnisi Museum is a part of the Georgian National Museum (GNM) network.

Bolnisi Museum is a model of the 21st century regional museum and the new ecosystem in general – where different segments as science, culture, education, and tourism coexist in one space.

The museum building has a permanent exhibition area and also a temporary exhibition hall. Modern infrastructure has enabled us to provide high standard storage facilities, scientific laboratory, auditorium, multimedia library, as well as public spaces - cafes, museum shop, and open verandas.

The permanent exhibition displays significant archaeological materials and artworks mainly from the collections of the Georgian National Museum and also from the local museum.

New Bolnisi Museum presents the history of the bio-cultural diversity of the region and its connection with the global context with the synthesis of classic museum

methodology and modern technologies.

The Kvemo Kartli region of Georgia has been the subject of multiple scholarly interest long ago. The lately uncovered archaeological evidence attests the presence of human ancestors – remains of hominins (1.8 m years), first traces of winemaking (6000-5800 years BC), and the earliest gold mine (4th millennium BC) in the area. Authoritative international research and dissemination of accumulated knowledge have brought the Kvemo Kartli region (and Georgia) into the spotlight of world scientific society.

The permanent exhibition shows the nature of the region, the history of the first hominins, emergence of agriculture, ancient metallurgy and Bronze Age cultures, early-Christian architecture, examples of the old Georgian inscriptions and stone, clay objects of medieval era. The last hall of the exhibition is dedicated to the history of the German population who emigrated from South Germany to Georgia 200 years ago and also to Kvemo Kartli in general, as a multicultural region where Armenians, Azerbaijanis, Ossetians, Greeks, Russians, Germans, and others lived with Georgians.

The museum creates a multifunctional-



Bolnisi Regional Museum. Main facade

educational platform focused on visitors of all ages and interests. It is an art center, a creative space, a place of fun, and learning for children. On the second floor of the museum is the Goethe-Institut Multimedia Library, which offers customers a well-equipped comfortable work environment, space for creative meetings, the latest German language textbooks, a library of science, fiction and subject-specific books, a collection of films and audio materials.

The museum will have a special focus on students from local schools. The museum will host lessons on different topics for school students. Our team has already started a series of online lessons, which will be a prerequisite for conducting lessons in the museum.

The Bolnisi Museum is a “cultural hub” that creates new perspectives for locals, international scientific projects of the region, and public education.

Vani Archaeological Museum

Vani Archeological Museum is one of the first archeological museums set up on a settlement in the Caucasus region, established in 1985 on September 29, and named after its founder – Otar Lordkipanidze. The Museum is situated on a hill close to the town of Vani in western Georgia, on the left bank of the River Rioni.

The Vani settlement which covers almost the whole first millennium BC is an archaeological monument of world importance. From 8th-7th centuries BC till 1st century BC Vani was the religious center of Kolkheti – the country of the Golden Fleece.

There are numerous artifacts discovered in the Vani settlement and its environs preserved in the museum collections. These items are dated back to 8th-1st centuries BC. Materials discovered in the



Bolnisi Regional Museum. Auditorium



Vani Regional Museum

Vani settlement have crucial importance for studying antiquity. The museum includes the archaeological site of Vani, the expedition base, and the museum itself.

After ten years of work by the museum team, Vani Museum has a renewed building and displays. Using new technologies and installations the permanent exhibition of the renewed Vani Museum showcases Kolkhian jewelry from wealthy burial grounds, which are irrefutable proof of “Rich in gold” Kolkheti reality. At the same time, it is the first demonstration of manufacturing techniques and knowledge of the ancient Kolkhians about mining and processing of gold.

Yet along with bronze sculptures discovered in the previous century, the hidden hoard of Hellenistic unique bronze lamps was found. They were temple utensils and once again asserts the importance of Vani as the temple city of 2nd-1st centuries BC.

In the building corresponding with international standards are presented permanent and provisional exhibitions.

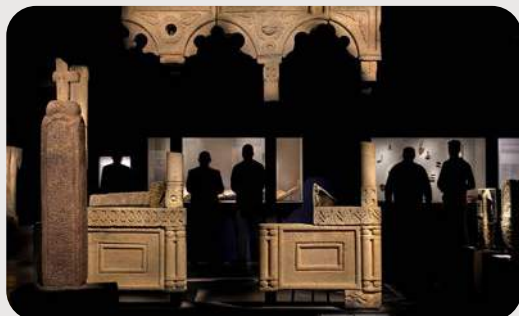
The modern infrastructure gave us the opportunity to organize funds, scientific laboratories, auditorium, library-mediatech and public space (café, museum shop, open veranda) in keeping with modern standards.

In the renewed museum’s auditorium which operates in order to keep up close relations with society and public education, “Vani International Symposia” will be launched anew. They will be participated by leading scientists of the world. Symposia were held regularly from the founding of the museum and was dedicated to issues of the Black sea area ancient history and archaeology. The renewed museum will play an important role in the field of perception of our country, culture, national identity and self-awareness. It will also help with the development of regional tourism.



Vani Regional Museum. Exhibition hall





Novecentopiùcento – Conversion and annexation of the “Second Arengario” at the Museo del Novecento

Sonia Beatrice Calzoni

Architect

Calzoni Architetti, Italy

The aim of our project, in which Pierluigi Nicolini and I were responsible for the architecture, CEAS for the structure, Deerns for engineering and sustainability, and Ferdinando Aprile held the role of young professional, was to create a united face for the Museum in order for it to become an ever greater institution for the city, unifying it in a single architectural organism.

The new Museo del Novecento and the dialogue between the two towers of the Arengario

The general aim of the project is to architecturally join the two towers of the Arengario to form a single organism that will best be able to accommodate the Museo del Novecento and any future expansions. Redevelopment of the Museum as a single architectural organism requires skilful engagement with laborious attempts by Mengoni, creator of the Galleria Vittorio Emanuele II, to create an arch in symmetry with the entrance to the Galleria on the south side of Piazza del Duomo. However, the failure to build this monumental arch led to the modification of Mengoni's idea of concluding the axis of the Galleria in Piazza del Duomo and

made it possible to introduce a striking new construction defined by the aesthetic and political climate of the 1930s. This is how the two twentieth-century towers of the Arengario came to occupy the site and introduce the next piazza into the existing monumental structure. The new museum is, in fact, an opportunity to restructure the two Propylaea in a way that resolves all remaining contradictions, whether architectural or related to city planning, and allows the museum to assume its rightful role in the group of monumental buildings flanking the Duomo.

The linking of the two towers of the Arengario with an aerial connection therefore, as required by the design competition to suit the needs of the Museum, its new image, the organisation of movement paths and a new viewpoint over the public space, might be considered the happy conclusion of a project that began with the never-realised arch on the south side of the piazza, the new walkway being read as the ‘objective correlation’ to Mengoni's original idea. Alternatively, the solution would have to focus on the base of the two towers of the Arengario, using them to create a ground-floor public

space and transforming the junction with Via Marconi into an 'in-between' space, a courtyard or external atrium for the museum.

This reorganisation gives rise to two solutions: one is the removable aerial connection between the upper floors, which would establish a continuous path through the museum at the level of the two upper rooms while preserving the phenomenal view of the Torre Martini; the other, either to replace or complement the aerial connection, is the creation of an external public atrium, as many contemporary institutes have sought to do. As well as uniting the two towers of the Arengario and acting as a belvedere, the aerial connection will also function as a proscenium for the museum's new visual communication, just as the establishing of continuity at ground level with an open-air public museum space will ensure that the artistic and cultural transformation of this area acts as a catalyst for redevelopment of the surrounding areas. The space between the two towers of the Arengario will become a new urban element, transforming Via Marconi from more than a purely formal perspective.

ICOM Prague 2022: The Power of Museums The 26th ICOM General Conference

Martina Lehmannová &
Alžběta Horáčková

*MgA Office of ICOM Czech Republic for
the preparation of the ICOM General
Conference – ICOM Prague 2022*

Keywords

*ICOM Prague 2022 - The 26th ICOM -
General Conference - Museums - Prague*

Abstract

The International Council of Museums (ICOM) and ICOM Czech Republic have the pleasure of inviting you to Prague, the capital of the Czech Republic and a magnificent open-air museum. Between 20 and 28 August 2022, this 'city of a hundred spires' will host the 26th ICOM General Conference. Given the current epidemiological situation, the event will be offered in a hybrid format.



Prague Congress Centre



DOX Centre for Contemporary Art

The Power of Museums

is the main theme of ICOM Prague 2022. The conference will also explore four individual sub-topics; Purpose: Museums and Civil Society, Sustainability: Museums and the Ability to Overcome Crises, Vision: Museums and Leadership, and Recommendation: Museums and New Technologies.

The first day of the conference, 20 August, has been reserved for a meeting of the ICOM Executive Board. On 21 August, statutory meetings, such as of the ICOM Advisory Council and the ICOM National and International Committees, will take place. For delegates who are not members of these ICOM bodies, a pre-conference programme of guided tours and activities around Prague will allow participants to discover the city before the main programme starts.

From 22 to 24 August, the conference's

main scientific programme will take place both at Prague Congress Centre and online. It will include keynote speakers, panel discussions, workshops, round tables and other activities, including networking sessions for new ICOM members.

Additionally, ICOM Prague 2022 will include a variety of social events to ensure that participants fully enjoy all that their host city has to offer. On 22 August, an Opening Party will be held in the twin-like buildings of the National Technical Museum and the National Museum of Agriculture. On 23 August, various museums in Prague's centre will host a Museum Night - a unique opportunity to stroll around Old Town and experience a dedicated cultural programme ranging from special exhibitions to concerts, guided tours and fashion shows. On 24 August, the ICOM General Conference

Flag Relay Ceremony at the National Museum will be the occasion to celebrate the accomplishments of the conference and to formally pass the ICOM flag to the hosts of the 27th ICOM General Conference 2025.

On 25 August, the 32 ICOM International Committees will hold their own off-site meetings at ICOM member museums located in Prague and the surrounding area. The off-site meeting of the ICOM International Committee for Architecture and Museum Techniques (ICAMT) will take place in the DOX Centre for Contemporary Art. As a part of an accompanying programme, members of ICAMT will have an opportunity to visit also CAMP – Center for Architecture and Metropolitan Planning.

From 26 to 27 August, conference participants will leave Prague to discover even more of the Czech Republic's rich cultural heritage. A total of 40

excursions lasting from 1 to 2 days will allow us to explore the country and get to know various, fascinating Czech museums. Also from 26 to 27 August, International Committees have the option to independently arrange post-conference excursions.

We look forward to seeing you in Prague! Please stay tuned for more information.

For the hottest conference news, check out our website: <https://prague2022.icom.museum/> and follow us on Facebook <https://www.facebook.com/ICOMGC>.

Registration will be open from the end of November 2021.



CAMP Center for Architecture and Metropolitan Planning

Stefano Della Torre

Former Director of the Department of Architecture, Built Environment and Construction Engineering - Politecnico di Milano, Italy

The focus of the present contribution is the need of a systemic vision of the museum functions, which are so many and sometimes are seen separately. ICAMT and Politecnico di Milano started their cooperation in the frame of the executive master program on “Management dei Beni e Istituzioni culturali” (MABIC), whose perspective is exactly to develop “transversal” skills, as every day managers have to bridge different issues. A museum requires high specialization in different fields, there are of en a special theme and a special mission characterizing the institution, technical issues require technical excellence as well, but the solution of problems require the capability to see the connections and to exploit the opportunities.

Museums are no longer understood as steady repositories, their mission, and broadly speaking the mission of cultural activities at large, is to connect people, to foster citizenship, to engage individual and to strengthen communities (Sacco, Ferilli & Tavano Blessi 2018).

Not paradoxically, museums are laboratories for cognitive innovation. Museums are required to stand in the middle of digital and green transition. A

bit of augmented reality, some QR codes, websites including virtual visits, online ticketing, and so on, are the first signals of a change, which still seems to be far from the bulk of what digitization could be. On the other hand, reducing the energy consumption is good and correct, but humankind needs much more, and places where culture is created could give a terrific contribution to building awareness and engagement.

That kind of tasks require to face new challenges in museum management, encompassing the role of technologies and the kind of organization, which has to meet the needs of creating and exploiting connections, without overlooking some missions that in some cases are deemed as not mandatory (such as research). This is the reason why our executive master program takes a great benefit by the contents on architecture and building technology of museums, actually speaking not only of museums, but of historic buildings at large as a matter of protection and valorization; and also the reason why soft skills, understood as the art of collaborating on the basis of a holistic vision of the organization, and digitization have a special place in the program.

To cite an example, the Museo Egizio in Turin is providing cutting edge examples of how digital technology can be central for innovative researches, attractive for communication, but also a tool to improve the integrated management of the many functions of a museum, developing and interoperable environment (Greco, Rossi & Della Torre 2020).

To give another example, in the frame of the MABIC program new interesting perspectives have been developed for a special kind of cultural heritage, that is the heritage of universities.

The history of Italian universities produced a long-term tradition of studies: since 1997 fostered by a dedicated Centre involves several Italian universities, being part of a European network on Digital Academic History, which every year organises a conference on the development of digital tools in the field of academic history and heritage. As for University museums, at international level, the working group UMAC exists in the frame of ICOM, besides the UNIVERSEUM network. The Università di Modena e Reggio promoted a National network including several museums, mostly devoted to scientific themes.

In our perspective, based on experience in Italian universities, a positive transition is ongoing from small collections owned and managed inside the departments, to integrated management models, in which the functions are thoroughly analysed and attributed to the actors in an effective

way. Centralised management models for university museums have been set up by some athenaeums, such as Bologna, Palermo, Torino, Padua: as every change there are resistances and sometimes steps backwards, but the direction is clear, and the scope is getting wider, including a more comprehensive planned conservation and valorization of historic buildings. Many universities are still the proud owner of their old colleges, and also the youngest universities have often got the task to regenerate old abandoned complexes. The case of SiMuA (Museum System of the University) in Palermo is a paradigmatic example of an enduring commitment, targeting non only the development, but also the dissemination of scientific knowledge, including the architectural assets. On that line, the recent inauguration of the MUniPa (Museum of the University), in the restored spaces of the monumental complex of the Steri (Di Natale, Nobile & Travagliato 2020), is one of the practices enabling Palermo University to interact with society, by activities of public engagement. It's a way of developing the role of universities as leaders of social innovation (Fassi et al. 2020).

The mutual influence developed between the universities and the cities where they have had their premises is an extremely interesting example of coevolution. Such relationships, being decisive in the very foundation of the institutions, influenced their development over the centuries, with important consequences on demography,

economy, culture and the urban structure. The understanding of this point becomes a basis for the management strategies of university heritage, but this is only an example of how broadening the vision can contribute to a more successful and timely management of museums, making also the implementation of technologies more integrated and sustainable.

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ICAMT Podcast

Maddalena d'Alfonso

Architect

Md'A Design Agency, Italy

Culture has been one of the fields most affected by the pandemic Covid-19, for this reason as cultural community ICAMT, International Council of Architecture and Museum Techniques, decided to share some important examples in the context of museum architecture, keeping the community informed.

We believe that this is the most crucial moment to keep the community up to date at the international level and to respond promptly to the new technological challenges of the period and for this reason podcasts lend themselves as a useful in-depth tool.



ICAMT, founded in 1948 as one of the first 30 international committees of the International Council of Museums (ICOM), in anticipation of the great event of ICOM Prague 2022 that will deepen precisely these issues, decided to interview exceptional exponents of the world of museums and architecture and to collect the results in a series of podcasts published periodically to deepen their

doubts, perplexities or curiosities in the field of museum architecture, exhibition techniques, sustainable planning, design and management of museum buildings and the new challenges of the period.

It was decided to propose the creation of 7 episodes presented monthly, 7 interventions to 7 protagonists of the international cultural and museum scene who agreed to participate in the project. The guests at the podcasts are well-known representatives of the museum and art sector and have contributed to a reflection on the relationship between new technologies, museums, art and culture, starting from their experiences in museum institutions and artistic foundations.



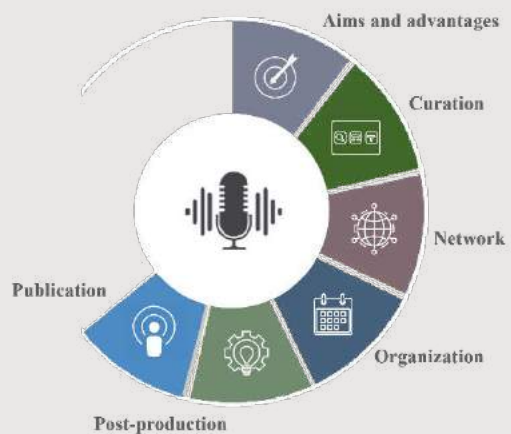
- Episode 1 - Clarenza Catullo, collection manager who collaborated with private and public companies such as the MART
- Episode 2 - Carina Jaatinen - director of the Museum of Finnish Architecture in Finland since 2021
- Episode 3 - David Lordkipanidze paleontologist and discoverer of a hominid 1.8 million years ago
- Episode 4 - Michelangelo Pistoletto, Italian sculptor and painter of international renown
- Episode 5 - Maria Ignez Mantovani - museologist and executive producer, director of EXPOMUS
- Episodes 6 and 7 - Ruangrupa - group of artists from Jakarta, curators of Documenta 15 in Kassel

In order to reach an ever wider and interested audience, podcasts have been chosen as a means of popular communication for their practicality, comfort and the widespread they have had since the pandemic period. Now an instrument of widespread consumption, they make direct, clear and incisive communication. Accessible from any device, from your computer, tablet or, even more easily from your smartphone, contribute to an increasingly democratic dissemination of content. Podcasts, moreover, allow you to listen to the

interviews at any time of the day, thus making the dissemination of content usable and easy allowing any user to reach podcasts in a simple and free.

A restricted scientific committee has been composed from the ICAMT board, which includes Nana Meparishvili, President of ICAMT; Alessandra Labate Rosso, Secretary of ICAMT; Danusa Castro, member of the ICAMT board, Eeva Kyllonen, treasurer of ICAMT and whose spokeswoman is Maddalena d'Alfonso, ICAMT board member and architect founder of Md'A Design Agency.

The creation of the podcast was accompanied by the expertise of Md'A Design Agency following a process they devised, precise and established divided into stages.



Starting from the initial choice of experts to be invited to participate in which is sent a detailed email clarifying the idea and the content to be treated. These are then asked for a series of useful documentation to implement their presentation and

communication on social media and other channels of ICAMT publishing the podcast dedicated to them.

Guests are asked questions in advance so that they can view them to carefully prepare the interventions. The choice to make a podcast instead of a live interview was born just to allow a smooth and precise dissemination of the content. Once the intervention is recorded, an intense post-production work is done during which the contents are selected to respect the present duration of 15/30 minutes maximum and improved the sound quality.

The duration was set at 15/30 minutes to ensure a fast but precise use of the topics without excessive distractions due to a too long duration in which it would be easier to lose interest and concentration of the audience.

The 7 episodes that make up Season 1 are published on applications such as Spotify, YouTube, Google Podcast, Sound Cloud, Deezer and Apple podcasts that follow simultaneously communication on social media.

All the episodes will be presented during the 26th ICOM 2022 General Conference in Prague, from 20 to 28 August 2022, entitled “The power of museum”, where the results achieved will be evaluated.

We hope that the scientific community of ICAMT will appreciate and evaluate together and continue in this informative action.

New Museums in Portugal Requalification and Exhibitions

Manuel Furtado Mendes

PhD in Museology

*Lusophone University of Humanities and
Technologies (ULHT), Portugal*

Introduction

Even at a time when the Covid-19 pandemic is being felt all over the world, and therefore also in Portugal, it was possible to create and install some new museums: the MOT – Museum of the Order of the Templars, taking into account the need to deepen the knowledge about the Templars in Portugal and in the World; the MNRL – National Museum of Resistance and Freedom, due to the need to preserve the memories and life experiences of those who resisted the fascist dictatorship in Portugal between 1926 to 1974; and the MH - Holocaust Museum, which is part of an international policy that aims to commemorate the victims of the Holocaust, honour their legacy and memory and avoid Holocaust distortion and denial.

Museum of the order of the Templars

The Museum of the order of the templars is administrated by a private entity, the OPCTJ (Order of the Poor Templar Knights of the Temple of Jerusalem) and it is located at the “Roof House”, an historic building in the city center of Tomar (an

historically templar city), with adaptation construction works to install the museum. The Museum was created in 2020, scheduled to open to the public at the end of 2022. The civil construction works for the installation of the long-term exhibition will be completed in early 2022.

The Mission of the museum is to research, preserve and communicate Templar history and cultural memory associated with national and international templar territories.

The Exhibition will include showcases, prints, projections, sounds and films and the exhibition contents will include documents, books, manuscripts, art objects, textiles, archaeological materials, metals, numismatics, and audio-visuals. The methodology for the museological project is based on historical research in partnership with the CITCEM (Transdisciplinary Research Centre “Culture, Space and Memory”) of the College of Letters of the University of Porto and with National and International archives.



Author's photo, 2021

The National Museum of Resistance and Freedom

The National Museum of Resistance and Freedom is administrated by the Portuguese State through the DGPC (General Directorate of Cultural Heritage).

The museum is located at the “Peniche Fortress”, a 16th century monument, that functioned as a high security prison for political prisoners during the Portuguese dictatorship (1926 – 1974).

The museum was created in 2017 and opened to the public in 2019 with four temporary exhibit spaces. The civil construction works for the installation of the long-term exhibition will be completed in 2023/2024.

The museum is defined as a memory space and major symbol of the struggle for Freedom. It aims to preserve the historical memory of the Peniche Fortress and the memory of the Portuguese people's

resistance against the dictatorship, for Freedom and Democracy.

The present temporary exhibition display showcases, prints, projections, sounds and films.

The exhibition contents are recorded testimonies of former political prisoners and their families, documents, manuscripts, prison ethnography, objects of resistance and objects of repression and Art of Resistance.

The methodology for the museum installation is participatory, including former political prisoners and families, testimonies from the population, an Executive Committee, the Peniche community, Universities and National Archives.



Author's photo, 2021

The Holocaust Museum

The third institution is the Holocaust Museum. The Administration is a private entity – the Jewish Community of Porto (CIP / CJP) in partnership with B'nai B'rith International and Holocaust museums around the world. The museum is supervised by members of the Jewish

Community of Porto whose parents, grandparents and relatives were victims of the Holocaust.

The Holocaust Museum is located at a modern multifunctional building, in the centre of Porto and was created in 2021, opening to the public in April.

The museum's mission focuses on the public, especially young people, and invests in education, professional training of educators, promotion of exhibitions and research support.

The Holocaust Exhibition present showcases, prints, projections, space reconstruction, sounds and films.

The contents are mainly document and manuscripts replicas, recorded testimonies and objects left by refugees in the Porto Synagogue during World War II.

The museum is a materialization of the challenge launched to civil society by the

government project “Never Forget”, around the memory of the Holocaust and intends to honour the International Alliance for the Memory of the Holocaust of which Portugal is a member.

