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Voremetur Project: proposal for the digital cataloguing of museum objects on media art

Abstract

Purpose: The article describes the creation of a catalogue of museum objects associated with two media art collections. The proposal was formulated under the Voremetur Project 'Vocabularios para una Red de Archivos y Colecciones de Media Art y sus efectos: metaliteracy y turismo de conocimiento' [thesauri for networked media art archives and collections and their effects: metaliteracy and knowledge tourism] (HAR2016-75949-C2-1-R). Collection characteristics and typologies are discussed along with the difficulties encountered and the interoperability of the platform chosen with other web resources that foster visibility.

Methodology: The article describes a case study and a review of the protocols and standards used to catalogue media art collections. Digitised descriptions were processed with Omeka software in conjunction with the expanded Dublin Core metadata schema. The paper also reviews the literature on the conceptualisation of these collections and the challenges involved in their conservation and management

Results: The result was the creation of a digital repository for two media art collections: one linked to Espacio P and the other the outcome of digitising part of the MIDECIANT collection (Archivo Media ART AEMA).

Originality: The methodology innovates the description and analysis of museum objects on media art in Spain. The proposed cataloguing method can be replicated and used to describe similar collections and lays the grounds for creating a Spanish network of media art archives and collections.

Keywords:

Cataloguing, media art, Voremetur, web museology thesaurus

1. **Introduction**

The incorporation of technology in art has generated new forms of contemporary creation, of which media art is the most representative. The creations of experimentation and performance, artistic expressions forming part of that trend, are by nature 'ephemeral' and consequently difficult to subsequently process and preserve. The objects of media art culture are ethereal inasmuch as they often cross hardware and software bounds to establish connections between the digital and analogue worlds (Post, 2017). Moreover, given the evolution of hardware and software systems, their preservation calls for very elaborate techniques. Interdisciplinary research involving digital curators, art historians, documentalists and naturally the artists themselves is needed to keep such artistic production from swelling the ranks of the so-called 'digital dark ages' and ensure its reproducibility over time. Artists are the ones who define the minimum guidelines for preserving their oeuvre to ensure subsequent user experience through re-creation. The existence of such interdisciplinary teams is merely anecdotal in the literature, as is research on and systematisation of the documentary techniques that help normalise media art collections.

The proposal described hereunder, formulated under the Voremetur Project 'Vocabularios para una Red de Archivos y Colecciones de Media Art y sus efectos: metaliteracy y turismo de

conocimiento' [thesauri for networked media art archives and collections and their effects: metaliteracy and knowledge tourism], undertook to digitise and catalogue Espacio P, an alternative, self-managed benchmark collection in the Spanish artistic scenario. Fathered and coordinated by multimedia artist Pedro Garhel (Tenerife, 1952-2005), from 1981 to 1997 it organised a series of performances, installations and videoartistic and similar activities that constituted an avenue for contemporary art training and research in Spain. The resulting collections therefore comprise objects in which widely diversified media, formats and nature range from digital artistic expressions to the documents relating to their creation, staging and dissemination. The project also addresses the digitisation and cataloguing of the Museo Internacional de Electrografía - Centro de Innovación en Arte y Nuevas Tecnología (MIDECIANT) collection that forms part of the Cuenca School of Fine Arts' Colecciones y Archivos de Arte Contemporáneo [contemporary art collections and archives].

The premise informing this article is the need to define protocols and standards for cataloguing such collections and ensure their interoperability with other thesauri. The project consequently designed a specific thesaurus with TemaTres, an open source web implementation tool for publishing the respective terms as linked data (Marzal, Ríos and Ferreyra, 2019). The terms were drawn from the metadata and semantic labels in use in the media art collections digitised on the occasion of the project. Cataloguing was therefore the key to ensuring project consistency and subsequent web visibility. Indeed, one of the long-term objectives of the Voremetur Project is to lay the grounds for a Spanish network of media art archives and collections as a convergent digital and virtual space for cooperation in the processing, preservation and dissemination of Spanish media art collections.

The procedure adopted entailed, firstly, a review of the literature broadly understood, with a discussion of the conceptualisation of media art and the difficulties inherent in cataloguing such expressions. That was followed by the present study, in which innovative methodology was deployed to describe and analyse museum objects on media art in Spain. It includes a detailed explanation of the development and results of the cataloguing methods proposed with a view to their replication and use in similar collections as well as to adding to the still scant specialised literature on cataloguing and preserving digital museum objects on media art.

2. Literature review

The two areas addressed in the literature on media art primarily used in this research were its conceptualisation as an artistic movement and the difficulty involved in cataloguing and preserving media art collections, with a specific review of articles on cataloguing digital objects on media art.

