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Digital Gallery of the maquettes

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Massimiliano Lo Turco
Elisabetta Caterina Giovannini and Noemi Mafrici
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In the academic year 2019/2020 he collaborate as teaching tutor to differente courses for Professors M. Lo Turco and M. Calvano.

DIGITAL GALLERY OF THE MAQUETTES

Elisabetta Caterina Giovanniini, Andrea Tomalini

European Heritage institutions galleries, libraries, archives and museums (GLAM) hold rich collections that represent Europe's cultural diversity and our shared history and values. Digitising and providing broader access to cultural resources offer new opportunities for the visualisation of collections and represent essential conditions for the further development of Europe's cultural heritage. The digital revolution highlights how Cultural Heritage institutions are turning online to engage with diverse audiences. Today the tools available can reach out a new and diverse public using the web through virtual exhibitions, online activities (e.g. games with cultural significance) and social media.

The B.A.C.K. TO T.H.E. F.U.T.U.RE. research project[1] follows this direction believing in the necessity to make cultural heritage accessible in a digital way, to promote culture using scientific content. As already described in *Part I* of this volume the project focused on a collection conserved in the Museo Egizio's depots: the 'Expedition models of Egyptian architecture' (EMEA). Since 1976[2] the role of depots is described as "*the museum's role as guardian, exhibitor and interpreter of cultural and natural objects and as a research institution*"[3]. A recent Italian ICOM initiative[4] entitled *The essential is invisible to the eyes. Between care and research, the potential of museum depots, was focused on the theme of museum depots*, their management issues and how digital technologies can contribute to their wider knowledge in term of research and communication to a wider public.

The theme of digital collections since the last decades covered mainly the needs to show collections improving the quality of visualisation tools to display objects. Some important initiatives were developed also to physically replace the museum itself, creating virtual museums. These solutions were developed to make both virtually accessible museums and to design new digital environments.

The Google Art Project[5] (February 2011), thanks to the Street View technology allows to virtually explore diverse museums all over the world, using 360° virtual tours. Nowadays this project is entitled The Google Arts & Culture[6] and since 2016 it started to digitise a large number of paintings and artefact using the Art Camera[7] creating new high-resolution digital assets. The Virtual Museum of Iraq[8] shows the collection and the objects are chronologically exhibited in different rooms using a diverse type of multimedia content.

The Guggenheim Virtual Museum (GVM) was initiated in 1999 and it was one of the first projects that had the ambition '*to develop a fully interactive and "immersive" architecture that would afford visitors the possibility to access, peruse, interact with and further explore contemporary mediated and technological art forms*' [9], but unfortunately, the project has not been fully completed.

Some European initiatives consider the term 'Virtual Museum' as a general one that covers various types of digital

creations including virtual reality and 3D. The V-MusT.net[10] project (2011-2015) was one of the first European funded projects with the aim to resolve the problem of research in museums developing new solutions for sharing knowledge connecting different technological domains. The project provided also tools for immersive and interactive fruition of virtual environments. Crosscult[11] project (2016-2019) aim was to deliver tools to individuals and groups, for interactive experiences based on storytelling using the composition of digital cultural heritage resources, including 3D digital assets. 3D-ICONS[12] (2012-2015), was one of a suite of projects, to develop Europeana[13] and its contents. The project covered all aspects of 3D digitisation from selection of methods and tools, data acquisition and post-processing to publication of content online. GRAVITATE[14] (2015-2018) project objectives were to create a set of software tools that will allow archaeologists and curators to reconstruct shattered or broken cultural objects. At the same time, another important aim was to identify and re-unify parts of a cultural object that has been separated across collections and to recognise associations between cultural artefacts creating new knowledge.

The B.A.C.K. TO T.H.E. F.U.T.U.RE. research project follows these precedents adding a novel approach to document how different disciplines (geomatics, history, archaeology and architectural digital representation) interpret digitised sources. The digitisation process both for documentary heritage[15] and artefacts[16] were developed following established principles of the London Charter[17] for the use and re-use of computer-based visualisations by researchers, educators and cultural heritage organisations. Regarding the 3D models, considered as architectural digital representations, the International Principles of Virtual Archaeology (Seville Principles[18]) were used to develop 3D models used as visualisation tools able to clarify the relationship between architectural artefact and related digital assets. Some research projects that have dealt with the digitisation of museum collections have focused their attention on the visual appearance of the objects and not into its history and related sources.