The museum is part of a strategy to combat anti-Semitism that includes the Jewish Museum of Porto, school visits to the Porto Synagogue, teacher's training, history films and charitable actions in partnership with the Roman Catholic Diocese of Porto.

Conclusion

To conclude, we want to draw attention to the fact that these three Museums are part of global political and sociocultural movements and concerns. And, although we have detected the use of some participatory methodologies, the initiative to create these museums clearly responds to strategic plans of the respective tutelary entities.

(©Museu do Holocausto, 2021 in: <https://www.mhporto.com/>)



Short summary on pandemic impact in Georgian Museums

Lana Karaia

Board Member

ICOM Georgia

As the pandemic period became challenge for all spheres, global crisis also impacted museums and other cultural institutions in around the world. In a result, they have experienced unprecedented social and economic consequences due to the Corona virus.

There are currently more than 300 museums of different profiles (historical, art, memorial, etc.) and legal status in Georgia, more than 90 museums are Located in the capital. Since the first signs of pandemic in the country the Georgian museums were closed on 16th March 2020 due to pandemic restrictions and approximately 79% of them step by step reopened since 20th June 2020. After that during the second lockdown all museums were again closed on 28th November 2020 and reopened after 4 months, next year on 1st March of 2021.

Being in lockdown a number of museums (mostly in Tbilisi) have offered digital resources of a variety of content to their audiences, which included: online exhibitions, educational programs, virtual and “live” tours of the museum, programs “Curator from home and conservator from home”, blogs and stories on Instagram and Facebook, video-lectures on YouTube, hashtags and individual objects for online audiences on the social network, as well

as in some cases entertaining and learning programs, quizzes and competitions prepared by museum specialists through the Zoom platform, using their own resources to plan school lessons (e.g. Georgian National Museum and Adjara Museum). Apart of the above-mentioned museums in the country (mostly in regions) have been found passive or sometimes absolutely inactive within similar activities. However, observations and surveys have proved that during the isolation, the digital activities of museums increased, but mainly it was based on social networks, in particular, Facebook, which is the most popular social platform in Georgia. Besides some museums have previously actively used social media and shared their collections before the isolation, digital communication has grown in the approximately 33% of museums in Georgia.

Crisis, no matter what type it is, often reveals the lacks and disadvantages of the individuals and institutions. In researching the crisis traces on Georgian museums, reports have revealed what readiness the museums showed to continue working in the digital world while their doors were closed. Museums in lockdown have increasingly realized what the biggest importance the audience has for them

and why the digital heritage is significant for the museums. The crisis has once again exposed the online side of museum functioning; the documentation problem and not existence of so-called digital collections highlighted the “failures” of museums’ and museums somehow learnt lessons on what the major problem is in general and why digitization is mandatory. While talking about Georgian museums according to the above-mentioned we can summarise the pandemic lessons as follows: The problem of collection documentation and digital database; Shortage and lack of new technological equipment; Lack of competent staff in the use of digital technologies; Internet access and follow-ups.

The problems are not small and their solution is necessary. It is quite possible that this crisis can be a push for museums, to fill the important gaps associated with the digitization of collections, to overcome the problems connected with the documentation, and the active use of multimedia technologies. Museums need to restart their approaches in these directions, as everything directly affects the social responsibility of the institution – accessibility, engagement and closer communication of the museum and the audience.

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Abstract

If the purpose of a museum is to serve people, then how would its architecture be? I am searching for this answer and navigating through experimental spaces, alternative ideologies, contextual resources, local materials, and traditional skills in India. My assumption is that the answer would find resonance in subaltern activism, in environmental justice, in community ownership; In slowness and perhaps impermanence, in a new understanding of modernism that is contextual, empathetic, ethical and caring. Maybe my attempt is to challenge the museums that exist as grand structures but have little to do with the lives of their public. The needs I thus touch upon aren't necessarily new, it is new however to consider those as needs. This is an ongoing research through the lens of care, for the purpose of this paper I have drawn focus on museums and their stakeholders in folk and tribal communities.

Contextual - Modernism

"If we have land, we will be fine, we will just set up tents ! That is how we used to live! This is how our museum will be!" expressed Ishamudin Khan, traditional

Keywords

Context - Modernity - Vernacular

Identity - Time - Monument - Folk and tribal - Communities

magician residing in Delhi, and founder of Indian Street Performers's Association Trust(ISPAT).

Ishamudin Khan is one of the many folk and tribal artists and street performers who once resided in Delhi's Kathputli Colony. The neighborhood's identity i.e. "Kathputli" comes from the traditional Rajasthani wooden puppet, as the puppeteers were the first to settle here over seventy years ago. They were slowly joined by diverse communities, many who had been nomadic and came from different parts of India- magicians, animal trainers, jugglers, acrobats, behroopiyas (impersonator or impressionist), rope walkers, dancers, singers, musicians, healers, instrument makers, bangle makers, rope makers, toy makers, phadd painters, tattoo artists, embroidery artists, bamboo artists, furniture makers, artists working with glass and more. Over the years they were also joined by communities in miscellaneous professions such as drivers, cleanliness staff, rickshaw pullers, tailors and a community of people suffering from leprosy. Kathputli Colony was a unique ecosystem that brought together a diversity in folk and tribal arts unlike any other. Because this was not an ecomuseum

inviting artists to recreate their traditional architecture and exist as a frozen identity. It was instead an organic settlement that contained within it signifiers of the past and the complexity of an ever changing present and future aspirations. How do living cultures live when they have not been asked to live in a certain way they are stereotypically identified with? This is what one could experience at the Kathputli Colony. And much of my learning as a professional in art and culture, begins from this space.

But why do I mention it here, in a paper about museums and architecture? Because this is the ground on which the residents of this colony fought a brave battle, lost their homes, and are still waiting for a solution that could be empathetic and contextual. Kathputli Colony was bulldozed in 2016/17 to make way for a private builder's plan of high rise apartments. The land had been sold by the government in 2007, without any information or consultation with the people who had been residing here for more than 60 years, and hence are valid stakeholders. Thus began the struggle of the colony against the builder whose plan personified ideals of modernism that dominate much of architecture in urban India and around the world. His plan proposed two towers that would be offered to the residents as well, those who by some dubious method would be recognized as residents. The residents of the colony pleaded that they cannot live in such small spaces and continue with their familial

professions. They countered this plan by offering instead their own conception of how the colony should be redeveloped and rehabilitated. Most of the performers residing at the colony have been to heritage festivals and cultural institutions around the world. They hence came up with a proposal where the colony should be redeveloped as a heritage site, as a tourist destination, where the performers could continue with their practices and visitors could also experience their way of living. The homes in which they lived were not how their ancestors would live in the desert or as nomads around the world. The homes of Kathputli Colony were designed and built to have ample storage space, to include workshop area, rehearsal space and a space for social interaction with curious visitors and tourists. From the outside, the colony could easily be summed up as a slum and hence reduced to a statistic, however inside the colony were informal structures that were contextual, responsive to the needs of the residents- imagine a magician's trick where a young boy disappears inside a basket, that huge basket has to be stored in a room where they will also sleep, where they will also experiment, innovate, practice and pass on the skills to their children. These were not fabricated replications of the past, these were homes in a state of flux, navigating between personal and professional requirements, historical identity and an aspiration to be part of contemporary cultures. An aspiration to be seen as valid which lack

of paperwork and documents denied them the most. This is not an attempt to gloss over sanitation concerns or health concerns that emerged from the growing population or failing sewage system in the colony, but to draw attention to the fact that living cultures have their ways of living that are continuously evolving with time, and this cluster of around 3000 people had defined a style of architecture for themselves that neither belonged in the 'traditional' nor the 'modern' images of architecture. Yet they wanted it to be acknowledged and preserved. This was their self defined, self created contextual modernism, that carried forward their identity but did not limit them to it. This in their opinion was how a living museum could be. In lack of any official identity as citizens of the country, and concerned about being only identified as slum dwellers, an identity as cultural practitioners, as heritage of the country, that a museum could bestow is significant for them. As Puran Bhaat, renowned puppeteer whose father founded the colony would sum up, "I still don't know, are we artists or are we poor people?"

Contextual Modernism in Museum Architecture

It would be radical for urban informal architectural innovations to be recreated in an ecomuseum because it would disrupt the mainstream binaries of tradition and modernity. But if we can place the puppets in the museum, at times the puppeteer

too in the museum, then why can we not instead, let them consider their homes the museum or having the cultural capital to be displayed in a museum? (By using the terms 'we' and 'they', I do not wish to create an illusion of otherness, 'we' for the purpose of writing here refers to museums and professionals, and 'they' are the communities who are their stakeholders.) Communities might do so on their own, by owning the title of a museum or archive but usually such initiatives are considered alternative, are seen as activism or rebellion; They do not enjoy the benefits that come with an official recognition by the national or international bodies of heritage and culture. And the way the authorizing bodies would define heritage, they "derive from a way of perceiving the world that is the product of the experience of modernity... These worldviews have directly informed the contemporary practice and definition of heritage." (Harrison, 2013) And these worldviews are not inclusive of the way this world's diversity defines and experiences modernity. Hence the emphasis on contextual modernism and the need for it to be acknowledged by cultural institutions to represent and cater to diverse public. Arun and Gita Wolf remind that "Even if a museum has nuanced understanding of the cultures it represents, it still functions as a 'gatekeeper' that allows certain cultural forms into its premises, while considering others not important to be exhibited." (2013, pp. 24-25)

In the same city, the National Handicrafts and Handlooms Museum (Crafts Museum) had been designed by Charles Correa while reflecting upon and questioning the western format of museums. Dr. Jyotindra Jain, then director of the museum believed that “in following the British example the Indians forgot that, unlike in the West, the past and the present are not so severely divided” and “blindly adopted the archaeological museum concept.” Taking inspiration from India’s vernacular design elements, understanding of space and its relationship with people, environment and climate, at Crafts Museum “the architect succeeds in interpreting the timeless quality of India, where tradition and modernity coexist, into a building that resists the label ‘museum’” (Powell, 1995) and also linear concepts of modernity. Harrison in his book, *Heritage: Critical Approaches*, quotes Bruno Latour, “The modern have a peculiar propensity for understanding time that passes as if it were really abolishing the past behind it...since everything that passes is eliminated forever, the moderns...sense time as irreversible arrow, as capitalism, as progress.” I’ll juxtapose it here with a description of time by Gond artist Venkat Raman Singh Shyam, from “Finding My way” the book he has co-authored and drawn, “In the gondwana clock, time keeps spinning. Clockwise and anticlockwise are appearances. The sun merely moves from one freedom to the next. Yet we try to trap time inside a clock. We try to come to

terms with time by dividing it into seasons, days, hours, minutes, seconds. There’s this story of a Muria Gond who waves down a government jeep and hops in. When asked which way he was headed, the Gond, perhaps high on mahua, spreads his arms and points in opposite directions. We could learn from him the art of travelling in many directions at the same time.” This is where I would locate Kathputli Colony, which is neither traditional or modern, neither rural or urban, it was at “no place” in particular. (Anand & Shyam, 2016)

Is it possible for museum architecture to respond to this complex way of existing? How would there be a sense of belonging if a space is designed in ways its stakeholders might find alienating? Is this also one of the reasons most of our state run institutions do not have meaningful relationships with their communities? Is this because those communities have not been considered the museum’s public? Had they been considered stakeholders while museums were being constructed, would there have been a different language of design implemented in every museum? Taking forward the different perceptions of time, the idea of permanence that is associated with museums and hence their architecture is also something that could be experimented with. What if the architecture itself is not permanent? I refer here to the Tandel Fund of Archives (TFA). TFA is created and owned by Parag and Kadambari Tandel who belong to the Koli (fisherfolks) community in Mumbai.

Their intent being creation of “Socially engaged Ethnographic Archives & Pop-up Museums” as mentioned on TFA’s instagram handle, their only permanent site at the moment. Parag and Kadambari had wanted to initiate their own archive and pop up museums when they did not find any representation of their community and its contribution to the city in state owned museums. They wanted to ensure that they represent the Kolis while staying free of any influence and hence privately funded TFA while making it participatory for their community. They wanted to collect, reflect upon, document and share their histories, dialects, knowledge of environment, relationship with ocean, food traditions and varying aspects of culture that bring value to their lives. It was also a response to the pandemic, while understanding sustainable solutions within their food traditions. They managed to connect and deeply involve their community through temporary installations in public spaces; through pop up museums they created “contact zones” (Clifford, 1997) for the community’s way of being and the rest of the city. They chose to rely on impact through these possibilities of contact rather than permanent space.

In the collective imagination of what a museum looks like, do we all seek monuments?

“The idea here that a monument is a “witness” to history and tradition

anthropomorphizes material culture and creates a sense that memory is somehow locked within or embedded in the fabric of the monument or site.” (Smith, 2006) But memories of many communities are also reaching us through stories, paintings, rituals, songs, textiles or tattoos. They cannot be locked in space or time or even singular patterns of sequencing. Prof. G.N. Devy writes in Introduction to Painted Words: An Anthology of Tribal Literature, “A tribal epic can begin its narration from a trivial everyday event; tribal paintings merge with living space as if the two were one and the same.” (Devy, 2002) Thus the non imposing spatial order of the Crafts Museum or a self designed eco museum can perhaps create a space where communities who perceive the world in a certain way do not get placed in a starkly different worldview. The murals on walls at the Crafts Museum are closer to the artists’ creation of art back home and hence not alienating or intimidating. Very often we assume that our methods of participatory engagement for stakeholders have succeeded in making them comfortable. We assume the differences to be “barriers” only for the stakeholder, it is an even greater barrier for the cultural institutions if they do not access their stakeholders’ ways of seeing. And these barriers can lead to much loss. I would like to remind us of the tragic loss of tribal Gond artist Jangarh Singh Shyam, who took his life while in residency at a museum in Japan. The exact cause of

his extreme step cannot be claimed, but he had been longing for home. In 2015, Crafts museum itself lost a significant mural by Mithila artist late Ganga Devi, when the room (Kohbar Ghar/ nuptial chamber) in which she had painted it got whitewashed. Thereby bringing to light the dissonance between the original purpose of the museum and popular perception of how museums should be. How much say do these practitioners have when invited to participate in museum residencies or festivals? How can architecture support in making them feel safer, more at home? I do not suggest that the answer lies in adopting an orientalist gaze, rather it is a nudge to better understand the everyday life of communities who are stakeholders of museums and to adopt that into how we imagine and design museums. In their dialogue with folk and tribal artists, Arun and Gita Wolf note, “If there is one feature that unites the different types of traditional art in India, it is the fact that each of them originated from within a particular community. They all have their roots in the everyday practice of ordinary people.” (2013, pp. 38-39) The lens of everyday life offers a refreshing lens with which to understand architecture and its significance for communities. It is in the acknowledgement of everyday life in a “landscape of continuous transformation” (Jayakar, 1985), that we can possibly build such a museum with neither gatekeeping nor imposing designs. Architecture that makes place

for changes over time, for spontaneity. I draw inspiration from what Devy explains about tribal art, “The creativity of the tribal artist lies in adhering to the past while at the same time slightly subverting it.” (Devy, 2022) Can there be space in museum architecture to adhere to certain rules while also making room for others to be subverted? Because this is where the innovation can happen, for museums to continue to respond and be empathetic to their evolving communities. Curator Hans Ulrich Obrist writing about architecture, urbanism and exhibitions says he “learned that curating can be urbanism, that it can be about the mutations of changing cities.” He also mentions a portable museum from 1990’s called the “Nano Museum”. (Obrist, 2014) India is rich with folk and tribal arts that have been designed to travel. The Phadd which is painted on cloth, when arranged at its destination turns into a shrine. It offers the backdrop to which the Bhopa and Bhopi sing and perform. The Kaavad is a wooden storytelling box that reveals the narrative as its panels are opened. Carried by the storytellers to their patrons’ homes, the images, though depicting mythologies are also used to tell the genealogy of the patron’s family. I wonder if an extension of the museum could be these possibilities of museums beyond the walls thereby creating employment opportunities for communities and increasing opportunities for ownership and juxtaposition of narratives.

The reflection in this paper hence outlines briefly some ways of thinking about museums and their architecture, stemming from an intent to understand and care for their stakeholders. As part of on-going research this paper offers more questions than solutions. These questions are prompts rooted in a particular context, which could be used to ideate creative responses.

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Temples of Malta: Designing for prehistory with today's technology

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Abstract

Malta's rich prehistoric culture is a world of opposites: gigantic stone temples that represent the world's oldest free-standing buildings versus small figurines with refined human features. The National Museum of Antiquity in Leiden presented artefacts of this ancient community in an attempt to decipher this mysterious culture. The exhibition design concept played with the contrasts in volume and time, combining small-scale with large-scale, old with new, and the past with today. Using the latest technology, the past became present time to the visitor: robotic cameras moved through the small temple models, creating a monumental live projection that evoked the sensation of a visit to the megalithic sites. This paper demonstrates how a balanced combination of high-tech and prehistorical objects brings out the deeper meaning of the artefacts and invites visitors to interact with them.

Keywords

Robots in museums

High-tech and prehistory

Connecting the past with today

Exhibition design

Visitor interaction

The National Museum of Antiquities in Leiden, the Netherlands, hosted "Temples of Malta" from June until October 2021. The museum organised this exhibition in partnership with Heritage Malta and the National Museum of Archaeology Malta. All objects were on loan from Malta's national collections. The exhibition team consisted of the Maltese curators Sharon Sultana and Pierre Bonello, and in Leiden, included the conservator Luc Amkreuz, project leader Jill van der Sterren-Hendriks, spatial designer Anika Ohlerich and graphic designer Esther de Vries.

Featuring an overview of Malta's earliest culture in 3600-2500 B.C., the exhibition was presented in an exhibition space of about 350m². The first part of the exhibit paid attention to the megalithic stone temples, their structures, building techniques, and presumable use. The second part dealt with the human figurines found in temples and tombs.

The era of prehistory is so long ago that many questions about this ancient civilisation remain unanswered. How can objects thousands of years old and surrounded by mystery be displayed in the year 2021? How can we deal with the scale difference of the main artefacts, the huge megalithic temples versus the tiny figurines? These questions became the starting point for the design concept: playing with mystery, time, and scale turned out to be the presentation's key premise.

The Maltese temples were represented by six architectural scale models of famous megalithic temple sites, like Ggantija and Tarxien. In order to give the impression of the monumental character of these buildings, a live camera held by a robot moved through the scale models at eye-level, creating a video feed that was projected on a big screen. Visitors would see the projection and get the impression of visiting the temples in person. Only in the next room they would discover that the video material they just saw was actually filmed in temple models of only a few centimetres height. The six architectural models stood on a futuristic table installation made of aluminium rails, holding two delta robots that each had a small camera. Delta robots are usually used in the packaging industry as they are very precise in their movement due to having three arms connected by a universal joint.



Delta robot holding camera that films one of the megalithic temples

The Dutch robot builder Uif Putters, a specialist on this field, built the table and the delta robots, and programmed the entire installation. Each robotic camera was connected to a monitor hanging above the

table, showing the camera's raw material. On the large projection screen, the live feed was programmed to show only pictures filmed at eye-level. The most important thing was to never interrupt the illusion of the human perspective. So, while one camera was slowly moving its way through one of the temples, the other camera would find the right starting position, waiting for its turn to film the next temple model. The irony of having a live connection with prehistory was giving the installation a certain urgency and startling effect.



The monumental temple projection



Installation with the robotic cameras moving through the temple models

The second part of the exhibition displayed the fascinating figurines found in the graves and temples, the so-called fat ladies - even though it is not proven whether they are female or masculine. There are many

theories about those corpulent figurines, including that they are mother goddesses or fertility symbols. We do not know what sort of ritual they were used for but it is very probable that the statues were portraying abundance. To visualise the great spiritual potential of the sculptures, a live camera was again used to zoom in on the face of one of the Neolithic figurines. The camera was installed in the plinth of the showcase, held by an arm that moved slowly back and forth while filming. The footage was projected on a half-transparent acrylic panel hanging from the ceiling that was covered with projection foil. As a result, the projection of the face was visible from two sides, radiating the charisma of the prehistoric face into the entire exhibition space. As the camera would also record the space around the showcase, visitors positioning themselves next to the sculpture were also filmed. The faces of today's visitors appeared next to the prehistoric one, underlining the universal quality of human facial features. This 'selfie opportunity with prehistory' connected the past with today and encouraged visitors to relate to the artefact. In the same way that the temple models were enlarged to their real size, the appearance of the human figurines was magnified to underline their great potential and beauty.



Installation view with camera filming neolithic figure and projection screen



Selfies with prehistoric face

The visual backbone of the exhibition consisted of banners hanging all around the outer wall of the exhibition space. The colour of these banners was based on the pigment of red ochre found in tombs and on prehistoric figurines. Shaded in a gradient from dark red ochre to light red ochre, the banners carried all exhibition texts and images, creating different areas and atmospheres, and visually holding the entire exhibition together. In the lightest part, the theme of temple architecture was exhibited and the mysterious figurines appeared in front a dark red background.



The gradient of red ochre



Installation view of the beginning of the exhibition

In contrast to the shades of red, the object mounting was treated neutrally: all objects were presented on white pedestals of the same height throughout the whole exhibition. The large blocks referred to the idea of megalithic stones and provided a stable base for the mostly small artefacts. The tiniest object was shown at the very end of the exhibition: a 2cm high clay sculpture of two people hugging each other. The Maltese civilisation ended abruptly around 2500 B.C, but we still have unique pieces of art to which we can relate nowadays. Being able to affectionately touch each other is, in times of keeping distance due to Covid, a subject that is more important than ever. So, even though the Maltese prehistory is a civilisation that is further away from today's life than any other, we recognise elements of great human value.



Clay figure of an embrace, 3600-2500 B.C.

We invited visitors to this exhibition to connect to prehistorian culture with the tool of present-day technology. Robotic cameras and live projections made it possible to play with the concept of small-scale and large-scale, enlarging the meaning of prehistoric art literally and figuratively. The design concept encourages the public to engage with the exhibits and brings the past closer to the visitors of today.

Exposing Natural History

Natural History Museum of Crete

Natural History Museum of the Lesvos Petrified Forest

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Keywords

Natural history - Exhibition - Design

Museology - Museum

Abstract

Two of the most remarkable natural history museums in Greece are the Natural History Museum of Crete and the Natural History Museum of the Lesvos Petrified Forest.

The NHMC's exhibition narrative highlights issues that relate to geology and paleontology, the ecosystems of Crete, Greece and the wider East Mediterranean region. The NHMLPF showcases the unique fossils of Unesco's Global Geopark. Structured upon two sections, on one hand it focuses on showcasing the natural processes that led to the creation of the Petrified Forest, and on the other hand on spotlighting the great value of its finds.

The main pursuit in designing both these museums was the creation of experiential spaces, so that visitors perceive the museological content through their personal experience. New museological approaches, innovative technological applications, interactive digital media and modern exhibition techniques create unique exhibition environments that multimodally showcase the inexhaustible reserve of natural history. The exhibition

planning focused on combining techniques and methods that make the museum narrative attractive, pleasant, educational and comprehensible by the average visitor.