2.1. Media art: conceptualisation

The term 'media art' covers broad, diverse, dynamic, and continuously evolving ground as artists find new ways to work with visual, audio and data technologies.

In media art, artists retain creative and editorial control of their work, in contrast to practice in other culture industries such as cinema, television and multimedia publication. The movement entails participatory work based on location, screen-based art, networked media, projection, mobile working, software and database-generated art, artificial intelligence, information technology, bioart, nanotechnology, robotics, interactive and immersive environments, art/science and technology and augmented, mixed and virtual reality and practice. The characteristic that distinguishes it from other artistic expressions is that it can occupy traditional

spaces such as theatres, museums, and galleries as well as non-institutional platforms, from networked environments to public spaces and remote communities. It may also involve hybrid collaboration among different artistic forms such as the visual arts, dance, music, literature and theatre, forms of popular culture and disciplines such as science, architecture, and history (Donovan, 2006).

Adding to the complexity of defining the media art movement is the difficulty in establishing when the term was coined. General consensus would date its inception in the nineteen sixties to refer in general to any art form on computer media, although other terms have arisen since, including 'multimedia art', 'digital art' and 'computer art' (Wahl, 2013). Initially associated with computer-mediated interaction, the definition of medium has been progressively updated under the influence of video and television and the conceits around mediation authored by theorists such as McLuhan. In addition to the technological dimension, then, the notion acquired communicatory significance insofar as it uses the so-called mass media as a vehicle for conveying content. Later other media such as CD-ROM and multimedia platforms appeared, although in recent years the importance of screen interaction has been eclipsed by spatial mobility (Lally, 2006). Experimental mechanisms newly in place include the use of biological and technological materials, nanotechnology, and digital distribution technologies. The cloud has also gained prominence, whilst the immediacy of devices such as mobile phones and iPods has enabled these artistic expressions to target audiences directly.

Here media art is conceptualised in a dual dimension that envisages both the conservation of artistic products as digital museum objects and the media themselves used to build the digital artistic object. Such an approach necessarily calls for cataloguing and digitising documentary material to contribute to the essential change underway in contemporary art institutions and the role of new artistic practice (performances, videos, and electronic art).

2.2. Media art collections: cataloguing and preservation challenges

The difficulty in defining media art as an object of study hinders its documentary processing and subsequent preservation. The involvement of new technologies as part of artistic creation blurs the boundary between form and content, whereby the digital object created acquires a holistic dimension which must be borne in mind from the perspective of preservation and future reproduction. The determination to preserve this type of art arose in the nineteen nineties, when museums and other cultural institutions began to include digital products deriving from the new artistic forms in their preservation policies. Nonetheless, as Graham (2014) noted, establishing media art collections entails many challenges and requires institutions to redefine the core characteristics of art preservation and their modi operandi when documenting the creation of a collection. Such interdisciplinary work involves curators, artists, information managers and of course the audience, for recovery of the artistic oeuvre is broached differently than in analogue environments.

Besser (2001) differentiated such collections from analogue material in terms of their non-perdurability, interaction with the audience and dependence on a given hardware or software. Media art works consequently form part of an ecosystem comprising technology, software and hardware that makes preservation a greater challenge than in works in which technology is not inherent.

The complexity of processing media art collections has been broached in the scientific literature from both the archivist perspective (Saba, 2013) and under the umbrella of so-called 'digital forensics' (Dietrich, Adelstein, 2015) or 'media archaeology' (Strauven, 2013; Post, 2017). All the studies cited address the complexity of preserving such materials and the need to reproduce all the components playing a part in the respective installations. Dietrich and Adelstein (2015) resorted to those disciplines in an attempt to deploy forensic archivism to explore a media art

collection characterised by complexity, interactivity and multimediality. The authors chose the Rose Goldsen Archive of New Media Art, a collection of 12 000 video art titles, including digitally-conceived art objects on CD and DVD media and internet art, to exemplify the use of new digital archivist techniques.

Digital archaeology research has served as the backdrop for the debate around preserving media art (Hediger, 2012). In a line more clearly relevant to the present study, Saba (2013) identified digitisation and the creation of digital libraries and repositories as one of the essential mechanisms for guaranteeing the preservation of media art collections. From the standpoint of the digital archive precepts, she discussed the difficulty inherent in reproducing the wide variety of universes comprising new media artistic creations: the many interrelationships in which different materials, conceptual particulars and platforms intersect with contextual elements such as interviews, conversations or other types of autobiographical or preparatory material. These considerations underlie the use of the term 'transtextual' works.