The documentary heritage (eg. architectural drawings and manuscripts) and its digitisation developed within the project, used the ontology standard known as CIDOC-CRM[19] to take the advantages of semantic technologies and to manage the diverse knowledge domains involved, to select, organize and implement digitised sources.

Successful examples of the use of CIDOC-CRM into digital collections are the ResearchSpace[20] project, the Swiss Art Research Infrastructure[21] (SARI) project and the Digitizing Early Farming Cultures[22] (DEFC) project.

The previous examples enlight how the use of metadata in the digital collection research projects, is crucial to document and describe digital sources, historical documentation[23] and digitised objects, in our case, the 'Expedition models of Egyptian architecture' (EMEA). In this project, Cultural Heritage is the main domain, but other sub-domains have to be taken into account aiming to cover a real multidisciplinary approach enabling the interlinking of 3D content with different digital assets related to it. These connections were possible thanks to the use of descriptive and cross-disciplinary metadata.

Metadata means data about data and can provide extra useful information on data (digital resources). They play a key role in the project data management systems to allow wider searchability and deeper specific knowledge. The developed conceptual model allowed connecting 3D models with research sources highlighting their implicit knowledge and derived multidisciplinary explicit assumptions.

As already mentioned, despite the growth of diverse technologies, the core of main projects related to digitisation of cultural heritage stops to the visual appearance of the diverse objects or digitised documents. The B.A.C.K. TO T.H.E. F.U.T.U.RE novel approach is to create narratives and providing critical navigation into the digital collection and related contents[24].

Latest initiatives that go in this direction are the EMOTIVE[25] project (2016-2019), that produced interactive, personalised, emotionally resonant digital experiences for museums and cultural sites, and SHARE 3D[26] project (2018-2020) and its developed tool, the SHARE 3D Story Maker[27]. The innovativeness of the Story Maker is the possibility to share 3D content to Europeana, the EU digital platform for cultural heritage. The storytelling tool allows sharing stories of an object's history, characteristics, information trough metadata, selecting and reusing content from Europeana, Sketchfab and other sources, and linking them to create stories.

The following digital gallery of the *maquettes* is part of the digital content developed within the B.A.C.K. TO T.H.E. F.U.T.U.RE project. The digital models, provided using the 3D Hop[28] visualising tool are part of a series of digital contents that support the historical narratives developed by the interdisciplinary research team. From the historical documentation to its digitisation, from the museum collection to its digital collection, the research opportunities are quite vast, as vast are the new stories and intersections created and discovered trough the project evolution path.

Notes

[1] Cf. Lo Turco et al. 2018.

[2] International Conference on Museum Storage was proposed by UNESCO and was held on December 13-17, 1976, in Washington DC.

[3] For an exhaustive list of key documents supporting the discussion see Froner 2018, pp. 9-10.

[4] http://www.icom-italia.org/eventi/save-the-date-15-16-marzo-2019-matera-convegno-sui-internazionale-sui-depositi-museali-e-assemblea-annuale-dei-soci/ Last visit, March 2020.

[5] Cf. Kennicott 2011.

[6] https://artsandculture.google.com/ Last visit, March 2020.

[7] The Art Camera developed by Google use a "gigapixel" process that stiches together multiple high-resolution images with an average of 7 billion pixels. Cf. Kennicott 2011.

[8] http://www.virtualmuseumiraq.cnr.it/ Last visit, March 2020.

[9] Cit. Rashid 2017.

[10] http://www.v-must.net/home Last visit, March 2020.

[11] https://www.crosscult.eu/ Last visit, March 2020.

[12] http://3dicons-project.eu/ Last visit, March 2020.

[13] Europeana is a web portal created by the European Union containing digitalized collections owned by European galleries, libraries, archives and museums (GLAM); https://www.europeana.eu/en Last visit, March 2020.

[14] https://cordis.europa.eu/project/id/665155 Last visit, March 2020.

[15] See *Digitalizing Data: from the historical research to data modelling for a (digital) collection documentation*, pp. 39-51.

[16] See *Digital models of architectural models : from the acquisition to the dissemination*, pp. 53-65.

[17] http://www.londoncharter.org/ Last visit, March 2020.

[18] http://smartheritage.com/seville-principles/seville-principles Last visit, March 2020.

[19] CIDOC, the International Council for Documentation, is a committee of the International Council of Museums (ICOM). CIDOC Conceptual Reference Model (CRM) is a standard ISO 21127:2014 in the field of cultural heritage. The CIDOC CRM ontology is complemented by a series of modular extensions to the basic model. Such extensions are

designed to support different types of specialised research questions and documentation.