Introduction

Greece is known worldwide for its archeological wealth and long cultural history. Except for its archeological background, the country has natural history collections and items of great importance, due to its biodiversity and its unique geology. Natural history museums in Greece are few in comparison to the archeological ones. For some years now, TETRAGON S.A. has been active in planning and implementation of natural history museums, as well as centers for the promotion of nature's beauty. Due to the particularity and requirements of these projects, we decided to present two of the most remarkable natural history museums in Greece, which were recently redesigned and completed by TETRAGON S.A. These museums are the Natural History Museum of Crete and the Natural History Museum of the Lesvos Petrified Forest.

Natural History Museum of Crete

The Natural History Museum of Crete is situated in the old multi-level building that provided electricity to the city of Heraklion. It was restored and remodeled in order to host the new natural history museum. It was founded in 1980 and since 1993 it has been expanding in size constantly. It is part of the University of Crete, located in the School of Sciences and Technological Sciences. The need for further enrichment of the museum's collections, the wear and tear of the existing exhibition spaces, the evolution of the museology discipline and new practices, made it necessary to upgrade the existing museum and carry out new museological and museographic research. The research process was carried out in 2016, while the final construction began in 2020 and continues to this day.

The building is a landmark for the city of Heraklion, due to its central location and the view to the Aegean Sea. In addition to the main exhibition area and the reception and visitor service areas, it has fully functional and aesthetically upgraded spaces for environmental education programmes, a gift shop, café, periodical exhibition areas and the "Research Site" which is a specially designed space for children. The main exhibition space is a total of 5,500 sq.m. and consists of four levels that communicate vertically, with

elevators and stairwells (image 1.). There is seamless visual communication between the floors, where thematic dioramas of ecosystems of the Eastern Mediterranean are projected.

Each floor has a large elongated room in which the respective topics are organized, using the following equipment and techniques:

- exhibit surfaces
- micro-dioramas
- scenographies
- digital applications
- interactive games
- display cases
- and more

Visitors flow begins with a tribute to the Myths of ancient Greece, correlating natural phenomena with mythology. The section of "Minoan Crete" examines the natural environment and presents the flora and fauna of that time, targeting an interpretation of the Minoan art iconographic representation as depictions of respective ecosystems. The last part of this section explains the geological factors that altered the natural environment and influenced the evolution of the Minoan



Image 1. Copyright: Tetragon S.A.

civilization, “leading” the visitor to the earthquake and volcano exhibition rooms, where a modern educational simulator of real earthquakes and natural disasters will be installed.

Geology

The climate and its evolution in the Mediterranean, the atmospheric processes and the formation of the relief of Crete, the cycle of rocks, minerals and their uses in modern culture, are some of the references of the geology section.

Paleontology

The last sections of the lower level deal with Paleontology, presenting the history of the appearance and evolution of life on earth. Reconstruction of the Dinotherium, fossils and representations of animal extinction over the geological centuries are some of the main exhibits (image2).

Mountain

A three-dimensional representation of an artificial mountain dominates the space, rising through all four floors of the building. Ecosystems are presented on this 3D mountain representation, based on the geomorphology and altitude. This scenographic trick showcases the mountainous terrain of Crete, the gorges, the deep caves, from the lowest to the highest level.

Vivarium

The next level includes a variety of ecosystems with a noticeable presence of the liquid element (rivers, estuaries, coasts) as well as ecosystems with an absence of water (sandy deserts, rocky deserts and phrygana). The element of life dominates this room with the 16 terrariums that host real animals, mainly reptiles (image 3).

Biodiversity

The biodiversity of Crete and the Eastern Mediterranean is the thematic section of the main level. The visitor explores the impressive geomorphology of the island which hosts a rich variety of fauna and flora. Two interactive applications that explain the subject were designed. The



Image 2. Copyright: Tetragon S.A.



Image 3. Copyright: Tetragon S.A.

first is an interactive model of Crete that comes to life, providing information, video projection and images about the geodiversity, climate and ecosystems of the island. The second is an interactive map of the Eastern Mediterranean with 16 active points activated by touch, to generate projections of images that show the natural environment of the areas (image 4).

Animals of Crete

The “great gathering of the animals of Crete” is an exhibit consisting of arrays of small- and large-scale animal species, combined with digital interactive media that provide additional information about rarity, endemism, etc. At the Museum of Natural History of Crete, new museological approaches, innovative technological applications, interactive digital media and modern exhibition techniques were used to design unique exhibition environments presenting the inexhaustible theme of natural history in a multidimensional way. The design focused on combining techniques and methods, so that the museum narrative is attractive, enjoyable, educational and understandable by the average visitor. With a strong element of interaction and public participation, the new exhibition spaces acquire a museum-pedagogical character which is of great importance due to the large number of children that this kind of museums attract (image 5).

Natural History Museum of the Lesvos Petrified Forest

Lesvos has a unique wealth of geological monuments and landscapes of natural beauty, habitats and cultural monuments which contributed to its recognition and inclusion in the UNESCO World Geoparks Network. In the western part of the island, the Petrified Forest dominates the landscape. It is a unique sample of geological history, which has been declared as a “Preserved Monument of Nature”.



Image 4. Copyright: Tetragon S.A.



Image 5. Copyright: Tetragon S.A.

Museum

The Natural History Museum of the Lesvos Petrified Forest reflects the geological history of the Aegean that goes back 20,000,000 years. It is located at Sigri (Lesvos), and it is the first Museum of Natural History founded by the Greek State, in 1994. It is connected to the outdoor Fossil Forest Park, a unique natural monument with world recognition. The abundance of standing fossil logs and their excellent condition impress the visitors. The building that covers an area of 1,600 sq.m hosts exhibition spaces, public service areas, a reception area, a gift shop, a café, laboratories and spaces for educational programs. Since 2000 TETRAGON S.A. has been examining, designing and gradually shaping sections of the Museum. However, in the past few years, extensive rescue excavations have uncovered discoveries of incalculable value, so the upgrading of the exhibition spaces was considered necessary.

The permanent exhibition is divided into two exhibition rooms:

A) the “Fossil Forest Room” which includes fossilized trunks, branches, fruits and leaves of a variety of trees and fossilized bones of animals that lived in the Early Miocene Age, 20 million years ago. B) and the “Room of the Geohistorical evolution of the Aegean” which presents the geological phenomena and processes that shaped the Greek area and especially

the landscapes of the Aegean islands and are associated with the creation of the Petrified Forest.

Fossil forest

In the first large section of the “Fossil Forest Room”, the museological flow presents the process of fossilization and the different types of fossils that can be found in nature. This section also exhibits and explains the evolution of life on Earth with depictions of the ancient environment and characteristic fossils for each time period in the planet’s history. Here the visitor can also discover the forests of Sequoia, the marine part of the Petrified Forest of Lesvos, the evolution of flora with characteristic fossils from all over Greece, as well as the Dinosaur of Lesvos (image 6).

Geohistorical evolution of the Aegean

The second section presents the structure of the Earth’s crust, the causes and effects of volcanism and seismic activity in Greece, as well as the geological evolution of the Aegean region during the last 65 million years. 3D models and audiovisual material are used to familiarize the visitors with the internal structure of the planet, the structure of the lithosphere and the movement of the lithosphere plates. A specially designed model explains important and difficult geological phenomena, such as the process of convergence of lithospheric plates in



Image 6. Copyright: Tetragon S.A.

the Eastern Mediterranean, the sinking of the African lithospheric plate beneath the Eurasian that takes place south of Crete, and the creation mechanism of the Aegean (image 7).

Special constructions

The redesign and re-exhibition of a part of the museum in order to enrich it with the new finds, focused on the creation of special constructions that highlight the exhibits in the most efficient way. Specially designed metal structures highlight the fossilized tree trunks, forming an exhibition layout that brings the exhibits into life. Without any special explanations, the visitor immediately realizes the origin of the fossils (image 8).

Display Cases

The same museographic principles apply in many of the display cases, where fossilized leaves or fruits are presented right next to their corresponding related species of today. Special constructions and underfloor showcases highlight fossilized



Image 7. Copyright: Tetragon S.A.



Image 8. Copyright: Tetragon S.A.

root systems, trunks and branches that are placed in their natural positions.

Conclusion

Museographic solutions combine traditional exhibiting practices with modern display techniques through the use of interactive applications and new technologies. At the same time, new materials and construction techniques generate architectural exhibition solutions for spatial environments and exhibition arrangements. In this way, the exhibits can be highlighted in the best possible way, while taking into account their special characteristics and thematic aspects that they project.

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Session 2

New Needs for Modern Museums & Future Steps



New Needs for Modern Museums & Future Steps

1. Giovanna Forlanelli Rovati, Mario Cucinella | The Museum of Fondazione Luigi Rovati.
2. Dexter Kandhlela | Museum Experience Post Covid 19 Pandemic
3. Kiem-Lian The | Museum Projects in the Netherlands
4. Viktorija Mangaroska, Liljana Mangaroska, Kosta Mangaroski | Virtual Network modeling of museums as part of the cultural route in Skopje, North Macedonia
5. Olivera Nikolic, Milena Milošević Micic | Museum Exhibitions in Serbia - Small Space and Low Budget
6. Bianca Manzon Lupo, Letícia Nascimento do Carmo, Raíssa Pereira de Arruda | The Museum Experience: Architecture and Technology at the MIS - Copacabana
7. Chang-Hua Wang | Taiwan's Museums under the pandemic: Becoming closer through isolation
8. Clara Mosquera-Pérez | The architecture of the Prado Museum on display: exhibition review and future perspectives
9. Gabriele Toneguzzi | Museum storage and robotics
10. Marzia Loddo | DIPOT: Digital Depot. Computer-Generated Simulations of Museums Storage Facilities. Using 360° Photography and Virtual Reality
11. Antony Vayssettes | The Étincelles du Palais de la découverte

Giovanna Forlanelli Rovati

Mario Cucinella

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Abstract

A new museum in the heart of Milan brings to life a space that will produce knowledge, creativity, and other socially beneficial results. A structure with a total floor space of over three thousand square metres will give an historic Milanese Palazzo a new lease on life, transforming it into a dynamic cultural and museum project ready to dialogue with the rest of the city. The new Museum of Fondazione Luigi Rovati is all this and more.

Fondazione Luigi Rovati, founded in 2016 by Lucio Rovati and his wife, Giovanna Forlanelli, as well as their daughter Lucrezia, is named for Luigi Rovati, physician, entrepreneur, and philanthropist. The Foundation operates in the realms of culture and science, serving as an open system that seeks to establish connections through numerous initiatives in different sectors, engaging in projects and exchanges of noteworthy innovation and social utility. The constant flow of interactions, exchanges, relations and shared endeavours makes Fondazione Luigi Rovati both a tangible and intangible

infrastructure that plans and produces objects, situations and places, the most recent being the Milan Museum, the end result of the redesign an historic residence to house variety activities: museum space for Etruscan artefacts and works of modern and contemporary art, a conference and educational area, a garden returned to the city and services for the public. (image 1)

The Museum building is located on the Corso Venezia, in the heart of city, facing the large Indro Montanelli public park. The elegant Palazzo's noteworthy

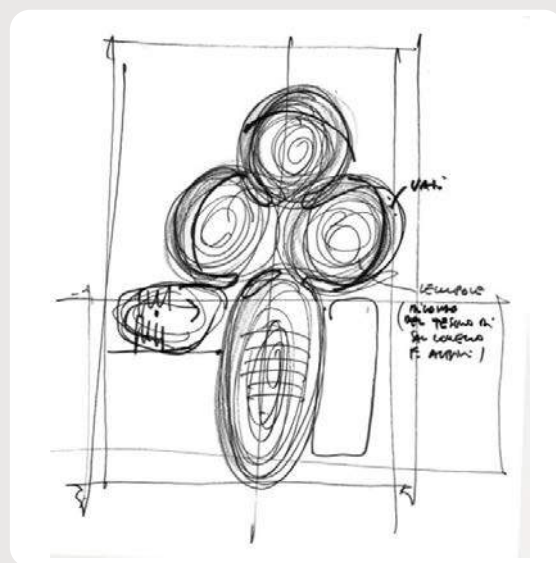


Image 1. Underground floor sketch_©_MCA for Fondazione Luigi Rovati

history is intertwined with the lives of the families that have resided there, plus the vibrant city that surrounds it, engaging in an ongoing dialogue with the site. The Palazzo was built in 1871 by the Prince of Piombino, following the demolition of a small *matinée* theatre dating from 1810. Less than twenty years later, it was acquired by the Bocconi brothers, textile manufacturers who had also founded Italy's first chain of department stores. They lived at no. 46 of the same street and used the Palazzo to house services. Angelo Rizzoli bought it in 1960 and left it to his daughter. Ferdinando Reggiori restored the architectural design and Filippo Perego the interiors, the latter seeking to revive the Palazzo's 19th-century identity while introducing a more modern ambience. The new architectural transformation, involving the entire Palazzo, was assigned to the firm of MCA - Mario Cucinella Architects, which interpreted the Foundation's need for a modern museum space complete with key supplementary services, such as a bookshop, a room for study, an auditorium, an open deposit and in the garden a pavilion dedicated to temporary exhibition. The Palazzo is currently a single constructed unit with five aboveground floors, two newly built levels belowground and an attic floor. The building has a total surface area of approximately 3,300 square metres. On the ground floor are a ticket window, a shop, a café-bistro and a garden with a pavilion for exhibitions.

The technologically challenging construction work

The complexity of the Palazzo's retooling and expansion entails massive efforts and technological capabilities that make the numerous construction phases extremely delicate. To proceed with the belowground enlargement, involving the construction of two underground floors, an initial structural reinforcement had to be accomplished by inserting reinforced-concrete piles along the entire perimeter of the existing building and the planned area of expansion. At the same time, the ground was reinforced with jet grouting, a preliminary step for the excavation work needed to attach the micro-piles to the pillars of the Palazzo's structure. Next, its existing foundations were demolished, followed by the initial excavation work to a depth of -6 metres. Once the first underground floor slab was laid, a cavity was dug in order to continue work on the second underground level through a top-down approach. Before these procedures could be undertaken, the aboveground portion of the building had to be lightened by removing certain elements (partitions, furnishings, panelling, plaster) and completely demolishing both the roof and the third floor. While this was being done, new pillars were inserted in the underground floors and connected to those of the upper floors, plus walls were constructed against the earth surrounding the excavation, making it possible to

remove the micro-piles which, until then, had supported the entire Palazzo, keeping it practically suspended for a few months' time, so that the laying of the zero-level floor slab, featuring the presence of the belowground cupolas, could start.

The cupolas were structurally tested using a 1:1 scale of a portion built with a substructure of steel carpentry upon which stone ashlars were installed. The rows of ashlars were spaced 5 mm apart, to allow air from the built-in plant facilities of the substructure to pass through.

The acoustic design was subjected to attentive, precise technological analysis, seeing that cupolas, by their very nature, reverberate sound, though the acoustic solution sought for the Museum was one that, rather than eliminating the effect, attenuated it, so as to maintain the perception of a vault. It was also decided to install ashlars of lighter material atop the cupolas, to heighten both structural and acoustic performance.

In redesigning the Palazzo, particular attention was focussed on energy and environmental factors. An integrated effort was undertaken, involving a variety of professional figures, with the aim of reducing energy consumption and environmental repercussions under the guidelines of LEED v4 certification (Building Design and Construction: New Construction and Major Renovation), which ensures that decisions taken in

the planning phase are adopted during construction. This certification not only evaluates the building's sustainability, but calls for the installation of systems to monitor consumption and periodically register the results.

The Museum design project – The layout of the underground and main floors

The entire plan for the museum is based on the latest theories of museum design, with the focus of the layout being the visitor, who is immersed in a stimulating, welcoming, inclusive environment which provides opportunities for learning, instruction and enjoyment. A thematic approach was taken to exhibiting the artefacts, in order to make them understandable to all, without any academic constructs or constraints. Digital supports, which include a beacon network, audio guides and projections, constitute a tool able to facilitate the narration and interpretation of the exhibits,



Image 2. Underground floor_©_MCA for Fondazione Luigi Rovati

while contributing to the day-to-day preservation and monitoring the artefacts. (image 2)

The first underground floor is the exhibition space, featuring the three large cupolas inspired by the mound architecture of Cerveteri, as well as the design of the Museum of the Treasure of the Cathedral of San Lorenzo in Genoa, built by Franco Albini.

The pieces, displayed in triangular and square showcases, form a sequence of topics that tell the story of the culture of the Etruscans, who prospered in Central Italy between the 8th and the 1st centuries BC, with works of modern and contemporary art interspersed among the artefacts. In addition to the exhibition rooms, the underground floor has a projection room and a space for teaching. Particular care is taken with the most valuable objects, kept in a special inset portion of the elliptical room adjoining the cupolas, where small, rectangular display cases are installed directly on the stone architecture, at varying heights, inviting the viewer to take part in a sort of treasure hunt.

The visitor experience continues on the first floor, the main level, where the dialogue between archaeology and contemporary art is further developed, primarily around the theme of collectors and collections. The main floor also holds important site-specific creations

commissioned from contemporary artists, new works that dialogue with the existing neo-classical spaces. The original upholstery and boiserie (wainscoting), the marble chimneys, the high mirrors of the gallery have all been restored, while the exhibition spaces, wherever possible, have been kept as they were, as in the case of the niches, which have been restored and put back to use, in order to ensure that the artefacts remain secured and available for viewing.

The cases have built-in beacon technology which monitors the parameters that contribute to preservation, and this same technology can also enrich educational offerings.

The Museum design project – The layout of the underground and main floors

The second floor was conceived of as a flexible space. Its largest room is meant to hold exhibits and events, while the smaller one is equipped for informative events or in-depth study involving specialists and/or the general public. The study room, closely connected to the documentation centre and the library of the Luigi Rovati Foundation, which is located in Monza, allows students and scholars to consult the books of the library on-site, thanks to on-line lending through the website.

There is a shop on the ground floor, offering not just books on art and

archaeology, but also a line of stationary product and gifts specially designed for the Foundation. Completing the Palazzo's offerings are new spaces holding the café-bistro and the restaurant (interior design by Flaviano Capriotti Architetti), both of which reprise traditional Milanese style from a modern perspective while engaging in a dialogue with the site-specific works of art.

The dining establishment on the third floor, in particular, features a large panoramic window whose view of Milan stretches from the gardens of the Porta Venezia gate to the magnificent architecture of the early 1900's, all the way to the contemporary structures of the modern skyline.

Research was carried out in the archives to restyle the garden as a “pocket garden” that links both past and future, with its design highlighting the ties between greenery, the urban dimension of the city and the shifts in the ground that allude to the cupolas of the basement floor below. (image 3)



Image 3. Exterior view of the Palazzo and garden_©_MCA for Fondazione Luigi Rovati

Museum Experience Post Covid 19 Pandemic

Dexter Kandhlela

Maintenance Officer

Zimbabwe Military Museum, Zimbabwe

Presentation summary

The presentation focused on the impacts of Covid 19 pandemic on one of the museums in Zimbabwe. The Zimbabwe Military Museum is situated in the Midlands Province and focuses on military, police and aviation history of Zimbabwe pre and post independence of 1980. COVID-19 is a contagious zoonotic disease caused by a novel coronavirus, named the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) (Al-Qahtani, 2020). The first outbreak was from Wuhan, China in December 2019. The virus quickly spread throughout the world affecting heavily countries like Italy, Spain and the USA within the first three months (Rothan, et al., 2020; Rothe et al., 2020). The spread has been attributed to possible multiple contagion sources (Salata, 2020). Subsequently the World Health organisation (WHO) declared it a global health emergency on the 30th of January 2020 and further characterising it a pandemic on 11 March 2020. Zimbabwe was not an exception from the scourge of the pandemic and museums as repositories of history and knowledge were heavily affected. The first positive case in Zimbabwe was recorded

on the 21 March 2020 of a British Tourist who had visited Victoria Falls. This led to an increase of positive cases and the subsequent closure of various institutions and the National Lockdown. The first lockdown in Zimbabwe was on the 30th of March 2020 followed by subsequent partial lifting of lockdowns until August 2021. The Zimbabwe Military Museum where I work as a Maintenance Officer was adversely affected by the lockdowns. The grounds were not attended to, collections in storerooms were affected by dust and even leaking roofs and objects in permanent exhibitions were affected as well. Post August 2021 the Government of Zimbabwe introduced a 50 % staff turnover which was a breather to the state of museums. Currently the Zimbabwe Military Museum has started on documentation of collections, auditing of collections, sprucing up of the grounds and has recently partnered with a local university on a National project researching on the impact of COVID 19 on the museum institution and also tracing the pandemics from a pre historic perspective. The presentation paper will explore the effects of Covid 19 on the Zimbabwe Military Museum.

Museum Projects in the Netherlands

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Summary

The presentation gives an overview of museum projects in the Netherlands that are currently in development, in construction or that have recently been delivered. For a relatively small country, a lot is happening, even in these trying times of COVID-19.

After an overview, naming known projects, the presentation starts with the Pieter Teylers Huis project for the Teylers Museum, presenting the house of the founder of the Teylers Museum, as the starting point of what has become a museum complex over the course of the 19th Century. The house has been completely restored, integrating new technologies with a focus on sustainability and also future-proofing the house. The house will opened in December 2021 by Her Majesty the Queen Máxima after which it will for the first time in its history become part of the museum and also opened to the public. Due to the collaboration of ToornendPartners with the exhibition and experience designers tinker imagineers from Utrecht on the new Natural History Museum of Denmark in



Pieter Teylers House, Teylers Museum Haarlem

Copenhagen, the presentation is also highlighting some of the design works of tinker, crossing over from the museum architecture perspective to the experience of visitors and the technological developments in that area, such as for the National Monument Kamp Amersfoort and the Loenen National War Cemetery. Both are prize-winning projects.



Kamp Amersfoort



Loenen National War Cemetery

The presentation of course contains of the internationally well-publicised Depot of Boijmans Van Beuningen in Rotterdam that has just been opened.



Depot Museum Boijmans van Beuningen, Rotterdam.

And also of the Netherlands Collection Centre in Amersfoort, the CC NL. For the CC NL ToornendPartners has been the lead consultant and project manager from the very beginning, making the successful completion of the project and the opening in September 2021 a very proud moment.



Collectie Centrum Nederland, Amersfoort



Collectie Centrum Nederland, Amersfoort

Finally the Art Pavilion Flevoland in Almere is shown, a small project but with a precious design by Studio Ossidiana in which the sculptural and the architectural meld together. Studio Ossidiana, founded by Alessandra Covini and Giovanni Bellotti, currently have a number of projects in the Venice Biennale.



Art Pavilion Flevoland, Almere

They have not designed a building before, but with the support of a technical design team, their pavilion is bound to be one of the architectural highlights of the International Horticultural Exhibition Floriade 2022 that will open in April 2022. The pavilion is the precursor to a new art museum that is being developed in Almere that will be focussing on Land Art.

Virtual Network modeling of museums as part of the cultural route in Skopje, North Macedonia

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Abstract

Virtual network modeling of spatial and program organization of museums and cultural institutions is one of the crucial network development at the Cultural Route in Skopje, North Macedonia.

The methodology of this scientific paper includes: analysis and testing of the developed virtual spatial models in the context of architectural-design and urban-planning interventions, stimulating the processes for their complete inventory, systematization, valorization, integration and adaptation in the virtually created urban environment.

The expected outcome results of this scientific paper is to explore and define the application of virtual modeling in the planning of current and future development of the virtual museum network, in the development of the city of Skopje.

The research includes: defining the existing and future programming factors

that influence the development of cultural institutions, defining factors in the process of virtual modeling of the spatial organization, location and relational connection of the objects in the field of culture in the network; defining the influence factors of the development of the facilities in the field of culture on the virtually created development of the city of Skopje.

The method of typological and morphological analysis where the reasons for the morphology and the emergence of cultural development are considered in the context of the relationship with cultural development as the development of semantic factors.

The modeling method (virtual) which is presented as an analogy and virtual simulation of the current and future conditions of cultural institutions in Skopje. Virtual realistic representation and simulation of the current situation are analyzed in this scientific paper. The situation is critically reviewed and measures are proposed that architects and designers can implement in the virtual modeling of the future state of museums and cultural institutions.

Keywords

Virtual Network Modeling

Museums

Cultural Institutions

1. Cultural Heritage in Republic of North Macedonia

Republic of N. Macedonia is located in the part of South-East Europe in the Balkan Peninsula. It is a country very rich in cultural and natural heritage, tradition, customs, archaeological and ethnological findings.



Presentation of the cultural heritage in Republic of North Macedonia
Source: Galicnik Wedding Tradition, N. Macedonia <https://macedonia-timeless.com/eng>

1.1. Typology and classification of museums in North Macedonia

According to ICOM (International Council of Museums) the museum is defined as

“The museum is a non-profit institution in the service of society and its development, open to the public, conserving, researching and communicating with cultural exhibits, which are used to study, educate and research material evidence of the existence of people and their environment.”

Museums should perform the following functions: preservation, exhibition, scientific and educational activity through the organization of exhibitions, professional lectures, performances, cultural events.

Typologies of museums in Republic of N. Macedonia are classified according:

1. Typology of museums according to the exhibited objects:

- Museums of applied arts,
- Archaeological and Historical museums,
- Ethnographic museums,
- Natural science museums,

2. Typology of museums according to the meaning of the territory:

- National museums,
- Regional museums,
- City museums

3. Typology of museums according to the architecture and location:

- Museums Houses in restored authentic historic buildings and sites.

2. Museum Architecture and Exhibition

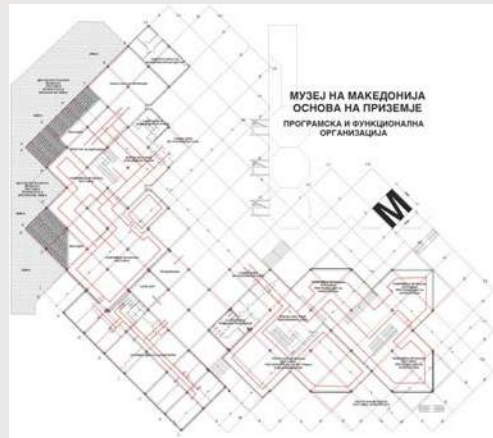
Functional and program organization of the museum institutions in Skopje include the following premises: administrative part - organization of the function through distribution of professional staff by organizational units, management, storage of a museum complex, depo - department for storage of artifacts, conservation and restoration department, organization of museum materials by collections, exhibition halls - organizing the space by exhibiting exhibits. salon - department for the sale of museum copies, museum tickets, souvenirs, library and documentation department.

2.1 Museum Architecture at the National Institution Museum of Republic of North Macedonia

Organizational and functional structure in the museum architecture of the National Institution Museum of Macedonia:

1. Historical Exhibition that presents the history from the Ottoman period II World War,
2. Gallery of Icons exhibits the most important icons, iconostasis and frescoes from the post-Byzantine period and the Renaissance period,
3. Ethnology Department presents the thematic units from: folk architecture, customs, musical instruments, costumes, jewelry, embroidery and weaving,

4. Complex museum - the building of Kurshumli an, where the exhibition of stone monuments - Lapidarium is located. The Archaeological collection from the National Museum of Republic of North Macedonia has been transferred to the new building of the Archaeological Museum in Skopje. Virtual models are an important tool in the architectural project design process, where architects, civil engineers, intercultural managers and potential investors will receive fast and accurate information about the facilities of the cultural institutions, the opportunity to see the ratio of the constructed with the newly designed facilities.



Presentation of the National Institution Museum of Macedonia, museum architecture and visitors circulation diagram

When designing architectural objects, it enables the preparation of a large number of variant solutions for one architectural object. The virtual model is used in inventory, systematization, valorization of existing cultural institutions, as well as in proposing possible future architectural solutions.

According the spatial and functional analysis of the existing spatial and functional organization of the National Institution Museum of North Macedonia the following proposal of interventions in the museum architecture can be tested in the virtual model; reconstruction of the exhibition spaces, reconstruction

of administrative spaces, providing and protective measures for depots and premises for conservation and restoration, repair and reconstruction of the depot space with the most modern and sophisticated equipment for storage and storage, reconstruction and rehabilitation of the access plateau, construction of access ramps and elevators-platforms for overcoming the architectural barriers for people with special needs, increased need because the architectural project has a leveling in the levels of the exhibition halls.

3. Virtual Museum Network

Virtual network modeling of spatial and program organization of museums and cultural institutions is one of the crucial network development at the Cultural Route in Skopje, North Macedonia. The methodology of this scientific paper includes:

1. Analysis and testing of the developed virtual spatial models in the context of architectural-design and urban-planning interventions,
2. Stimulating the processes for their complete inventory,
3. Systematization, valorization, integration and adaptation in the virtually created urban environment.

Objectives of the scientific research of the virtual museum cultural network are:

1. Analysis of the urban and spatial connection of the museum complexes in an urban context - cultural paths,

2. Virtual model of the Cultural Route -spatial and functional organization and connection in the museum complex ,
3. Importance of the database in determining the functional aspect of architectural planning by the architect and designer,
4. Functional program and spatial analysis of museums, analysis of the trajectory of the movement and circulation of museum visitors - Simeza,
5. Planning the current and future development of the architectural space through a virtual model, planning of spatial and functional organization of the interior design of the exhibitions by the architects and curators,
6. Spatial and functional planning at the city level and organization of spatial cultural buildings.

4. Virtual Network Spatial and Program Organization of Cultural buildings

Analysis of the virtual museum network is focused on the museums as a focal points in the urban network on the trajectory of the Cultural Route in Skopje, North Macedonia

The network of cultural institutions facilitates the exchange of information, skills, knowledge and experience, by holding meetings, workshops, publications and developing cooperation programs, in order to have a wider social impact. Methodological analysis of the cultural

institutions on the Cultural Route in Skopje is defined by the: virtual modeling method that has an analogy and virtual simulation of the current and future conditions of cultural institutions in Skopje; virtual realistic representation and simulation of the current situation critically reviewed and measures proposed that architects and designers can implement in virtual modeling of the future state of cultural institutions. The method of typological and morphological analysis where the reasons for morphology and the emergence of culture are considered in the context of the relationship with cultural development, development of semantic factors. Morphological analysis of the cultural

institutions in Skopje, North Macedonia is conducted by mapping and identification of virtual model criteria on the trajectory with cultural contents:

1. Spatial criteria

- defining the spatial urban scope
- length of connection of cultural institutions
- defining the shortest and longest distance
- defining the diversity of contents

2. Time criteria

- beginning, end, frequency of visit
- time interval of visit
- scheduled time visits through a virtual curator



Photo-documentation of the cultural institutions and cultural heritage buildings in the Cultural Route in Skopje

- the time interval of permanence - one-year, multi-year, seasonal)

3. Cultural criteria (purpose and significance of the cultural paths, cultural and content aspects of the permanent and temporary exhibitions of the museums)

Locating the Cultural Route in the urban spatial context of the city of Skopje, Macedonia is spatially defined with the beginning - Museum of the City of Skopje in the central city area along Macedonia Street through Macedonia Square, the Stone Bridge, the Old Skopje Bazaar as an old oriental urban complex from the 16th-17th century, and final destinations are the building of the Museum of Macedonia or the building of the Museum of Contemporary Art at the Skopje Fortress. In the process of analyzing the spatial distances between the cultural

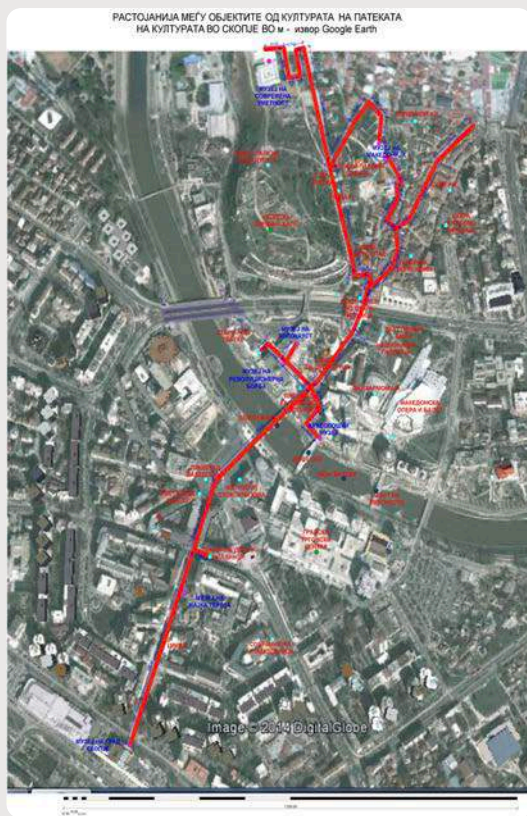
institutions on the Cultural Route in Skopje, it can be concluded that it has relatively small distances of 100 - 500 m, walking communication diagram. The communication between the cultural institutions on the Cultural Route in Skopje can take place on the pedestrian streets, paths, without crossing the pedestrian with the vehicular traffic. The time required for movement of pedestrians from one object to another ranges from 10-15 minutes. The distance between cultural institutions due to the favorable configuration of the terrain, is easily accessible to people with disabilities. The following national and local museums were identified in the process of the mapping of the museums in the virtual museum network: national museums: NI Museum of Macedonia - Skopje, NI



Spatial analysis of the spatial urban matrix of the virtual museum network in the Cultural Route in Skopje



Spatial analysis of the spatial urban matrix of the virtual museum network in the Cultural Route in Skopje



Museum of Contemporary Art - Skopje,
NI Museum of the Macedonian Struggle
for Statehood and Independence - Skopje,
NI Museum of the Holocaust - Skopje,
NI Art Gallery - Skopje, NI Memorial

House of Mother Teresa - Skopje, NI
Archaeological Museum of Macedonia -
Skopje, and local museums: Museum of the
City of Skopje - Skopje.

Od objektot Muzej na Grada Skopje (Stara makedonska starija) do objektot Muzej na moderna umetnost	Meѓusebno rastojanje	Време потребно за соопштување на тоа растојание со пешачење
Општинска кука на Мајка Тереза	326,26 м	3мин 57 сек
Градска фонтана на плоштад Македонија	235,06 м	3мин 25 сек
Плоштад Карпошевото востание	280,36 м	3мин 35 сек
Музеј на македонската револуционерна борба за самостојност	74,31 м	0мин 55 сек
Македонски народен театар	148,25 м	1мин 45 сек
Археолошки музеј на Македонија	126,45 м	1мин 30 сек
Национална галерија - Дуги пазарски зид	33,26 м	0мин 25 сек
Македонска филармонија	216,67 м	3мин 47 сек
Национална галерија - Чапирски зид	206,60 м	3мин 45 сек
НУ Музеј на Македонија	244,22 м	3мин 55 сек
НУ Музеј на современа уметност	679,08 м	8мин 49 сек
Вкупно Музеј на град Скопје - НУ Музеј на современа уметност	1769,67 м	21мин 23сек

РЕСТОЈАНИЈА ПОМЕЃУ МУЗЕИТЕ	Меѓусебно растојание	Време потребно за соопштување на тоа растојание со пешачење
Музеј на град Скопје		3мин 57 сек
НУ Спомен кука на Мајка Тереза	326,26 м	3мин 57 сек
Музеј на македонската револуционерна борба за самостојност	589,73 м	8мин 55 сек
Музеј на холокаустот	126,45 м	1мин 30 сек
Археолошки музеј на Македонија		
НУ Музеј на Македонија	484,14 м	8мин 55 сек
НУ Музеј на современа уметност	679,08 м	8мин 49 сек
Вкупно Музеј на град Скопје - НУ Музеј на современа уметност	1769,67 м	21мин 23сек

Distances between the cultural buildings of the Cultural Route in Skopje and analysis of the distances between the cultural buildings in the Cultural Route

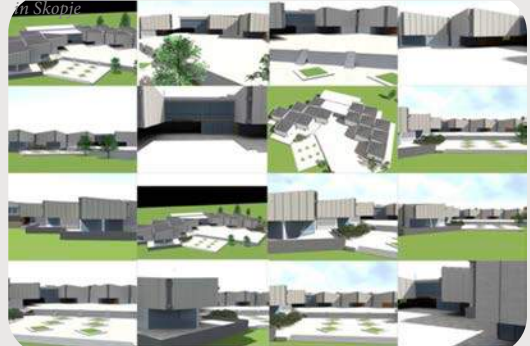
The virtual network enables the connection of objects in the field of culture in a virtual context, which will be of great importance in terms of: planning of activities, smooth organization of cultural events, circulation of visitors in the urban spatial matrix defined through the Cultural Route, defining the trajectory of the movement of cultural users and tourists in an urban context, which will enable a visit to several museum complexes in the city, planning the time interval of their visits to the cultural architectural buildings, opportunities for planning and development of exhibition spaces and architectural space planning by architects, museum professionals and users.

Strategy for Sustainable Development of the virtual network of the Cultural Route in Skopje, North Macedonia:

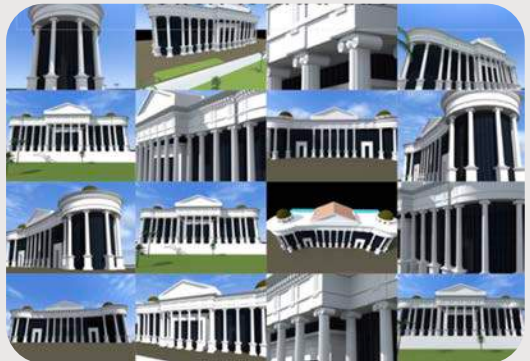
1. Complete protection and revitalization of the existing, newly built and historical buildings of the Old Skopje Bazaar
2. Construction of historical trade facilities and other business and commercial facilities next to the museums and their connection with the core of the Old Skopje Bazaar
3. Virtual reality, visual presentations, panoramas for all museums in the Cultural Route
4. Organization of simultaneous creative workshops in all cultural buildings for making jewelry, handicrafts in the Old Skopje Charsija



Production of spatial prototype - virtual model of Museum of Macedonian Struggle for Independence, as part of the Cultural Route in Skopje

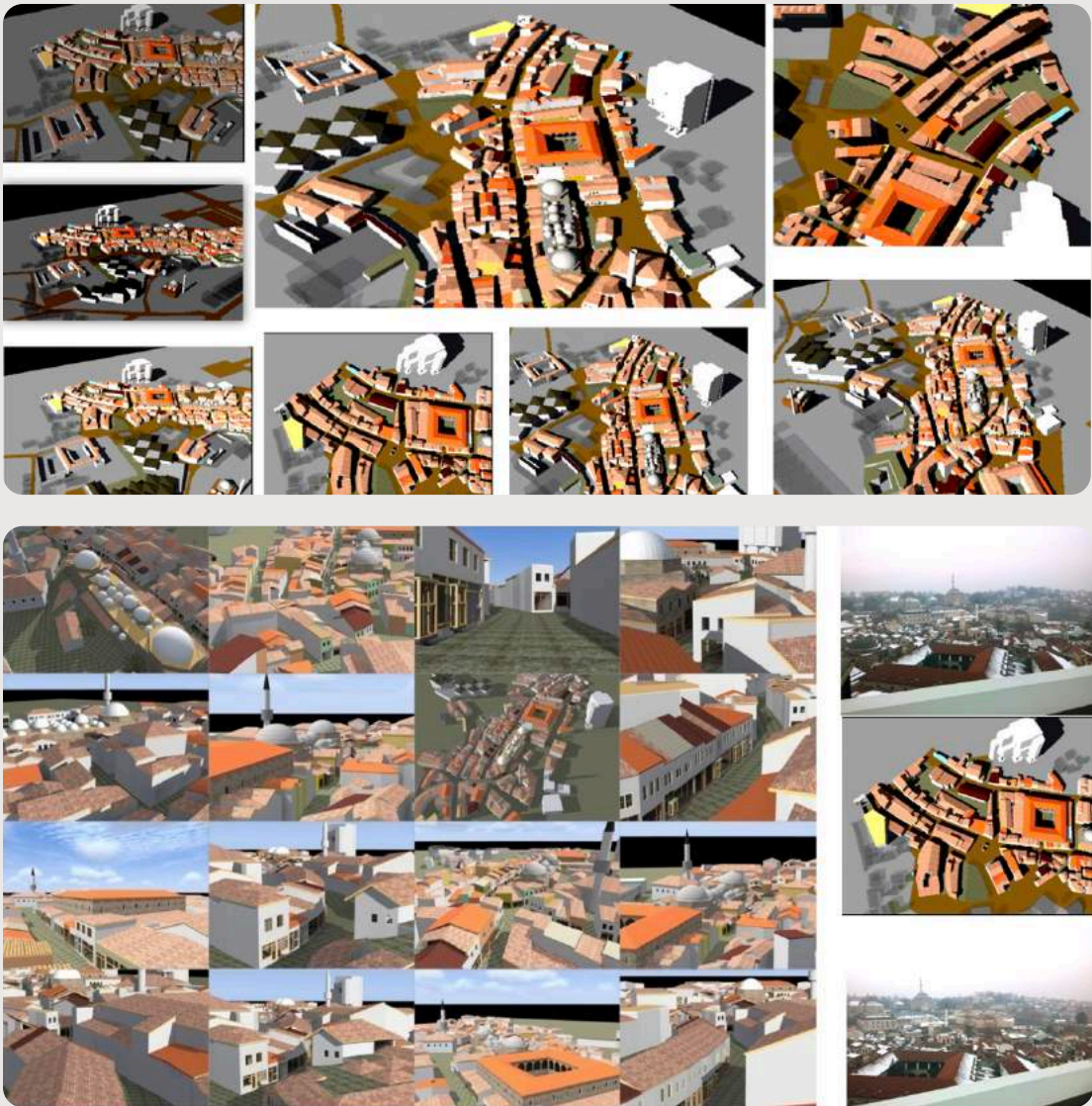


Production of spatial prototype - virtual model of Museum of N Macedonia, as part of the Cultural Route in Skopje



Production of spatial prototype - virtual model of Museum of the Archeological Museum, as part of the cultural route in Skopje

5. Organization of simultaneous cultural events, manifestations and performances
6. Architectural workshop for traditional construction
7. Creating Virtual Network WEB-page by entering all the information about the old and new cultural buildings
8. Posting maps with markings of cultural institutions around the Old Skopje Bazaar.



Virtual Network 3D modeling of the cultural institutions and cultural heritage buildings in the Old Charsija in Skopje

4.1 Virtual Models and Virtual Modeling - characteristics

The Virtual Museum models has been identified to create more usability and accessibility concepts for the museum visitors, through the following principles: creating opportunity to plan a visit to the physical museum, to choose distances and trajectories in the museums, defining different visits with specific trajectories of

visitor movement, possibility to plan the visit with a limited time interval, getting acquainted with the functional scheme and organization of the museum and the exhibition halls, on-line purchase of museum tickets from abroad, planning a visit in the time interval of the visit and opportunity to hire a museum professional

curator, guide-educator, defining the target group of museum visitors visitors from educational institutions (schools, universities), cultural centers, domestic and foreign tourists.

Virtual Models have the following characteristics:

1. Modern way of dynamic presentation and analysis of the architectural space of museums and cultural buildings as an important tool in architectural project process, where architects, civil engineers, intercultural managers and potential investors will receive fast and accurate information about the cultural buildings
2. Provides clear visibility in documenting and inventory of spatial and functional data in architectural design
3. Virtual model with databases, layers with specific search features according to certain architectural parameters
4. Virtual model is used in inventory, systematization, valorization of existing cultural institutions, as well as proposing possible future architectural solutions, creating preparation of a large number of variant solutions in architectural projects.

4.2 Virtual Exhibition model - on-line exhibition

Virtual exhibition model creates online 3D virtual interactive exhibition with following features: dynamic and interactive character of the presentation of contents and digitized artifacts, proactive and interactive education, actively updated

contents, planned and realized ideas and projects. ability for users to have control over the 3D virtual museum cultural tour, museum exhibits and artifacts have a rich multimedia format and high educational potential, interactive virtual exhibition can use automated virtual cultural guides.

Virtual Jubilee museum exhibition "100 years of Trebenishte" - Jubilee Exhibition, is the largest archaeological exhibition ever held in Macedonia. Virtual Online Exhibition for the "100 years of Trebeniste" at the Archaeological Museum of N. Macedonia was prepared by VR Port. The virtual online exhibition for the "100 Years of Trebeniste" was particularly important and often visited by national and international institutions, and gave opportunity to the educational institutions to plan and organize the important artefacts and the museum description. The exhibition was originally located in the Archaeological Museum in Skopje at 2019 and contains about 400 valuable artifacts discovered in the necropolis Trebenishte near Ohrid, N.Macedonia. The exhibition is extremely important and for the first time, almost all the findings from this historically important necropolis were presented in one place. The exhibition "100 Years of Trebenishte" has been co-organized by National Institute of Archaeological Museum in N Macedonia, National Museum in Belgrade and the National Archaeological Institute and Museum in Sofia, as a Joint Museum Exhibition project of the three countries.

4.3 Sustainable Development of Cultural Institutions in the virtual network

Sustainable development of museums and cultural institutions at the virtual network of the Cultural Route in Skopje, North Macedonia include: virtual mapping of cultural buildings in Skopje through modern information and communication technologies concentration of cultural buildings in the network, increasing cultural activities in the context of revitalization of cultural institutions in the long period located in the virtual network, attracting sponsorship due to the growing interest of the general population to visit cultural institutions and cultural events, involvement of project managers who will organize networked cultural activities, Skopje Art Festival, Skopje Summer Festival, increasing the interest of the media, which will actualize the presentation of the city on a regional, national and international cultural level.