[20] The ResearchSpace project emerged from an idea for a shared digital research infrastructure proposed by the Andrew W. Mellon Foundation. ResearchSpace is an open source platform designed at the British Museum and retrievable at https://www.researchspace.org/index.html Last visit, March 2020.

[21] The Swiss Art Research Infrastructure (SARI) is a national research infrastructure providing unified and mutual access to research data, digitised visual resources, and related reference data in the field of art history, design history, history of photography, film studies, architecture and urban planning, archaeology, history studies, religious studies, and other disciplines related to the visual studies, as well as the digital humanities at large. https://www.sari.uzh.ch/en.html Last visit, March 2020. The SARI documentation used for the semantic web infrastructure and its Reference Data Model is retrievable at https://docs.swissartresearch.net/ Last visit, March 2020.

[22] https://defc.acdh.oeaw.ac.at/ Last visit, March 2020.

[23] The historical documentation gathered, consists of digitized document and drawings of the sculptor Jean Jacques Rifaud (Marseille 1786 - Genève 1852) conserved at the *Bibliothèque de Genève*.

[24] *Cf. Lo Turco et al. 2019*

[25] https://emotiveproject.eu/ Last visit, March 2020.

[26] https://share3d.eu/ Last visit, March 2020.

[27] https://storymaker.share3d.eu/home Last visit, March 2020.

[28] http://vcg.isti.cnr.it/3dhop/ Last visit, March 2020

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Rashid H. (2017) *Learning from the Virtual* , Post-internet Cities, 25 July 2017. Retrievable at https://www.e-flux.com/architecture/post-internet-cities/140714/learning-from-the-virtual/ last visit, March 2020

Temple of Dakka

Temple: Cat.7109
Propylaea: Cat.7101
Scene elements: 3
Url: https://backto-thefuture.github.io/temple-of-dakka.html

Temple of Debod

Temple: Cat.7105
Portals: Cat.7111
Scene elements: 3
Url: https://backto-thefuture.github.io/temple-of-debod.html

Temple of Dendur

Temple: Cat.7108
Portal: Cat.7108
Scene elements: 3
Url: https://backto-thefuture.github.io/temple-of-dendur.html

Model of the Temple of Dakka (Propylaea)

Propylaea: Cat.7101
Scene elements: 1
Url: https://backto-thefuture.github.io/propylaea.html

Model of the Temple of Abu Oda

Temple: Cat.7102
Scene elements: 2
Url: https://backto-thefuture.github.io/abu-oda.html

Model of the Temple of Beit el-Wali

Temple: Cat.7103
Scene elements: 2
Url: https://backto-thefuture.github.io/beit-el-wali.html

Model of the Small Temple of Abu Simbel

Temple: Cat.7104
Scene elements: 2
Url: https://backto-thefuture.github.io/abu-simbel.html

Model of the Temple of Debod

Temple: Cat.7105
Scene elements: 2
Url: https://backto-thefuture.github.io/debod.html

Model of the Temple of Gherf Hussein

Temple: Cat.7106
Scene elements: 2
Url: https://backto-thefuture.github.io/gherf-hussein.html

Model of the Temple of Tafa South

Temple: Cat.7107
Scene elements: 2
Url: https://backto-thefuture.github.io/tafa-south.html

Model of the Temple of Dendur

Temple: Cat.7108
Scene elements: 2
Url: https://backto-thefuture.github.io/dendur.html

Model of the Temple of Dendur (Portal)

Portal: Cat.7108
Scene elements: 2
Url: https://backto-thefuture.github.io/portal.html

Model of the Temple of Dakka

Temple: Cat.7109
Scene elements: 2
Url: https://backto-thefuture.github.io/dakka.html

Model of the Temple of Tafa North

Temple: Cat.7110
Scene elements: 2
Url: https://backto-thefuture.github.io/tafa-north.html

Model of the Temple of Debod (Portals)

Portals: Cat.7111
Scene elements: 1
Url: https://backto-thefuture.github.io/portals.html

Model of the Temple of Derr

Temple: Cat.7112
Scene elements: 2
Url: https://backto-thefuture.github.io/derr.html

Model of the Temple of El-Hilla

Temple: Cat.7113
Scene elements: 2
Url: https://backto-thefuture.github.io/el-hilla.html

Model of the Obelisk of Heliopolis

Obelisk: Cat.7115
Scene elements: 1
Url: https://backto-thefuture.github.io/obelisk.html