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Conclusion

This scientific paper research explores and defines the application of virtual modeling in planning of the current and future development of the virtual modeling museum network, in Skopje, N Macedonia: defining the existing and future programming factors that influence the development of the cultural institutions, defining factors in the process of virtual modeling of the spatial organization, location and relational connection between cultural buildings in the network; defining the influence factors of the development of cultural buildings on the virtually created development of the city of Skopje.

The method of virtual typological and morphological analysis are considered in the context of the relationship with cultural development as development of semantic factors.

The expected outcome results of this scientific paper is to explore and define the application of virtual modeling in the planning of current and future development of the virtual modeling museum network, in the development of the city Skopje, N Macedonia

The method of virtual typological and morphological analysis are considered in the context of the relationship with cultural development as development of semantic factors.

The virtual modeling method is presented as an analogy and virtual simulation of current and future conditions of cultural buildings in Skopje. The situation is critically reviewed and measures are proposed that architects and designers can implement in the virtual modeling of museums. The virtual methodology has a great contribution for inventory and valorization of new buildings, existing buildings, analysis of buildings based on given morphological characteristics, etc. The applicability of virtual reality and virtual modeling enables the creation of new programmatic and functional analytical virtual diagrams. The new methodology of virtual modeling has an active application in the process of optimal spatial and program organization of the new and existing facilities in the cultural buildings in Skopje. Architectural and urban design in the future will be carried out exclusively with the application of computers in a virtual world, with new modern software packages in accordance

with the new achievements in computer technology.

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V. Mangaroska, PhD research “Virtual Modeling of spatial and functional organization of sustainable development of cultural institutions in Skopje, N. Macedonia”

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Keywords

Museum exhibition - Serbia - low budget - Design

Abstract

In recent years, museums in Serbia are continuously working in the domain of redesigning permanent museum exhibitions and creating new exhibition spaces, primarily through conversion of old buildings. This paper will present technical solutions in the design of permanent and temporary museum exhibitions in Serbia where, at the beginning, both regarding design or/and realization, one or both of the restrictive conditions are set - small space and low budget.

The paper uses scientific methods of case studies, statistical methods, analysis of technical solutions.

The results of the research give the average price per square meter for realized museum exhibitions in the case of applied restrictions. A comparison is also made with the price when the restrictions do not apply. The analysis of technical solutions from the aspect of applied materials, furniture and lighting defines the guidelines for achieving a low-budget museum exhibition.

Introduction

In the first decade of 21st century continuous and systematic work began in the field of preservation and presentation of cultural heritage in the museums in Serbia. They are recognized as a tourist potential for the promotion of which the state has formed a strategic policy of financing and co-financing the project in order to design new concepts of presentation with the use of modern technological solutions. There are about 160 museums in Serbia whose founders are the state or province or a local self-government unit. The first museum exhibitions, in most museums, were formed after World War II, mostly in the 1960s and 1970s. Thus, in a relatively short period of time, thousands of square meters intended for the presentation of cultural heritage had to be professionally and creatively transformed. In the process of transformation, several problems arose, primarily related to the age and level of maintenance of the facilities, as well as the size of the space and the size of the budget.

This paper analyses museum spaces intended for permanent exhibitions from the aspect of space limitations, the budget or both. The aim of this paper is to find technical solutions for the application of materials, furniture and lighting so as to meet all the requirements of modern exhibitions and meet the imposed restrictive conditions.

Background

Serbia is a European country on the Balkan Peninsula with an extremely rich historical and cultural heritage. The first Serbian state was established in the 12th century in the region of Raška, in the area of today's southwestern Serbia, but the territory was also inhabited in prehistory and in ancient times. Located at the crossroads of important European roads, Serbia was the target of invaders for a long time. In numerous wars, rebellions and uprisings suffered the people, but also the tangible and intangible cultural heritage. Despite the turbulent past, cultural institutions in Serbia today preserve valuable historical treasures that document a history longer than the state itself.

The first Serbian museum called “Muzeum srbski” (“Serbian Museum”), today’s National Museum in Belgrade was founded in Belgrade 1844 by a decree of the head of the Ministry of Education. In Serbian museology, it was the beginning of systematic collection and

protection of cultural heritage (National Museum, 2021). In 1864, the first museum exhibition was organized. After the First World War The National Museum was located in a non-purpose building in st. Milos the Great from 1923-1934. years. At that time, a photograph of the permanent exhibition of the Roman and historical departments was also made (figure 1).



Figure 1. National Museum in Belgrade in Miloš Velikog Street (1923-1934), photograph of the permanent exhibition in the Museum, Roman and Historical Department

According to Ikbal Cogo, the Law on Culture was passed only after the Second World War, after numerous drafts and attempts in the 1920s and 1930s. After the Second World War, in the early 1960s, numerous experts became involved in the development and implementation of projects of permanent museum exhibitions in museums throughout Yugoslavia in a very studious, artistic and precise way. These museum exhibitions have been available to visitors for more than 50 years. The works on their redesign and technological innovation in the museums of Serbia began in the first decade of the 21st century, and continue to this day.

Martinović (2014) wrote about the first

new permanent exhibitions in her 2014 work called “New permanent exhibitions in the function of transforming museums in Serbia”, analyzing the phenomenon of permanent museum exhibitions in Serbia at the beginning of the 21st century from a theoretical and critical aspect. Selected examples of museums that created new exhibits in the period from 2007 to 2010 were analyzed: the National Museum in Valjevo, the National Museum in Kraljevo, the Homeland Museum in Knjaževac, the Matica Srpska Gallery in Novi Sad, the “Ras” Museum in Novi Pazar, the Museum of Pedagogy in Belgrade and the achieved ambiances are shown in Table 1. In the conclusion, the author of the paper states that the first new permanent exhibitions and thematic exhibitions in our museums are conceptually outdated and that, in designing them, care should be taken to update the presentation and

Table 1. The First new permanent exhibitions realized in 2007-2010 years



National Museum in Valjevo



Homeland Museum in Knjaževac



Matica Srpska Gallery in Novi Sad



"Ras" Museum in Novi Pazar



Museum of Pedagogy in Belgrade



National Museum in Kraljevo

differently conceived museum, which means the presentation of the object itself through a rounded whole, and not the presentation of objects without connection to a meaningful story.

Types of restrictions when designing a museum exhibition

The contemporary museum exhibition is the product of the work of a multidisciplinary team whose ultimate goal is to present, popularize and educate on a specific topic (Nikolic, 2018, pp 76). It must comply with the requirements of the topic being presented, the objects to be exhibited, the conservation conditions, it must be adapted to each visitor and it must carry a message and emotion. It is not easy to meet all the requirements when you have restrictions in terms of architectural performance, when you have to present many topics in a small space or when the budget for realization is minimal.

Restrictions in the creation of a museum exhibition can be divided into:

- limited size of space
- limited budget
- limited conditions of operation in a space as prescribed by the commission for preservation of construction heritage.

The abovementioned restrictions were present in the projects of museum exhibitions designed and realized in the period from 2015 to 2020 and will be analysed below.

Limited size of space

location: National Museum in Leskovac, Leskovac

year of realization: 2020

topic: The “Golden Age” of Leskovac

area: 275m²

price: 24,000,000 RSD (205.120EUR)

price per m²: 87,272 RSD. (745EUR)

exhibition author: Mira Ninošević, historian

exhibition design author: Olivera Nikolić, architect

The National Museum in Leskovac, headed by the author of the exhibition, Mira Ninošević, began in 2017 the work on the project of arranging a permanent museum exhibition on the first floor of the building. The theme of the exhibition was “The Golden Age of Leskovac” and included the development of the city’s economy and society from the end of the 19th century to World War II. On an area of 275m², consisting of 4 spatial units, it was necessary to show as many as 16 thematic units, namely: 19th century - the period before industrialization, the project “Gajtan” (cord), guild, industrialization, electrification, trade, banking, printing trade, politics, prominent citizens, architecture, fashion, education, culture, society, entertainment - taverns, cinemas. The emphasis was required on rich collections of objects. At the beginning of the design, it seemed that 350 items could not be arranged in such a small space.

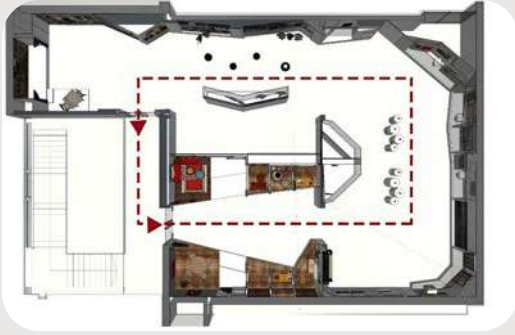


Fig.2 National Museum Leskovac, Floor plan of museum exhibition,
O. Nikolic

The first part contains the story of the life and work of the people of Leskovac in the 19th century, presented by reconstructions of the town and village room and 5 craft workshops. The second unit is intended for industrialization and social and political development of the city. The third unit is intended for culture and education, and the fourth for entertainment. At the same time, the fourth unit is a multi-functional space for presentations and workshops. The rich historical and photo documentation is mostly presented by multimedia devices and, to a lesser extent, on wall surfaces. The works on the exhibition included a complete adaptation of the space with new interior walls, a monolithic floor, all types of installation works, production of furniture, purchase of audio and video equipment. Lighting in the showcases has been made with the possibility of programming the light level and adjusting it to the type of object. The exhibition is partly tactile, with a tendency for further action in that area. Certain elements of the setting are hidden in drawers, under lids and the like, to

persuade the visitor to actively investigate. The interaction is also achieved through the application for virtual dressing in clothes from the 19th and 20th centuries. The result of the project is a multi-award-winning exhibition by professional organizations and the state.

Limited budget

location: The Homeland Museum of Knjaževac and The City Museum, House of Aca Stanojević, Knjaževac

year of realization: 2020.

topic: From the history of private life, a presentation of city life through the presentation of elements of visual culture

area: 100m²

price: 500,000 RSD (4.165 EUR)

price per m²: 5,000 RSD (42EUR)

exhibition author: Milena Milošević Micić, museum advisor, art historian

expert-consultants: Jelena Kurtić, curator, ethnologist and Dragoslav Živković, art editor, painter

exhibition design author: Olivera Nikolić, architect

In 2020, the Homeland Museum of Knjaževac realized the project of a permanent exhibition in the field of applied art, ethnology and art history on the lower floor of the Town Museum, the House of Aca Stanojević. The house, built in the first decade of the 20th century, is a gift from the Serbian diplomat, Aca Stanojević, to the town of Knjaževac and has been declared a cultural monument.



National Museum Leskovac, Museum exhibition, NML

The house consists of ground floor, first floor and attic. On the first floor, in 1987, an exhibition with original pieces of furniture and personal belongings of the owner was arranged. The ground floor, 100m², was used as an exhibition space - gallery or wedding hall. This space has not been innovated since then as far as the exhibition is concerned, but the building itself has been renovated in several phases under the supervision of the competent Institute for the Protection of Cultural Monuments from Niš. In order to arrange the ground floor, the concept of an open depot with five thematic units was designed. The space of the c has been turned into a photo gallery of old Knjaževac and the people of Knjaževac and the access corridor has become an educational-tactile corner, the main space shows the entire Balkan Room from the 19th century, the period from the beginning of the 20th century, the interwar and postwar period.

The main problem in the realization of the exhibition in addition to the limited layout of the rooms and their dimensions was primarily the extremely limited



Homeland Museum Knjazevac, Floor plan of museum exhibition, O. Nikolic



Homeland Museum Knjazevac, Museum exhibition, HMK

budget. With 42EUR/m² it was necessary to perform all the necessary construction works and provide the exhibition furniture and equipment. The funds were so limited that it was not possible to think about replacing the inadequate floor covering. The budget also influenced the choice to use only tailored plywood boards instead of pedestals for furniture display, creating a visual, and only to a little extent, physical barrier between communication and display. The existing wall lighting was used. Small items have been displayed in the display cases. The exhibition panels were created from Forex PVC foamboard and covered with printed PVC foil. In certain units, the walls are covered with wallpaper adapted to the period, in order to complete the ambient look. Draperies were used to separate thematic units.



Homeland Museum Knjazevac, Museum exhibition, HMK



Homeland Museum Knjazevac, Floor plan of museum exhibition, O. Nikolic

Limited conditions of operation in a space as prescribed by Commission for Preservation of Construction heritage

location: National Museum Niš, Memorial Complex “12th February” on Crveni Krst, Niš

year of realization: 2017-2019.

topic: Remembrance of the victims detained in the “Crveni krst” concentration camp during World War II

area: 347m²

price: 1,200,000 RSD (10,256 EUR)

price per m²: 3,458 RSD (29 EUR)

exhibition author: Ivana Gruden

Milentijević, historian

Nebojša Ozimić, historian

exhibition design author: Olivera Nikolić, architect

The “12th February” memorial complex in Niš was formed in 1967 on the site of a concentration camp formed by the Germans in 1941. Patriots were detained in the camp, regardless of their political affiliation, as well as a large number of

Jews and Roma people. Out of over 30,000 inmates in the camp, more than 10,000 were shot on Bubanj, a hill above Nis. A large number of the camp inmates were interned into camps in Germany, Austria, Poland and Norway. On February 12, 1942, a group of 147 inmates attacked the guards and tried to break out of the camp. 105 of them succeeded in their intentions, while 42 of them left their lives on the camp wires. After the war, extensive material was collected, which includes personal documents, letters, photographs and objects of the camp inmates. Based on that material, in 1967, a museum exhibition was formed in the main building of the camp. The exhibition lasted until 2012, when works began on the preparation of a new one and when the ground floor was redesigned. The



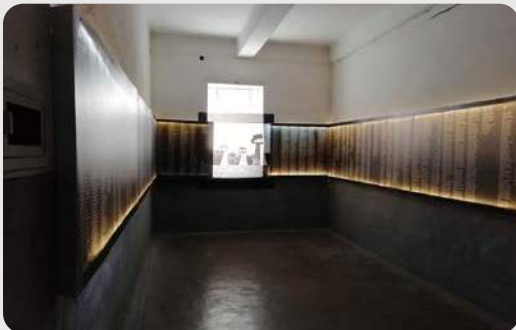
National Museum Niš, Memorial Complex “12th February”, Museum exhibition, NMN

design and realization of the exhibition on the first floor was done in stages, in two phases, from 2017 to 2019.

Since the “12th February” memorial complex is an immovable cultural property of extraordinary importance during any adaptation of the space, it is necessary to obtain the consent of the Institute for the Protection of Monuments of Serbia for each type of work. In order to preserve the authentic interior and exterior, the conditions are very strict and do not allow any intervention on the walls, floors, carpentry. During the adaptation, nothing was allowed to be anchored to the floor or walls, but only to the existing wooden panels, placed in the old setting. There was no possibility of making new electrical installations. The building has no ventilation and air conditioning.

On the first floor, 5 rooms are used for exhibition purposes. Each of them presents one thematic unit: Everyday life of the camp inmates, the “Crveni krst” Society, the Jewish Room, the Memorial Room, and the Internees.

In order to innovate the exhibition, despite all the limitations, and in order to adequately display the objects, wall showcases that were inserted into the openings formed in the wall panels were designed. They are made of plywood with glass cases. In the room called Everyday life of the camp inmates, a double-sided display case was formed, with a construction made of steel pipes and glass. Old horizontal showcases have been recycled. New plywood boxes and glass cases have been placed on steel stands, supported, with the addition of LED



National Museum Niš, Memorial Complex “12th February”, Museum exhibition, NMN

strip lights. On the wooden wall panels, by forming the overhang, Forex PVC foamboard coverings were made, covered with printed PVC foil. An LED strip has been mounted under the overhang as a source of accent lighting. The existing wall cabinets have also been recycled. In the Internees Room two new vertical glass showcases for displaying the internees' uniforms. Glass wings were added to secure the items in them. Ambient light is achieved by the existing hanging lamps, which look like authentic lamps from the 50s. In the memorial room, the names of the prisoners were printed on transparent foil and glued to opal Plexiglas. The budget for this exhibition was more than meager. There is no multimedia content in the exhibition, because due to limited funds, it was not possible to



National Museum Niš, Memorial Complex "12th February",
Museum exhibition, NMN

purchase devices and create applications. There are places in this space for their subsequent installation and power supply. The biographies of the detainees still cannot be accessed in the present exhibition.

Final considerations

Spaces intended for permanent exhibitions in Serbian museums are very rarely purpose-built, new buildings. These are mostly spaces created by conversion. Museum exhibits are often formed as a whole within protected cultural assets. The price range per square meter, from the attached examples, is in the range of 30-800 EUR. There are exceptions, such as the building of the National Museum in Belgrade. The museum exhibition unites all museum collections and presents the most valuable objects of Serbian culture. According to information from the press, the exhibition space of 5,000m² (National museum, 2021) has been equipped for 1,619,118,000 RSD (13,838,615 EUR), (Blic.rs, 2018), which is 2,767 EUR per m². The permanent exhibition of the National Museum in Vranje, the realization of which will be completed soon, had a budget of 24,000,000 RSD (205,128 EUR), but 4/5 of this amount was spent on conservation and restoration works in the building and installation and lighting. For the area of 400m² the price was calculated to be 512EUR/m². In Britain, according to the calculations of the Building.co.uk portal, the average

price of equipping an exhibition setting with less equipment is 1272.50 pounds per m², and if construction works are added, then the price is 2545 pounds. For higher-end exhibition settings, prices range from £ 4,700 to £ 9,400 per m², depending on whether construction work is included or not.

The average price of a museum exhibition in America is \$ 400 per square foot, which would be, translated to m², \$ 4400 per m². The optimal price of a permanent exhibition in Serbia, designed to meet most museological criteria and standards, could be around 1200 EUR / m².

The average price per square meter of museum exhibition in Europe and America differs significantly due to the approach in the design of movement controls, glass breakage, air quality control in showcases, automated lighting, sound and the like. In our practice, most of the above is ignored or changed by some simpler methods such as the use of barriers, adjusting the light intensity on the switch and the like.

Frequent budget restrictions during the planning and implementation of an exhibition in Serbia are solved by using cheaper materials and lighting. Panel materials - plywood and MDF - are most often used in the production of furniture. Showcase opening and securing systems are simple. The use of Forex PVC foamboard is widespread, but also Card-foamboard in the production of exhibition panels. LED strips or LED

strips in diffuser profiles are used for lighting in showcases. Recycling is also in use, which means redesigning the already used furniture and adapting it to new conditions.

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The Museum Experience: Architecture and Technology at the MIS-Copacabana

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Abstract

Contemporary global culture operates through the logic of identifying certain global symbols, emphasizing the diffusion of exceptional architectures that come to take center stage in the disputes for strategic investments aimed at consolidating cultural tourism. In turn, the audiovisual museography based on the creation of highly persuasive, interactive and space-connected experiences has become an important strategy for creating new museum institutions, which seek to align themselves with the standards of international museography. This article intends to reflect on the possibilities opened by the integration between architecture and technological media for the creation of contemporary museum narratives. In Brazil, the main activities in this area were headed by the Roberto Marinho Foundation (FRM). The methodology adopted by FRM seeks the integral connection between architecture, museography and content. The new Museum of Image and Sound (MIS) in Rio de Janeiro, developed by

Keywords

audiovisual museography, contemporary architecture, Diller Scofidio + Renfro, T+T, Roberto Marinho Foundation.

the US architects DS+R, together with the Brazilian designers T + T, can be considered the most radical experience of integration between architecture and museography implemented by the FRM in the country. However, the difficulties faced in completing the work (unfinished since 2010) signals the fragility of this operational model, raising questions about its own economic and environmental sustainability.

Introduction

Contemporary global culture operates through the logic of identifying certain global symbols, emphasizing the diffusion of exceptional architectures that come to take center stage in the disputes for strategic investments aimed at consolidating cultural tourism. The dispute for strategic investments, based on the paradigmatic Barcelona's model, influenced the urban and architectural thinking of the capital of Rio de Janeiro. At the beginning of the 21st century, the alignment between the municipal,

state and federal government spheres benefited the context of economic strength driven by the exploration of the pre-salt layer. The city was preparing to host various international events, such as: Pan American Games (2007); United Nations Conference on Sustainable Development (Rio + 20, 2012); the World Youth Day, Confederations Cup and Rock in Rio (2013) and celebrations of the city's 450 years (2015). In a context of great optimism, a considerable number of large-scale architectural projects were being planned or built in the city: such as Guggenheim Rio (Jean Nouvel, not executed); City of Arts (Christian de Portzamparc, 2013); Museum of Art of Rio (Bernardes + Jacobsen Architecture, 2013) and Museum of Tomorrow (Santiago Calatrava, 2015).

One of the main agents responsible for implementing new contemporary museums in Brazil is the Roberto Marinho Foundation, a private non-profit organization linked to Grupo Globo, the largest Brazilian media conglomerate (Finguerut & Sukman, 2008). From the 2000s, the foundation became involved in the construction of the Museum of the Portuguese Language (2006), Museum of Football (2008), Museum of Art of Rio (2013), Paço do Frevo (2014), Museum of Tomorrow (2015) and Museum of Image and Sound (not concluded). The methodology so adopted seeks the integral connection between architecture, museography and content during the

design process, emphasizing the use of communication technologies. According to the architect and manager of FRM projects on Heritage and Culture, Larissa Graça, “we do not work with the idea of a building occupied by an exhibition, but we think of everything connected to the concept” (Graça, 2019).

The conception of the new building MIS was entrusted by the then governor of Rio de Janeiro, Sérgio Cabral Filho, to the FRM, after he visited the inauguration of the Football Museum (2008).

This initiative stems from a personal relationship nurtured by the politician in relation to the old MIS, inaugurated in 1965 at Praça XV de Novembro (Moreira, 2018; Basto, 2021). The museum became a place of resistance against the Brazilian military dictatorship, having suffered from successive cuts in funds and budget restrictions. The precariousness of the museum facilities culminated with a fire in 1981. After that, the old building was threatened with demolition due to the subway line construction, which led to its listing by the State Institute of Cultural Heritage in 1989. So, the museum underwent restoration and the institution moved to a new location in Lapa. Only during Cabral's administration, a large investment was made in the digitalization of the MIS collection (2006-2014). In 2014, the requalification of Lapa's building was coordinated by Metrópole Arquitetos, who won a public competition organized

by IAB-RJ. Nevertheless, the largest intervention would be the new building announced in 2008, located on the famous Copacabana's beach. This article intends to reflect on the possibilities opened by the integration between architecture and technological media for the creation of contemporary museum narratives; questioning the socio-economic viability of this model based on the difficulties in completing the work, which lasts over ten years. The main documentary sources consulted were the architectural and museographic projects, complemented by research in periodicals and magazines specialized in architecture or media in general, in addition to semi-structured interviews with professionals involved in the project.

A cultural icon in Copacabana: the international competition for the new MIS

The choice of Copacabana beach to host the new MIS came from Cabral Filho (Sant'Ana, 2018). The new museum would be an anchor project for the cultural and tourist reactivation of the region, which faced problems related to urban violence, sex tourism and drug trafficking since the 1970s and 1980s. The Help Nightclub, one of the only places able to receive the new construction, would be expropriated and demolished. Building the new MIS would be the first experience of creating a contemporary architecture undertaken

by the FRM, opening new possibilities for applying the integrative design (Migliore, 2020). To choose the architectural project, a closed international competition was organized by FRM and State Secretary of Culture of Rio de Janeiro, in 2009. The international architects Daniel Libeskind and Shigeru Ban participated, in addition to the Brazilian offices Bernardes + Jacobsen Arquitetura, Brasil Arquitetura, Tacoa Arquitetos and Isay Weinfeld. The jury was composed of professionals from different fields of activity. The new iconic architecture should dialogue with the idea of "transforming the MIS into a Total Museum" (Viana 2014, p. 41). This idea recovers the thought of the Spanish museologist and physicist Jorge Wagensberg (2006), who defends the need for integration between architecture and museography. From the first presentations, two finalists were chosen: Brasil Arquitetura and Tacoa Arquitetos. However, "the two finalist projects presented inadequacies in relation to the guidelines established for the competition" (Índio da Costa, 2021). Before announcing the competition's winner, the process was interrupted and the organizers decided for a second round. To the six teams previously selected, the New York office DS+R was added. The newcomers ended up being chosen unanimously by the jury.

¹ The following professionals composed the jury: Lucia Basto, Hugo Barreto, Bel Lobo, Jaime Lerner, Paulo Herkenhoff, Rosa Maria Araújo, Magaly Cabral, Jordi Prado, Adriana Rattes, Sérgio Dias and Jaime Catchcart.

DS+R and T+T, an integrated design

The design posture adopted by the office DS+R was perfectly aligned (on purpose or not) to the architectural experiences sought by the FRM between architecture and technological museography. The New York office, formed by architects Elizabeth Diller, Ricardo Scofidio, Benjamin Gilmartin and Charles Renfro became known for the production of a heterogeneous work which stems from the confluence of different languages of artistic production and communication technologies. As Renfro explains,

“experiences” (Charles Renfro, in AD Interviews, 2013). The notion of interface is emphasized, allowing the simultaneous perception of different events through media mediation. The integration between architecture and media, an objective pursued by the FRM, assumes a central character in the work of DS+R. The EyeBeam Museum of Art and Technology (not executed) perhaps is the closest reference to the MIS’ design. Its spatiality originates from a flexible and sliding tape that rises from the street and unfolds in space (Scheeren, 2016). In the new MIS, a similar principle was adopted, drawn from the scan of Copacabana views. The wavy ribbon that winds through the facade



Fig. 1. Proposal by Diller Scofidio + Renfro for MIS Copacabana. Available in: <https://bit.ly/2ZRbOxe>. Accessed in: Sep. 30, 2021.

makes it possible to democratize the view of Copacabana beach, accessible without paying for entering. (Fig. 1).

The museographic design of the new MIS was entrusted to the São Paulo office T+T, formed by the filmmaker Daniela Thomas and architect Felipe Tassara, who had conceived some mega-exhibitions held at the Oca's building (Ibirapuera's Park) such as "The Warriors of Xian" (2003), "Picasso na Oca" (2004) and "Fashion Passion" (2004); in addition to the Football Museum. According to Larissa Graça, "MIS was the project in which architecture, museography and content achieved the greatest integration" (Graça, 2019). As Diller explains, "we have been working with Daniela Thomas and her team to really detail everything, so that the entire building is a concept, from the structure to the exposed object" (Elizabeth Diller, cf. Canal do Youtube, 2015). As Brazilian professionals testimonies, "for the first time, architecture and exhibitions would be built together" (Thomas and Tassara, 2021). According to them, "there was a desire for everything to be part of the building" (Thomas and Tassara, 2021). Tassara also explains that "this work had a particular characteristic, which was to work very closely with the architects. Within their conception, all objects, the entire exhibition, everything that is inside the museum should be part of the museum." (Felipe Tassara, in: Canal do Youtube, 2015). They also explained that "we participated in every video,

every comma, every micro moment of everything that happened inside. And this was also experienced with the architects." (Thomas and Tassara, 2021).

The spatial experience on the culture of Rio de Janeiro. Design and technology

The narrative path seeks to create multiple experiences, mediated by communication technologies, focused on the presentation of Rio de Janeiro's culture. The museographic experiences were displayed inside architectural levels, articulated by a central void with a changing format, allowing simultaneous views of the sea. The museum was intended to be porous and open, integrating the entrance hall (called "Baixo Atlântica") to the sidewalk designed by Burle Marx. The entrance should become a meeting place, inspired by the functioning of the old newsstands (Strecker, 2016). The first narrative sequence aims to interpret the popular imagination related to the 'carioca spirit', divided into three environments: "Humor Carioca", "Rio 40°" and "Carnaval". The first experiences brought interactive totems and a game inspired by subway lines. Inside a closed container, the last experience created a multimedial spectacle formed by audiovisual projections in 360°. The second narrative sequence is dedicated to Brazilian music, comprising

² Elizabeth Diller and Ricardo Scofidio inaugurated the office in 1981. Charles Renfro joined the group in 1997, becoming a partner in 2004. Benjamin Gilmartin came up in 2004 and became a partner in 2015.

the modules “Banda, Samba-Choro” (Brazilian musical genre) and “Carinhoso” (name of a Brazilian famous song). Firstly, an artistic intervention formed by parts of exploded musical instruments was hung in the central void. It was an idea from Diller herself, so that “instead of being a guarded showcase, the showcase is the museum itself” (Thomas and Tassara, 2021). Some individual interactive experiences preceded a small auditorium, dedicated to the Samba-choro, where there was a multisensory experience based on the Disney film “Fantasy” (Thomas and Tassara, 2021). For “Carinhoso”, six booths where visitors will be able to hear a good quality sound were created. After multiple experiences, the connection with the landscape allows a moment of relaxation and decompression. On the next level, there would be an expographic sequence designed to honor the figure of Carmen Miranda : “Novela”, “Carmen Cantora” (Carmen Singer) and “Carmen in Hollywood”. First, the visitor finds an interactive game related to the history of telenovela in Brazil. Then, in Carmen Cantora, a sliding timeline about Carmen’s biography was placed. There would be five exhibition stands with copies of colorful costumes traditionally worn by Carmen, displayed on slowly rotating mannequins, complemented by showcases within her original props (shoes, turbans and hairstyles). At the back, the visitor can listen to a sound installation about the last years of Carmen’s life. At the last level,

the curatorial focus was shifted to the city of Rio de Janeiro. At “The Landscape Cinema”, the visitor would watch a film coordinated by Carlos Nader. “É Sal, É Sol, É Sul” would present the transformation of Rio’s landscape. On the walls, devices would show digitized photographs from Augusto Malta's collection. Trying to create a fully integrated experience-museum, all environments were likely to receive expographic treatment. Even underground, there was a wall of lamps with famous people from Rio’s culture. In addition, the auditorium “Cine Theater” was seen from the bar-nightclub, intending to enable a body experience recovering the imaginative universe of Rio's nightlife and funk dance. The apex of the integration between architecture, museography and content, however, would be outdoor cinema installed on the museum's roof slab, with the wonderful view of the Copacabana landscape. It can be considered one of the “moments of greatest impact between museography and architecture. [...] That's when Felipe suggested: what if we turn the slab on the top floor into a stand?” (Thomas and Tassara, 2021). DS+R have incorporated this idea, connected to their own formal repertoire (presented for example at the Lincoln Center). There, the city of Rio de Janeiro emerges as part of the museum's collection, serving as a background for audiovisual projections that would ensure dynamism to the museum's programming.

Un unfinished work: the crisis of a model?

This article sought to present the new MIS as an exemplary case of integration between the creation of and iconic architecture connected to the technological museographic to compose a narrative about Rio's culture. The integrative design perspective contributed to the development of a joint experience, involving architects, designers and curators. This museum seeks to align Brazil to high international architectural and museographic standards. Many problems, however, delayed the progress of the works: difficulties in calculating the structure (Sant'Ana, 2018), and also disagreements between the Public Works Company of the State of Rio de Janeiro (EMOP) and the company Rio Verde Engenharia, which led to the abandonment of the work in 2016. The need to hire a new company through a bidding process did not happen because of the political-economic crisis that broke out in Rio de Janeiro, which even declared a state of public calamity in the same year. The consequences of "Operação Lava Jato" led to Cabral's resignation in 2014 and to his arrest in 2017 (Brito & Boeckel, 2016). The financing contract signed

with the Inter-American Development Bank was not authorized by the External Financing Commission of the Ministry of Planning due to state accounts. At that time, Rio de Janeiro had already adhered to the Tax Recovery Regime proposed by the federal government (Rodrigues, 2018). Despite this imbroglio, the government of the state of Rio de Janeiro recently announced the resumption of works (Rodrigues, 2021). Furthermore, the removal of the FRM from the area of museological activity (Graça, 2019) and political disputes around the Bidding Law/ Rouanet (Moura, 2021) put into question the conditions of permanence and sustainability of this model.

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³ The new MIS would also receive the collections of the Carmen Miranda Museum, located in Parque do Flamengo. Carmen's figure would also be honored on the building's rear facade.

⁴ Investigation of corruption crimes and others undertaken by the Federal Police between 2014 and 2021.

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Taiwan's Museums under the pandemic: Becoming closer through isolation

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Abstract

Since the beginning of 2020, museums around the world have been hit hard by the Covid-19, and the museum sector in Taiwan, for example the National Palace Museum, has seen a 95% drop in attendance compared to the same period in the past. Digital development seems to have become an important way for museums to maintain their presence. We find that there are some differences between the strengths and weaknesses of this trend, which means museums that have previously focused on connecting with the land/tribal people will have a richer niche in this trend. Affected by the epidemic, people have been forced to isolate themselves in their homes and restricted areas from going outside, and the museums have taken various plans in response to the emergency closures. With no access to the galleries, museums began to use existing resources to engage with audiences from distance continuously. Most museums promote their original exhibitions and events to the public through existing official websites, social media, and even

Keywords

pandemic, Covid 19, Online display, online lecture.

open platforms, using static displays, videos, virtual displays, radio programs, and live webcasts of lectures. As the epidemic continues and the closure of the museums lengthens, the museums are podcasting more digital free programs so that everyone can easily visit the museums at home and abroad. Because of the “isolation”, the collections, exhibitions, in-depth explanations, and interactive programs provide a great opportunity to get “closer” to the museums: people can walk through the high-resolution images, interact directly with the museums on social media, and ask questions and clicks the likes to the curators in live programs. In addition, because of the closed borders and regional isolation, museums focus on local development and community links. Will visitors return to the museums after the epidemic through all the digitalization of online activities? From our museum perspective, we believe that museums still can attract audiences to return by excellent exhibitions and the sense of space atmosphere.

I.

As we have realized, Covid 19 is an issue that all museums and galleries simply cannot ignore nowadays. This issue requires various alternatives that differ from what we used to do, from the resources we employ, the stories we tell, and whom we work with. I probably don't need to further elaborate on how challenging the last 18 months has been for us all, and the impacts that the pandemic entails. However, I see this historical moment as an epochal opportunity to reflect on the role and mission of museum, and to respond to this ever-changing world. Particularly, the pandemic greatly challenges us as the decision-making persons on the managing strategy. It pushes us to rethink the routine of our work, including the operation and audience engagement. Cyber space and digital methods come to the fore in museums to an extent that exceeds the way it used to be, as we draw our audience much closer virtually and digitally. Even though the effects of these changes are still unclear, either on the audience end or museum end, one thing could be certain is that the idea of museums and galleries as static, unchangeable sites is untenable. I would like to invite you all to think about this question: since social isolation becomes the major challenge of the pandemic, how would it be possible to "get closer through isolation" under the circumstances? In my following

discussion, I will share with you all about Taiwan's experience in responding to this question and particularly talk about how our museum employ the collaborative experience with local indigenous communities to tackle the challenges of pandemic. My following discussion includes three parts, the first part is about the increasing attachment between audience and museums through the means of digital platform and free online resources offered by museums, and the second part will cover the strategies and tactics of the National Palace Museum in Taiwan. For the last part, I would like to share the experience from our museum, National Museum of Prehistory, and to focus on how our museum benefits from the long-term, community-based collaboration with local indigenous people during the challenges of the pandemic.

II.

Since the outbreak of the pandemic was happened in a sudden, there were not much space and time for museums to come up with adaptive methods. The first challenge for them was to employ the existing resources for the purpose of virtual operation. The majority of the operation work is the in-person, physical displays of cultural relicts and exhibitions. To shift such physical operation to online scenario, the museums adopt several digital methods including video filming, livestreaming, and broadcasting via radio programs. In such case, the accessibility

of the original physical collection of cultural relicts is increasingly open to the public through the overarching cyber-connection. Furthermore, museums gradually learn how to make full use of social media and platform to interact with the public. Significantly, online lectures gain the most popularity among people. Audience now is able to casually sit on the sofa at their home while receiving abundant information and interacting with the speakers without much efforts. Various online meeting platforms such as Google Meet, Zoom, Microsoft Teams also enable the audience to have opportunity of (virtual) face-to-face interaction. In addition, broadcasting programs now regain its vitality with the emerging popularity of podcast. Building on the existing knowledge of and experience in digital methods, some museums advance their digital engagement by adopting newly invented displaying interfaces, such as VR showrooms, virtual art galleries, or clubhouse, a recent product which grows considerable popularity. Subsequent discussions regarding the resources and the innovation of digital methods also occur to museums. Some people argue that, as the increasing accessibility of online platforms enable more and more audience to join museums' work, the payment should be correspondingly requested. That is, the hidden cost behind the free, virtual resources is another important issue to think about for museums under the shadow of the pandemic.

III.

"Open Museum" is also another noteworthy attempt in Taiwan as a response to critical situation for museum. "Open Museum" is an online collaborative platform which is hosted by Academia Sinica. It aims to provide a public, experimenting space for virtual exhibitions, and it also serves as a base of technical support for museums. The core value of such work is to break down the material and epistemological boundaries that museums used to have, and to facilitate the potential collaboration of virtual exhibition and exchanging ideas between different museums. Moreover, I would like to briefly talk about how the National Palace Museum and the National Museum of Prehistory cope with the challenge of pandemic respectively. Administratively, the National Palace Museum is the ministry-level body under the central government, it is also the largest museum in Taiwan. As one of the most representative museums, the National Palace Museum has the great capacity of accommodating the challenges of pandemic by enacting all these aforementioned digital methods comprehensively. They have launched their Facebook since Dec. 2011, Youtube Since Nov. 2012, Instagram Since Dec. 2019, podcast show in 2020 and has been running the virtual sessions on Clubhouse now. They also collaborate with the popular social network software "Line" to

produce their own TV series, creatively demonstrating the image of cultural relics. This online TV series will be airing on Line's online streaming service "Line TV."

IV.

Last but not least, the work of our museum, the National Museum of Prehistory, stands out in the experience of tackling the challenges of pandemic. This year (2021), we started running an online, thematic exhibition on Instagram on a monthly basis. After first couple of months' attempts, we received considerable attentions. We have been holding virtual forums and panels on Facebook as the in-person activities were not permitted during the outbreak of the pandemic. Virtual sessions enable speakers and audience to join remotely and world-widely, and we could outreach to more people than ever had. We have had 19% non-local audiences from New Taipei area, 18.6% from Taipei area, 10.9% from Taichung area, 9.8% from Kaohsiung area, and 9.1% from Tainan area in one lecture on-line. Non of those you can imagine before.

In addition, we had conducted online galleries and collaborated with local schools for remote courses, which aims to offer more opportunities for remote indigenous communities to engage the work of the museum. For instance, our museum has been running the Environmental Education Program for more than six years which renders our museum the most important site of

environmental education training in Eastern Taiwan. During the outbreak of the pandemic, we immediately took on adjustment and shift the program to online. Due to matching students' knowledge needs efficiently, we could increase 26.6~33.5% feedback from student community and young people between 35~44 years old in 3 months. Besides, our museum incredibly benefits from the long-term partnership and collaborative experience with local indigenous communities in the past decades, which sets a crucial tone for our museum as a community-based, indigenous-centered institution. Our major collaboration throughout these years is the partnership collaborating program "large museum leading small museum plan" (大館帶小館), where our museum would offer collections and resources for the local exhibition halls (地方文物館) to launch their exhibitions. Thanks to the reliable partnership, we are able to continue running small scale activities during pandemic.

Conclusion

I would like to end the discussion by raising several questions. What is at stake and what is gained when the digital methods take over the regular work in museums? Does it take over everything? Will museum be able to go back what it used to be in the post-pandemic world? The pandemic urges museums to reckon their resources and their way to engage

the public. The digital alternatives have enabled museums to approach audience in an unprecedented way, but some people also remind us that the population of our audience won't be unlimitedly growing even though the internet and virtual network seem to be far-reaching. To conclude, we are positive to embrace the digital alternatives become trendy in the museum, and we are confident that museum will still holds its significance and importance either in a physical or virtual manner. We envision that the uniqueness and professionalism of the museum will be the key to navigate itself within the future challenges.

The architecture of the Prado Museum on display: exhibition review and future perspectives

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Abstract

The new permanent exhibition 'History of the Prado Museum and its buildings' was inaugurated March 2021 to provide a dedicated space to the complex history of its buildings that has decisively shaped its institutional trajectory. With a thoughtful conception, curated by Víctor Cagiao, the presentation seeks to examine the different stages in the museum construction together with the most relevant people and events involved. The visitor discovers in a round itinerary along three rooms a carefully designed museography, organised in nine chronological units. A large variety of objects are displayed: graphic materials, objects, drawings, and paintings, as well as paintings, sculptures, and other precious works. A series of models of the different phases of the museum are presented in the centre of the rooms. This project confirms the vocation of communicating the architecture of the museum as part of the identity of the institution. Therefore, this contribution reviews the museological and design concept of this recent exhibition of the Prado Museum and examines its

Keywords

Exhibition design - museum architecture - museum techniques - permanent exhibition - Prado Museum.

role in the valorisation of the architectural heritage legacy of the museum. Finally, further challenges are considered, such as how the Prado Museum buildings can develop connections with its urban context.

Addressing a bicentennial history

The more than 200-year history of the Prado Museum, Spain's major museum institution, has been studied largely from different perspectives. Investigations focused on the knowledge of the collection and its formation have traditionally been the most extensive. From the late 1960s onwards, abundant research has been developed, addressing the history of the institution (Gaya Nuño, 1969; Portús, 1994) and that of its building (Moleón Gavilanes, 2011). More recently, the Prado has edited a compilation of its management practices in which other museums can find a methodological referent (Chinchilla, 2021). The research function of museums acquires its reason to be when the knowledge is applied to the museological programme of the

museum and, therefore, communicated to the visitors. The celebration in 2019 of the bicentenary of the inauguration of the Prado Museum stimulated a great number of initiatives that reinforced the link of the museum with the public, as well as provided an opportunity to analyse the past and present of the institution and assess its future goals. Multiple activities and programmes were held (Museo del Prado, 2019), among which there should be highlighted different documentation programmes, such as *Voces del Prado*, devoted to oral history, with interviews to workers and collaborators, as well as the audiovisual register of the museum in films and TV productions. It also should be noted the initiative *El Prado efímero*, that shows quotidian materials such as affiches and printings of exhibitions that meant to be ephemeral. In this frame, a deep reflection on the architecture of

the Prado was also carried out, which resulted in the organisation of the scientific conference *El edificio Villanueva: Historia revisada de una arquitectura de museo* (The Villanueva Building: A Review of a museum architecture) in October 2019. In addition, the creation of a new permanent exhibition unit was promoted that presented the history and trajectory of the architecture of the institution, from its original construction to our day. Although it was not possible to complete it for the commemorative year, the exhibition project was initiated, in consonance with the other documentary research that had been performed. The exhibition was decided to be curated by Víctor Cagiao, Director of Buildings and the Natural Environment at Patrimonio Nacional and formerly General Coordinator of Programming at the Prado. The documentalist Teresa Prieto assisted with the research tasks.



Northern façade of the Prado Museum, called the Goya entrance. Commemorative scaffolding during the bicentenary events, November 2019.
Source: Clara Mosquera Pérez.

The necessity to showcase the Prado Museum as a hybridisation of architectures

From a general assumption, the architecture of the museum can be considered as an essential component of its identity since represents the physical space in which visitors meet the collections. In some cases, there is a strong link between the museum building history and that of the works and the institution. The case of the architecture of the Prado Museum directly addresses the history of the city of Madrid and Spain. It represents a paramount referent in the evolution of European museums as contemporary institutions and from a museologic perspective.

It is widely known that the building of the Prado was never intended to be a museum. Commissioned by the King Charles III, the architect Juan de Villanueva would have conceived a building to house the Academy of Sciences and the Natural History Cabinet (1785). In the final stage of its construction, the French invasion (1808-1814) interrupted in the political and urban scenario. The plans for the unfinished and damaged Villanueva building would derive in the decision to arrange it as the Royal Paintings Museum, inaugurated in 1819. This institution would be the prefiguration of what is today the Prado Museum. From then, the architecture of the Prado has

been made up of numerous projects and transformations developed by over ten architects along more than two centuries of history. Therefore, its buildings have been shaped in time, resulting a complex hybridisation of architectures. The different interventions, much or lesser recognisable, are a consequence of the significant transformations that the institution has known. Some of these changes were motivated by the political context, and others have been determined by the own trajectory of the museum and the evolution of exhibition and conservation practices. The most recent transformations were initiated in 1997-2001 with the project of Rafael Moneo and the creation of the 'Prado campus', a conception of the museum as an ensemble of buildings that has not ceased to be enlarged. In 2016, the architectural competition for the rehabilitation of the 'Salon de Reinos' building was won by the team of Norman Foster & Carlos Rubio and will incorporate a new exhibition space to the museum. The acknowledgment of this complex and rich history proves the necessity of presenting the architectural features of the museum in a dedicated permanent exhibition so that all visitors can appreciate it.

Communicating the architecture of the Prado Museum

The museum communication, in a larger sense, is made up of all the elements of the museum, and the building of

the museum is part of the message that is transmitted. Furthermore, the architecture of the museum itself is particularly charged with symbolism and representativeness. Museums have historically exemplified ideological values such as national ideals, monumentality, or power. Furthermore, museum architecture has gained a special interest from the general public from the late 1970s to our days. This attractiveness was particularly achieved by new museums with eloquent buildings created by renowned architects, but also by singular rehabilitations and expansions. In the case of the Prado Museum, its buildings represent significant heritage values together with remarkable contemporary insertions. This reaffirmation of the significance of the museum building in the conformation of its institutional identity culminates with its inclusion in the museological discourse.

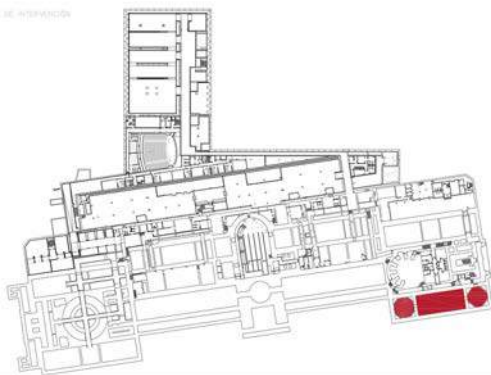
Museum visitors can profit during their visit from several materials, mostly related to the spatial arrangement of the collection in the museum. In the form of signage elements, leaflets, triptychs, webapps, and other complementary publications, the public can find schematic floor plans and points of interest that usually respond to orientation purposes rather than a source of knowledge about the museum building. Historical information relating the museum building is frequently found in a dedicated section on the institutional website of most

museums, and in lesser cases, references to its architectural concept and process of construction are made (Herrero Delavenay & Cáceres Madera, 2013; Mosquera Pérez & Mosquera Adell, 2021). In the Spanish context, it is necessary to point out the initiative of creating the website *Arquitectura de los Museos* (Architecture of Spanish State Museums) to provide detailed information on the architecture of the 73 museum establishments placed under the responsibility of the Ministry of Culture of Spain (Ministerio de Cultura, 2018). Particularly after the Moneo project, the Prado Museum has been engaged with detailed information on its architecture on the institutional website (Museo del Prado, n.d.). However, including an architectural appreciation of the museum in the visitor itinerary has not been an extended practice in the museum panorama. The Louvre Museum has been a pioneer in this aspect, since 2016, it presents the architectural history of the museum building in the Pavillon de l'Horloge, which is precisely connected to the archaeological elements of the medieval castles that originated the palace later (Musée du Louvre, 2021). Thus, the Prado Museum joined this significant precedent by launching this new exhibition project, inaugurated in March 2021.

The exhibition project 'History of the Prado Museum and its buildings'

The exhibition project surged upon the initiative of the Director of the museum, Miguel Falomir, with the aim of developing a display that dealt in depth with the interrelation of the history of the museum and that of its building. The first steps of the project of the curator, Víctor Cagaño, were the detection of the most relevant stages in the museum trajectory that could be explained by showcased objects of the collection. The already mentioned documentary initiatives carried out for the bicentenary constituted an important basis. The selection of the works to be presented should be significant and considered as an ensemble that gave meaning to the whole display. The choice of space for the new permanent exhibition was a determinant of the project. It was finally decided to place it in the basement of the Murillo corps, which is part of the original Villanueva building. Their

availability, adequation in size, and spatial arrangement, together with its position that enables the possibility to have an independent access, were the key points for the decision. The curator completed the redaction of a detailed plan, that comprised an architectural adequation of the space, the historical and museological background that had oriented the conceptualisation of the exhibit, and the museographic and technical prescriptions and orientations for its construction. The final design and execution went out to public tender and was assigned to the architect Desirée González and the production to the company Ypunto Ending SL (2020). The exhibition setup was accomplished in three phases: after the architectural arrangement of the exhibition rooms, the museography was fabricated and installed, and finally the art works were received. The exhibition space totals over 300 m², composed of three rooms of octagonal, rectangular, and circular floor plan, respectively, without windows to the exterior and with access only through the first of them. As a result, the itinerary proposes a round itinerary. The exhibition presents a wide range of works, including paintings, sculptures, engravings, drawings, photographs, models, plans, books, newspapers, posters, brochures, and other objects. As reflected in the project, the museography presented multiple technical requirements, regarding conservation and security issues, as well as lighting and accessibility conditions



Location in the Prado Museum of the project for the new exhibition rooms. Source: Plataforma de Contratación del Sector Público, 2019

(Plataforma de Contratación del Sector Público, 2019). The architect decided to respect the chronological units that had been defined by the curator that correspond to the most relevant phases of the trajectory of the Prado, combining the focus on the institutional and architectural approach, significantly shaped by the political context. Therefore, these units do not represent equivalent periods in time but significant events that have influenced and transformed the museum and are listed as follows:

Unit 0: 1785-1818, Before the Museum

Unit 1: 1819-1833, The Royal Museum of

Paintings

Unit 2: 1834-1872, Royal Museum and National Museum

Unit 3: 1873-1910, The affirmation of the Great Museum

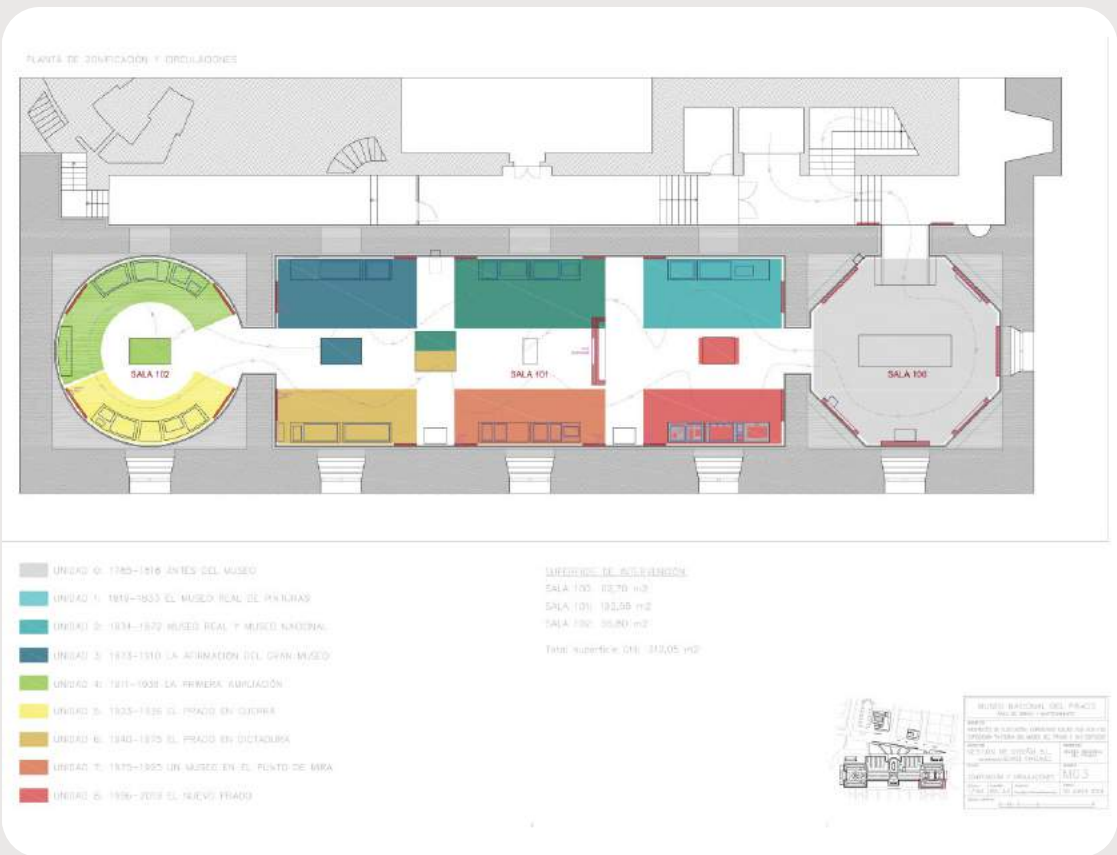
Unit 4: 1911-1936, The first extension

Unit 5: 1936-1939, The Prado at War

Unit 6: 1940-1975, The Prado in the Dictatorship

Unit 7: 1975-1995, A Museum in the spotlight

Unit 8: 1996-2019, The new Prado” (Museo del Prado, 2021).





Elevation of the exhibition, showing the museographic installation in the octagonal room. Source: Plataforma de Contratación del Sector Público, 2019.

The technical solution that was adopted to create a homogeneous display was the design and construction of ‘table-vitrines’ with drawers for the display of most works (graphic materials, objects, and drawings). Paintings, sculptures, and other precious works have a special disposition, been hung or displayed in pedestals. Finally, a series of models of the different stages of the museum construction were produced by the company Métrica Mínima (2020). They are presented in the centre of the rooms, serving to guide the fluid itinerary for the visitor. The visitor discovers a carefully designed museography, which responds to a chronological presentation, conformed by two ‘table-vitrines’ per unit, which are completed with other audiovisual devices. The graphic design of the exhibit includes texts in Spanish and English. The nine historical phases

are perfectly recognisable by the visitor, facilitating the comprehension of the presentation.

Conclusions and future work

The new permanent exhibition project ‘History of the Prado Museum and its buildings’ of the Prado Museum confirms the vocation of communicating the architecture of the museum as part of the identity of the institution. In this sense, the aim should be outlined to present the museum as an evolutive and growing institution, whose changes are accompanied by a significant architectural transformation. This presentation supposes an important effort in the valorisation of the architectural heritage legacy of the Prado, but also to the general panorama of museum architecture in which it is inscribed. The acknowledgment of the evolution and features of the museum buildings across

over two centuries provides a pertinent contextualisation to the collection of the museum. Additionally, the exhibition highlights the contribution of people who have shaped the institution, including anonymous characters that are normally unnoticed by the public. Consequently, the museum offers a richer experience to the visitor that would perceive the complexity of the work of the museum as well as reinforces the heritage legacy of the institution. Finally, this exhibition and the future transformations that will continue to transform the Prado Museum open up a further reflection regarding its urban dimension. The museum concept has become wider and surpasses the indoor perspective, being encouraged to enhance its role toward its urban context and territory. The recent UNESCO declaration of the 'Landscape of Light' as a World Heritage Site (2021), in which the Prado Museum is included, implies a new challenge and perspective of the future. The reflection process of the permanent exhibition could mark a departure point to examine the essential role that the building of the museum must play as an urban landmark that embodies the physical presence of the institution in the city.

Acknowledgments:

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Keywords

museum storage, exhibit theaters, tailor made exhibit, innovation, robotics.

Abstract

From a truly modern perspective, it would be essential that the museum storage is not limited, as has happened up to now, to almost carry out the fundamental custody of artifacts exclusively, playing a very limited role in the exhibits on rough B-side, but move further. For example, also creatively fueling people's autonomous interests.

If the museum storage could be consulted as a web archive it would be possible to create infinite tailor-made exhibit theaters, what scenarios would open for the holders or users? Currently, this is already possible, but only virtually: it is of course a huge step forward compared to the past in which it was complicated even to consult the photographs of archived artifacts. Thanks to augmented reality, today it is also possible to virtually enjoy faithful 3D representations of the originals., but... but nothing can replace the physical relationship with the original.

Imagine that I, a common visitor, without intermediation of museum officials, by complete safety and without risk of

artifact's damage or theft, I can choose which finds to call from the storage by building my personal exhibit theater. Or imagine that I, a scholar, without intermediation of museum officials, by complete safety and without risk of artifact's damage or theft, I can decide which finds I can call from the storage to study them.

Museum storage and robotics

From a truly modern perspective, it would be essential that the museum storage is not limited, as has happened up to now, to almost carry out the fundamental custody of artifacts exclusively, playing a very limited role in the exhibits on rough B-side, but move further.

Currently, many museum reserves are accessible in various and different ways. For example, at the Metropolitan Museum in New York, as in other large museums, the internal storage can be visited.

The Hermitage in St. Petersburg created a large, detached warehouse of 35,000 sqm in Staraya Derevnja, built between 1990 and 2010, but the visit is only possible on guided tours. Some time ago, also the French Government and the Louvre Museum after long reflections, has decided to store its big reserves at one specific site close to the Louvre II in Lens, Pas de Calais, North of France creating “a welcoming place for researchers, museum professionals and perhaps the public”. In even more recent times, an interesting new strategy to make a storage sites more attractive, was to shape and design them like a kind of scenographic display. A sample of this concept was finally inaugurated few months ago in Rotterdam, created after years of work and a huge expense. This is the much praised and awaited depot of the Boijmans van Beuningen museum, a large storage unit equipped with laboratories and other functions almost completely accessible to the public. First at all, this depot solves a big problem, a situation quite common to many of the world’s leading museums (but also to small ones): before its birth, the museum could exhibit only 7% of his artifacts owned. Then, in addition to performing a function common to other storage, inside it offers a wide view of the collections stored from the entrance to the main floor. Then, there is a cafeteria, specific display spaces for exhibitions and a roof-

garden where, in addition to a cozy restaurant, it be hosted artistic installations.

Going up through three floors of storage, by the path on zig-zag walkways crossing the restoration labs and exhibition spaces, the vision of relics changes constantly, allowing you to embrace most of the artifacts at glance. A space that has finally been specially designed to captivate the visitor, a major advance in this domain. However, this newly kind of storage will have the objective limit of allowing to the generalist public absent-minded-like looks on the artifacts, mostly reduced to indefinite scenes in which it is difficult to focus on single artifacts, giving priority to the astonishing scenographic and decorative overall effect.

If a visitor will want to choose what to see here, as in a traditional museum, he will have to study an artifact’s map, moving itself from one point of the building to another to locate them: a further step forward would be needed.

There are many ways to liven up the museum storage: surely nurturing interest in the past requires updating distant values over time. Benjamin Franklin claimed that “tradition does not mean guarding the ashes, but fanning the embers”, Gustav Mahler: “tradition ist die Bewahrung des Feuers und nicht die Anbetung der Asche” or Jean Jaurès: “la tradition ce n’est pas garder des cendres mais entretenir une flamme”.

Traditionally the idea of storage is to limit oneself almost exclusively to keeping the ashes of the past so, like others, I think it is more interesting to revive the embers by passing beyond the phase of passive contemplation, instead pushing people to creatively feed their interests through tools guided with large margins of autonomy. It is a question of conveying knowledge that is not only sequential and orderly, but also of exploiting the magic of the concept of serendipity, exactly as happens to many of us surfing on the web. If the museum storage could be physical consulted like a Web archive starting from a search engine, it would be possible to create infinite tailor-made exhibit theaters in a personal, unique stage, relying on mental associations and physical comparisons that can be immediately activated at will, a much more complicated (if not impossible) to carry out in a traditional way, moving across of ten distant building zones.

Currently, this is already possible, but only virtually: it is of course a huge step forward compared to the past in which it was complicated even to consult photographs of archived artifacts. By the augmented reality, today it is possible to virtually enjoy fairly faithful 3D representations of original artifacts, but this in my view is not enough, because NOTHING can replace the physical (or almost physical) relationship with original artifacts: what scenarios would open this for holders, scholars or users?

Imagine that I, a visitor, without intermediation of museum officials, by complete safety and without risk of artifact's damage or theft,

I can choose which artifacts to call from the storage, building my personal exhibit theater. Imagine that I, a scholar, without intermediation of museum officials, by complete safety and without risk of artifact's damage or theft, I can decide which relics I can call from the storage, building my personal scenario to study them. Imagine that we will experience this shortly in the extreme south of Italy, in Taranto, at one of the most important national museums owned and managed directly by the Ministry of Cultural Heritage. The construction of this tool has been possible since some time: it was just a matter of imagining how to decline proven, mature, and extremely reliable technologies used in other fields, to the museum industry, adapting them to the specific purpose. A giant, safe, completely transparent architectural showcase will house a robot that will take stored artifacts waiting for someone to order him which exhibit theater he wants to set up allowing infinite tailor-made arrangements. To design all this, it was necessary to study and classify traditional and repetitive processes, procedures of picking up, moving, and repositioning the artifacts, by deconstructing them into single elementary phases. At a later stage, critical points and general safety were addressed.

Then followed the coding of the operating sequences. Finally, the robot will be programmed by instructing all iterative processes, so that it can assist or replace museum officials in the operations in which it is totally reliable. Robot safety is out of the question: these machines also work in extremely critical contexts such as in the medical sector dealing with vital

functions or operating in the surgical domain. This robot coexists next to and is part of traditional museum upgraded and partially reshaped with new fresh, modern, ethereal displays like this illustrated. (Figure 1)

It will be positioned before the payment barriers, connected to a bar and freely usable by anyone during opening hours: we imagine it will constitute an element of attraction and aggregation devoted even before tourists, to the inhabitants of this city that is rethinking their destiny after having suffered the problems deriving from the presence of one of the largest and most polluting steel mills in Europe. (Figure 2)

We would like the inhabitants to come and have a cup of caffè, cappuccino or aperitivo at the museum using the robot, drawing inspiration from the glorious past to imagine his future. It must be a trendy, cool place, especially dedicated to young citizens of Taranto. From theory to reality to get here it took years of study, reflections, theories and many, many problems to solve, it will take a little more for you to observe directly onsite the reactions and (of course) judge and tryout yourself a completely new paradigm which we hope will be successful especially among the Taranto people.



Figure 1: Rendering of new showcase for Greek artifacts, archaeological museum, Taranto



Figure 2 : Steel plant of Taranto, Italy 25 December 2007, ph. Mafe de Baggis

If the test as we think will positive, this scalable concept could be replicated into very large museum institutions serving for several other applications by opening completely new scenarios, both from a scientific point of view, regards safety, integrity of artifacts and, of course, the simplification of management, thanks to the easiest control of whole storage and a significant reduction of management costs. Welcome you soon at MarTa, and Taranto! (Figure 3)



Figure 3 : archaeological museum_of_Taranto, MArTA (from wikipedia)

Update:

When the project was finally ready and verified for the tender, this realization was indefinitely suspended in mid 2022, due to a sharp increase in costs of last months in EU, which no longer allows compliance with the budget caps.

Design team principals

Eva Degl'Innocenti, museum director, supervisor.

Gabriele Toneguzzi and Antonello Stella, architects.

Anna Maria Visser, museologist, consultant.

DIPOT: Digital Depot Computer-Generated Simulations of Museum Storage Facilities Using 360° Photography and Virtual Reality

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Keywords

*360° photography, Virtual Reality,
Museums Storage, Virtual Museums*

Abstract

This article explores the use of digital technologies to enhance collection-based institutions and focuses on non-exhibited collections located in storage facilities. These areas of museums have undergone numerous transformations, going from museums' dusty attics and basements to visible and accessible storage to newly designed conservation centres. By acknowledging these transformations, this work looks at how quantitative and qualitative research, and the inclusion of digital technologies could be applied to the future management and improvement of museums. One of the main questions looks at what museum visitors can learn/gain from the digital representation of museum storage. The research methods include a literature review, quantitative, and qualitative research related to cyber-ethnography, the creation of an interactive 360o set of images and a participatory workshop. The findings of this research could be used by future museum stakeholders when creating computer-generated simulations of museum storage facilities using digital technologies for storytelling, accessibility, and interpretation.

1. Introduction

Although museums usually keep 90% of their collections in storage (e.g. the Rijksmuseum in Amsterdam only exhibits 0.8% of its entire collection) (Ankersmit & Loddo, et.al, 2021) the storage facilities of about 60% of institutions worldwide are in such poor condition that the collections are unable to be used for any type of museum activity (Lambert 2011). This led to significant interest in this topic, as evidenced by the latest international conferences and symposiums where several museums and institutions have discussed the issues associated with their storage facilities and their plans to deal with the common issues.

In the last 10 years, several publications raised the issue of the historic role of storage facilities in museums (Griesser-Stermscheg, 2013), the management of museum storage facilities (Kipp, 2016), the politics of collecting and the epistemic value of museum objects (Brusius & Singh, 2017) the architectural character of storage space (Loddo, 2020), buildings (Ankersmit & Loddo, et.al, 2021) and storage furniture and specimen housing (Elkin & Norris,

2019). Museum professionals around the world have also been reconfiguring the role of storage areas inside and outside museum buildings (Kreplak & Mairesse, 2021).

It has been stated that ‘much of the world’s great art is housed in the vast archives of museums with limited display space’ (Groskopf, 2016). Some countries have had the opportunity to reorganise their collections outside the main museums and make them accessible to the general public. In Denmark, a series of off-site storage buildings designed to keep the cost and energy consumption of storage low and the quality of storage high have been shared by multiple institutions and museums since the 1990s. Similarly, the Staraya Derevnya preservation and storage centre at the Saint Petersburg Hermitage Museum in Russia was designed in 1985 to be both a conservation centre and open storage accessible by the public.

With the launch of the Delta Plan for the Preservation of Cultural Heritage, museums in the Netherlands have become more organised and more ‘open and accessible’ (Roos et al., 2019). In 2021, two storage buildings with very different purposes opened their doors: the Collection Center Netherlands (CCNL), a common storage building shared by four cultural institutions, and the Depot Boijmans Van Beuningen (DBVB), a storage building for the Museum Boijmans Van Beuningen and private collectors. The Victoria and Albert Museum in London is also planning to open a new

collection and research centre that, as the DBVB, will be accessible to the public: the V&A East. It is clear that museum storage facilities are adopting various solutions, showing different building shapes, concepts for indoor climate and functions on-site and off-site museums. Consequently, they are becoming more attractive to general audiences, and museum curators are aiming to explore entire collections and make them more accessible.

There is a clear distinction between the museums that want to bring attention to stored collections by exhibiting them and making them accessible to everyone and the museums that focus on the preservation and study of stored collections. However, the latter put forward the idea of creating digital representations of stored collections and using virtual tours, augmented reality projects and 360o photography to bring attention and attract different audiences to stored collections.

2. Digital technologies in museums

Past literature provides examples of research looking at the use of 360o photography, virtual reality (VR) and augmented reality (AR) in museums. The majority of studies have looked at VR or AR or a combination of both e.g. (Wojciechowski et al., 2004; Walczak et al., 2006), with some focusing on the interaction between museum audiences and VR (Grayburn, et al., 2019), AR (Roos et al., 2019), 360o photography and recordings (Cai et al., 2018; Sirikulpipat & Nadprasert, 2020), and games (Kargas et

al., 2020). Questionnaires and surveys have been used to obtain data (Wojciechowski et al., 2004; Walczak et al., 2006; Jung et al., 2016], and a framework for evaluating museum technology before and after its introduction in a museum setting has been developed (Damala et al., 2019).

It should be noted, however, that these studies only looked at the exhibition areas of the museums to put into practice new engaging methods/technologies available and not the storage facilities. Some attempts to look at storage areas have been made by museum institutions in recent years (Loddo et al., 2021; Depot Turnhout, 2020), but no studies have evaluated the use of digital technologies/computer-generated simulations for these areas.

3. Research aim

This study identified the benefits and challenges associated with using digital technologies and computer-generated simulations of a museum storage facility. This area of museums and other cultural institutions (libraries, archives, etc.) is where the majority of the collection is kept and has undergone various transformations over the years. Museums professionals and scholars are the common audience for storage, even though they not always had the opportunity to visit one. Depending on the type of collection, storage changes and offers a different set-up such as painting racks, drawers, shelves filled with objects in a different ambience from the exhibition path, which could be interesting for a broader

audience. Due to the “storage nature” of being a sensitive place, both as a keeper of fragile materials and its management practices (e.g., environmental control and security), preservation often prevailed over the possibility of open storage to a vast public. The use of digital technologies such as VR, AR, 360o photography and games can help collection-based institutions to enhance their collections and involve a larger share of visitors. This study focuses on these digital technologies, exploring future uses and applications on museum storage facilities and identifying strengths and weaknesses associated with their representations.

4. Materials and methods

A literature review showed a lack of studies looking at the use of digital technologies and computer-generated simulations for museum storage facilities. Therefore, an interactive 360o set of photographs was developed and edited on the technology platform ThingLink (Fig. 1 and 2), and a participatory workshop was organised. The benefits and challenges associated with the use of digital representations of storage facilities were identified via a content analysis of the data collected from a stakeholder engagement workshop. The stakeholders (hereafter referred to as participants) included students and scholars, digital developers, teachers and educators, museum and library professionals and members of the general public.

4.1 360° photography, participants and data collection

Two examples of storage locations were used: the CCNL and the special collection storage facilities of the National Library of the Netherlands (KB). The storage rooms of both locations were captured using a 3D camera (Insta360 EVO), and the images were edited and equipped with interactive elements. For example, the KB photos had hyperlinks to copies of digitised books, conservation reports, additional images and other materials (Loddo et al., 2021) (Fig. 1), while the CCNL photos linked to technical information about the building, storage and artworks, information on preventive conservation and collection care and hyperlinks to external resources, literature and detailed images (Fig. 2). A participatory workshop was held online on 6 May 2021 with 58 participants. A focus

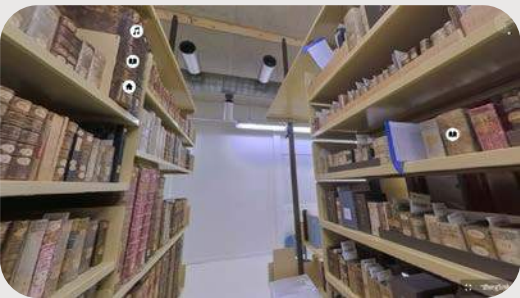


Fig. 1: The 360o representation of the KB's special collections' storage (Loddo et al., 2021).



Fig. 2: Screenshot of the 360o photography of the storage facility of the CCNL, Amersfoort.



Fig. 3: Screenshot of the virtual storage facility of the Museum Turnhout (Depot Turnhout, 2020).

group was used because it is a participatory method that ‘collects data through group interaction on a topic determined by the researcher’ (Morgan, 1996). To ensure that the participants were familiar with the topic, the workshop began with a plenary session that introduced and explained the research aim of gathering knowledge about museum storage facilities. A selection of digital technologies and computer-generated simulations of museums and storage facilities was also provided (Figs. 1, 2 and 3). Due to the lack of examples of AR and games related to storage facilities, two examples of AR in museum exhibitions (Bone Hall, 2017; Latvian National Museum of Art, 2016) and one game (Father and Son, 2019) were provided (Figs. 4 and 5). With these examples, participants had an overview of different representations and understood the differences between the previous examples displayed. They were given time to explore these technologies before being separated into five different groups: students and scholars (group 1), digital developers (group 2), teachers and educators (group 3), museum and

¹ The workshop was part of the series of events “Europeana Digital Spring Programme” (Loddo, 2021). It was organised online and participants were invited with an open call through the Europeana and author’s network and advertised on social media.



Fig. 4: At the Smithsonian Institution, Washington D.C., some skeletons can be “brought back to life” by using the AR app “Skin and Bones”, which overlaps images of the animals (Bone Hall, 2017).



Fig. 5: Father and Son mobile serious game launched by the National Archaeological Museum in Naples (Father and Son, 2019).

library professionals (group 4) and the general public (group 5). In each room, the facilitators initiated a discussion by asking the same four main questions: ‘What is your interest in storage facilities?’, ‘What can users learn/gain from the digital representation of a museum storage and how could you use it in your profession?’, ‘What are the benefits associated with the digital representation of museum storage?’ and ‘What are the challenges associated with the digital representation of museum storage?’.

The information gathered with the software Miro and Mentimeter, and the video recordings of the focus group were used for the analyses.

5. Data analysis and results

Content analysis methods and techniques were used to analyse the data (Krippendorff, 1980; Thomas & Harden, 2008). Extensive recognition of the benefits and challenges is key to understanding how to make the best use of museum storage facilities.

These were identified in the primary data extracted from the participants’ background and viewpoint. Although the discourse in each group was adjusted according to the experience of the group members, common challenges and benefits were identified across groups. For example, the benefits associated with ‘accessibility’ were mentioned by 40% of participants, while the challenges associated with ‘money’, ‘cost/s’ and ‘affordability’ in relation to digital tools were mentioned by 55% and issues with ‘safety’, ‘security’ and ‘thefts’ in relation to museum storage areas were mentioned by 45%. Each group also identified their challenges and benefits, and the Figure 6 presents an overview of the themes revealed by the content analysis. The content analysis was performed on 58 contributions, and thematic synthesis of the coding resulted in the identification of 70 themes. The themes most frequently mentioned by participants in relation to benefits were ‘accessibility’ and ‘education’, while the theme most frequently mentioned in relation to challenges was ‘security and economic value’, which includes the terms ‘money’, ‘cost/s’ and ‘affordability’.



Frequency

6. Conclusion

Given the role that storage facilities have in the communication strategies and cultural agenda of museums (Dickson, 2020) and the advancement of digital technologies in museums in recent years (Kargas et al., 2020; Bone Hall, 2017; Father and Son, 2019; Pottgiesser et al., 2021), this study aimed to identify the benefits and challenges associated with making museum storage facilities digitally accessible. These benefits

and challenges can facilitate different stakeholders and harvest their potential for future projects. It must be premised that due to the novelty of this topic and the continued evolving of digital technologies, scientific research has not been able to keep up the same pace with practices currently being experimented within museums. Therefore, the literature review offered a selection of publications derived both from a quantitative systematic review and a qualitative search of resources.

Representing storage digitally is an opportunity and a starting point for museums to share part of the collection, which is not often available to many, and create new content for and with a broader audience. In fact, not only museums educators/curators can draw from the digital storage and create new activities and storytelling to engage with different audiences, but also visitors can contribute to this participatory process and point the attention to what they are most interested in, and suggest to them new stories to explore. Previous studies concluded that virtual reconstructions of cultural heritage can trigger a sense of nostalgia and recollections of memories (Cai et al., 2018). Therefore, allow users to connect with the virtual collection can create a future bond with the real one. Moreover, it can trigger kinds of gamification to raise curiosity to the user for more exploration. Digital technologies will not substitute the in-presence visit but could become a tool for museum professionals to create pedagogical, educational, research and institutional projects. Several other projects have addressed some challenges within the field of 360o photography and VR research and teaching (Cook, 2019). As it was possible to see by the range of participants and applications, 360o photography, AR, VR and games are not limited to a niche area. They have broad transformative potential and are becoming increasingly mainstream in many contexts. The challenges are not easy to overcome

but continuing the research in this field and addressing new challenges through additional forums, would allow museums and cultural institutions to be more inclusive and share more of the cultural heritage preserved in storage facilities with a broad community.

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The Étincelles du Palais de la découverte

Antony Vayssettes

Project Manager

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Presentation

Hello everyone, thank you all for being here. Let's start with the heart of the matter, the creation of the ephemeral structure to host part of the Palais de la découverte's offer for 4 years.

Background

First of all, some background information. The Palais de la découverte is undergoing its first major renovation since it opened in 1937. Work is scheduled to last four

years to modernise the Grand Palais and introduce a new scientific museography.

During the works, the Palais de la découverte brand will continue its activities outside the building, in a temporary structure: the Étincelles du Palais de la découverte.

Les Étincelles in a few figures is 770 m², 6 high constructions of 16 meters each, with 3 mediation spaces of 40 places each and a planetarium of 49 places.



Les Etincelles du Palais de la découverte, Paris 15



Palais de la découverte, Paris 8

The operation was piloted and financed to the tune of 1.8 million Euros by Universcience.

Reminder of the need and objectives

Let's go back in 2019 to the foundations and needs expressed by Universcience to develop this operation. The objective is to create an ephemeral building, located in an emblematic place in Paris. After numerous searches, the City of Paris proposed a 1000 m² site in the André Citroën Park in the 15th arrondissement of Paris.

The site is located on a vast esplanade planted with trees and landscaped with games for children, a football field and rest areas. The Carré Blanc garden is located in the centre of this esplanade; it is a cloister with a garden in the centre.

Finally, Universcience imposed in its call for tender requirements in terms of modularity, sustainability, respect for the environment and the local context. This call for tenders gave rise to the Étincelles project, an original architectural creation with a strong focus on sustainable development.



Palais de la découverte, Paris 8



creates a strong visual marker, inserting itself into the Citroën-Boucicaut district and marking the public space with its joyful imprint.



The choice for an ephemeral structure in wood and colour



The choice for an ephemeral structure in wood and colour

Presentation of the building - focus

What tipped the balance in selecting this project?

4 major points:

1 - THE CHOICE FOR AN EPHEMERAL STRUCTURE IN WOOD AND COLOUR

Composed of six slender shapes, each sixteen metres high, in bright colours, inspired by circus codes, the structure

2 - COMBINING TRADITIONAL AND STATE-OF-THE-ART TECHNIQUES

The construction techniques used for the

Étincelles du Palais de la découverte are inspired by the traditional knowledge of wood-frame structures and walls, while at the same time using state-of-the-art prefabrication and assembly techniques.



Combining traditional and state - of - the -art techniques

insulated wood-frame walls. This installation benefits from ventilation and natural light. This ventilation is enhanced in the three mediation modules by roof windows. On the outside, the walls are clad with pine cladding. Inside, planks laid on an absorbent mattress ensure the acoustics of the different rooms and serve as stage rails.



The adoption of good environmental practices

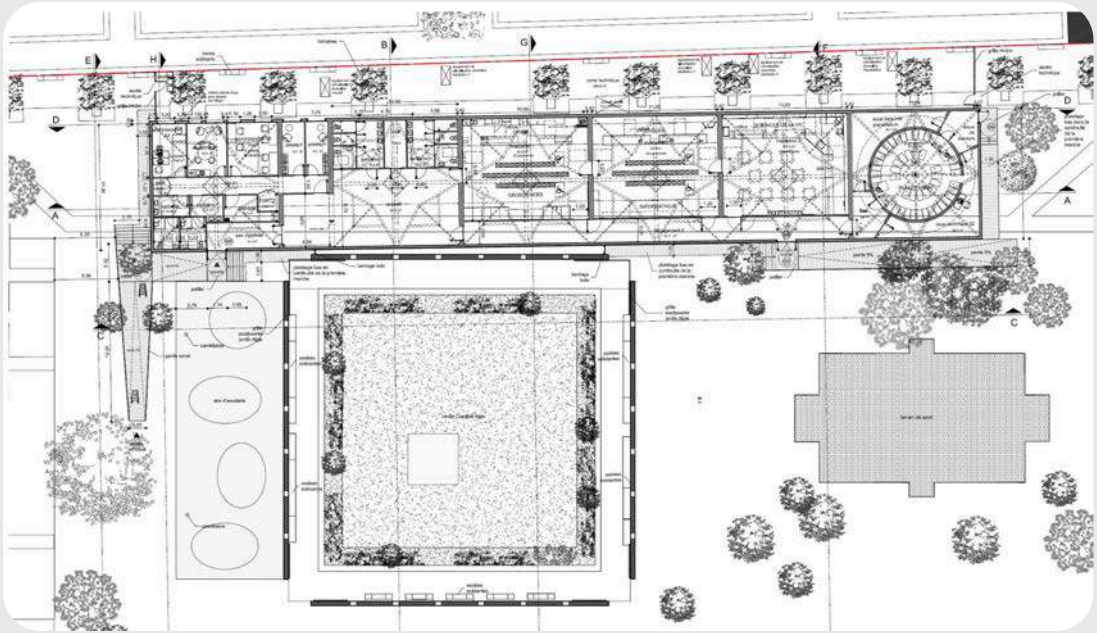
3 - THE ADOPTION OF GOOD ENVIRONMENTAL PRACTICES Made entirely of wood, the construction of Les Étoiles du Palais de la découverte is exemplary and stores carbon rather than producing it; the walls of the various modules are made of highly thermally

4 - THE DUO MODULARITY AND SUSTAINABILITY

The six modules were designed and assembled in part upstream, reducing and facilitating the installation phase on site. The foundations made of metal piles, which act as large screws in the ground, allow for

limited intervention, without unwanted excavations or cement residues. All the work was carried out “in the dry”, with no pollution of the site, which will return to its original state after the structure has been dismantled. At the end of its operation, the modular elements of this temporary installation will be easily dismantled and reassembled, either scattered or grouped as required, taking with them a little of the history of the Sparks of the Palais de la découverte.

Patrick Bouchain and Loïc Julienne, has designed numerous projects: Thomson’s headquarters in Boulogne-Billancourt, the transformation of the former LU factories in Nantes into a cultural space, the Centre Pompidou Mobile (2011), the world’s smallest circus in Bagneux (2015), etc. Pioneers in the redevelopment of industrial sites into cultural spaces, their activity focuses on the performing arts, mobility and the ephemeral.



Master plan

Presentation of the MOE

The architectural studio Construire and the company Charpente Cénomane, which have been working together for many years on various projects, were selected following a call for tenders to design the Étincelles at the Palais de la découverte. The Construire workshop, founded by

Fundamentally anti-conformist, the studio practices an “HQP” architecture for High Human Quality, developing sites open to the public, true cultural acts, the permanent questioning of norms and the valorisation of the project owner at the heart of the project. Charpente Cénomane is the company that carried out the work. Expert in the use of wood, these carpenters are experts in these operations.



Construction



Architectural brief - focus

The following three aspects guided the project manager's proposal:

- The dimensions of the project, which make the building exist in this remote district of the 15th arrondissement and in the fragmented public space of the Square Max Guedj, with the strong choice of installing six tall forms (12 metres) inspired both by the 19th century forges in which many of the structures of the Grand Palais were cast and by the hats of childish fairies and the joyful codes of the circus. These proposals make it possible to create a sign in the city by forming both a strong visual marker and an effective signpost.
- The taking into account of the preoccupations that run through our society today and accompany scientific research, namely ecology, climate and sustainable development. This building is an example of good environmental practice. Entirely made of wood, it stores

carbon rather than producing it, it is highly thermally insulated and contributes to a positive image of the relationship between science and ecology.

- At the end of the operating period, when the Palais de la découverte has returned to the historic walls of the Grand Palais, this temporary structure will be completely dismantled. Its modular elements can be reassembled either in a scattered or grouped manner, as required, taking with them a little of the history of this ephemeral Palais. Like the Grand Palais at the time of its construction, the ephemeral Palais will be an object of discovery and wonder.

Operation

Now let's get to the heart of the proposal. Rather than developing the project on a corner of the "cloister", the project manager preferred to line up his six modules behind the wall on the cemetery side. With the exception of the

“Vigipirate” and technical module, the six programmatic elements have been developed in identical volumes, with only the coverings and colours differing. The reception module includes a large reception area, a waiting area and sanitary facilities; the module next to it houses the administrative services and technical support; the three following modules are dedicated to mediation spaces; the planetarium is located in the continuity of the mediation rooms. All the buildings are 55 cm higher than the flood level (PPRI), and ramps (5%) and footbridges allow visitors to access the entrance. The buildings are installed on legs which are themselves placed on metal “distribution plates” laid on the ground. A ring of wooden beams connects these legs together and supports insulated boxes whose surface, made of plywood panels, serves as the floor of the different rooms. The walls of the various modules are made of highly thermally insulated MOB (wood-frame walls). They are clad on the outside

with Douglas fir cladding. On the inside, non-adjointing painted boards laid on an absorbent mat correct the acoustics of the different rooms and serve as picture rails for all the scenographic displays. With the exception of the reception module, which is made of alveolar polycarbonate, the covers are made of coloured PVC membranes. The upper part of the roofs has a “ridge” that serves as ventilation and natural light. This contribution is reinforced in the three mediation modules by roof windows with remote control occultation. With the exception of the reception module, which is made of alveolar polycarbonate, the roofs are made of coloured PVC membranes. The upper part of the roofs has a “ridge” which serves as ventilation and natural light. This contribution is reinforced in the three mediation modules by roof windows with remote control occultation. The roofs are composed of highly insulated wooden boxes, the inner skin of which is made of plywood. The main facade and both sides



Interior fittings

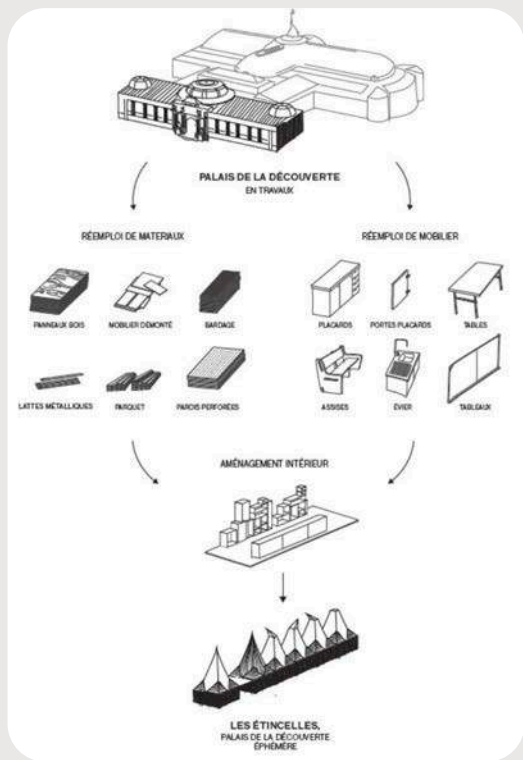
of the building are solid and have signage elements. The rear façade has openings for natural lighting of the offices. A technical area is provided for the operation of the building.



Materials from the Palais de la découverte

Construction

This project was completed in record time: 1 year. In order to meet the extremely short assembly times imposed by the project schedule, the Charpente Cénomane company proposed working in hidden time by bringing the design and prefabrication phases forward. The architectural project integrates these constraints by proposing six identical repetitive modules. These were cut and prepared in the factory before the start of the works. The company then proceeded to install the 80 foundation fittings. These “feet” allow for a “clean” intervention, without the need for excavations for conventional foundations and without unwanted cement residues.



The frameworks were then brought to the site and assembled on the heads of these fittings. As the frameworks were lifted, the roofers moved in to install the waterproofing membranes and the polycarbonate cells on the roof caissons. At the same time, the façade cladding caissons were installed to obtain a “closed and covered” structure before the technical batches and the secondary trades (partitions, ceilings, interior joinery and painting) were involved. All the work was therefore carried out “dry”, without any pollution of the site, which will return to its original state after dismantling without having suffered from this installation.

Environment

This is a very respectable project from an environmental point of view. The project is not subject to the RT 2012 standard, due to its unconventional use. The project obviously respects the thermal performance of the walls as a minimum, and more particularly with regard to fluids.

Heating is provided by 2 types of equipment:

- Reversible heat pump in the 3 mediation spaces and the Planetarium room.
- Electric radiant heating in the other spaces.

The equipment operates with R410 A refrigerant, and the production units are

installed at the rear of the building to ensure optimal operation and easy maintenance. Ventilation and the renewal of hygienic air comply with the RSDT (Règlement Sanitaire Départemental Type).

Interior fittings

In addition to this structural project carried out by the Atelier Construire et Charpente Cénomane, the Unverscience teams, with the support of a group of social and solidarity-based companies, built the interior spaces of the Étincelles du Palais de la découverte in a creative and sustainable recovery approach. The design team was made up exclusively of French companies, including a design agency specialising in the circular economy,



The mediation offer



a design office specialising in reuse, a collection and recycling company and solidarity-based carpentry workshops. The building thus benefited from a complete process of recovery and reuse of equipment and materials from the Palais de la découverte itself. Partitions, benches and furniture were transformed for a new life and a new layout.

Materials from the Palais de la découverte

99% of the materials used for the interior fittings (chairs, benches, tables, benches, reception desks, workbenches, platforms, cupboards, shelves, display cabinets, trolleys, etc.) are recycled materials. Only new hardware had to be purchased in addition. 17 tons of materials were thus saved from the dumpster for which they were destined. The materials from the former light, computer and digital sciences, geosciences, chemistry, animal communication and symmetry areas of the Palais de la découverte are used in the new structure. Thus, for example, parts of the stage of the Palais de la découverte make up the Mendeleïv painting installed in the new chemistry-geoscience mediation room and old partitions make up the new benches of the life sciences-mathematics mediation room. Similarly, old oak floorboards from the Palais, combined with aluminium sheets, were also used to build the platforms in the physics-computer science and digital science mediation room. This approach,

which is both economical and ecological, meets the objective of an eco-responsible structure as well as the desire to preserve the spirit and material universe of the Palais de la découverte. With this same desire to use internal resources and wealth, the Universcience workshops, whether carpentry or locksmithing, are partly responsible for this vast recovery operation.

The mediation offer

In order to pursue its mission of sharing science with as many people as possible, most of what the Palais de la découverte has to offer has been transposed to this ephemeral structure. Visitors will thus find the key presentations and workshops in three mediation rooms. Each mediation space is organised in pairs of disciplines: the first space is dedicated to chemistry and geosciences, the second space to physics and computer and digital sciences, the third space to mathematics and life sciences. The *Étincelles du Palais de la découverte* thus offer around twenty presentations each day, i.e. six sessions per mediation area and four planetarium sessions, all led by the Palais's mediators. All of these activities are offered to school groups during the week and to individuals at weekends and during the school holidays. Wednesdays are shared between school groups and individuals.



The Conclusion

Dear members and friends,

The ICAMT Annual Conference 2021 ended and it was full of interesting presentations, which we, traditionally, will put together in a Conference Proceeding and publish on ICAMT official webpage next months.

I would like to thank the participants for their valuable contribution to the success of this Conference:

- a chair of ICOM-DRMC—Diana Pardue—for her warm welcome speech;
- Prof. David Lordkipanidze, keynote speaker, for telling about two brand-new museums from Georgia;
- Sonia Beatrice Calzoni, Forlanelli Rovati and arch. Mario Cucinella, for their keynote speeches at the Conference;
- Martina Lehmannová and Alžběta Horáčková—our special guests—who made a presentation about next General Conference of ICOM (2022, in Prague), especially for ICAMT;
- Manuel Furtado Mendes, Lana Karaia, Dexter Kandhlela and Kiem-Lian The for being the “country ambassadors” and sharing information about museums from their own countries during and after Covid-19;
- my committee board members—Alessandra Labate Rosso, Maddalena d’Alfonso, Danusa Castro and Eeva Kyllönen—who were involved in the organizational side of the Conference;
- all speakers of the Conference for their interesting and beautiful presentations;
- and, of course, the audience.

The Conference welcomed 31 speakers from 15 different countries, and also around 170 attendees: professionals, students, young people and new members from different countries.

Let me announce ICAMT 47th Conference is over.

I declare the 47th ICAMT Annual Conference finished and express my hope that next year we will meet each other in person!

Next Annual Conference of ICAMT will be held within ICOM 26th General Conference, in Prague, Czech Republic, from 20 to 28 August, 2022.

ICAMT wish you all good health and success in your professional and personal lives.

Thank you!

See you in Prague!

Nana Meparishvili
Chair of ICAMT

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