New approaches to the preservation of media art recommend preserver and curator collaboration with the artists themselves to define which parts of works are essential and which peripheral (Besser, 2001). That philosophy is mirrored in pioneering projects such as the Valuable Media Network created in 1999 by a number of cultural institutions, the Guggenheim Museum among them. The task force created defined working criteria irrespective of the media in which artworks were generated, enabling artists to choose the reproductive mechanisms (hardware, software…) that could be used in the future without forfeiting the essence of their art. In a study of artists' perceptions of media art preservation, Post (2017) stressed the need for such collaboration. The artists invoked complex technical (obsolescence, size, format deterioration) as well as attitudinal issues, alluding to the lack of awareness of or interest in preserving the artistic environment in which a work was generated, given its ephemeral nature or the existence of other priorities. Innocenti (2014) detected a lack of specialised literature on media art preservation and the need to establish systematic preservation practices for such collections. He endorsed the need for cataloguing and documentary protocols with which to describe and preserve works across their entire life cycle.

The same want of systematisation is perceptible in the initiatives around collection content analysis. Such documentation and protocols are deemed essential for online media art collection digitisation and management to ensure future persistence and accessibility. Saba (2013) noted that with such collections, processing and archiving cannot be documented in the traditional manner, for that would forfeit works' ephemeral and experiential dimensions. Smith (undated) corroborated that idea indicating that whereas some details of media art works fit within traditional metadata schemas and standards, insofar as authorship is recognised and they can be physically described, the features of the hardware and software involved are more difficult to match to the thesauri in place. The author cited as an example the non-usability of ideas associated with licensed software such as Flash or Quicktime as descriptors in endeavours such as Getty Art, the Architecture Thesaurus (AAT) or similar given their brand name status. Folksonomies and collaborative tagging might be an innovative solution for adding content relating to more complex artistic matters. Another example cited by the same author is the archive created by Rhizome, a not-for-profit organisation devoted to media art preservation with whose database of over 2000 works artists could interact by adding tags to describe their oeuvre more precisely. That project provides further support for the premise that collaboration between cataloguists and artists is a necessity. Although social tagging strategies may be relevant to the cataloguing endeavour, they cannot lend support to media art collection management policies due to the difficulty inherent in their normalisation. Smith (undated) identified the combination of normalised and unstructured description and thesaurus techniques as a route for documenting these creative experiences as fully as possible.

Spanish literature, in turn, is characterised by very few studies dealing with cataloguing artistic objects in general to create digital repositories for disseminating the country's historic and artistic heritage. Even less has been published on research focusing specifically on cataloguing objects on media art.

Saorín (2011) authored one of the first studies to stress the importance of cataloguing in creating normalised repositories of cultural objects, advocating for the advisability of cataloguing added 'technological' value. He contended that metadata should describe complex cultural objects with additional contextual and environmental information, given the many layers of intangible information present that must be described to ensure the meaning of such objects does not vanish with time.

Some researchers focus on cinematographic and magnetic media artwork cataloguing and exhibition in the country's most prominent artistic institutions. In most cases indexing such cultural objects poses limitations that hinder their technical and aesthetic comprehension and could compromise their preservation for future generations (González de Ubieta, 2014).

In the specific processing of artistic objects that may be included under the media art umbrella, the various audiovisual formats and media are broached in depth from the perspective of conservation, documentation and dissemination through case studies analysing video art collections in Spanish museums (Rodriguez, 2012; Hofman, 2011).

The present article addresses the need to implement cataloguing and indexing policies when building virtual media art collections. Despite the significance of digitisation, only content analysis techniques can provide all the contextual information needed to describe the complexity of the nature of media art work. Against that backdrop, three research questions are addressed hereunder.

RQ.1: How can retrospective cataloguing of a virtual media art collection be broached?

RQ.2: What challenges are raised by such collections and how can they be solved via cataloguing and indexing?

RQ.3: Can the Voremetur Project and the cataloguing and indexing policies generated contribute to furthering debate on media art collection systematisation and cataloguing in Spain?

3. Voremetur research project: background and context

Voremetur was a nationwide research project jointly coordinated by the Carlos III of Madrid and Castilla La Mancha Universities. Its two primary lines of research were aligned with its targets, namely methodology and results. Both were defined within the conceptual framework of media art, understood as the convergence between communication and information media and the visual arts.

1. The creation and study of Cuenca's Colecciones y Archivos de Arte Contemporáneo as a methodological model for research excellence in the fine arts: this sub-project focused on research on the MIDECIANT contemporary art collections and respective copyrights, along with promotional and dissemination strategies. In the years, the project was in place, the Archivo Español de Media Art (AEMA) was the object of intensive work to guarantee the digitisation and cataloguing imperative to collection preservation in the context of digital continuity.
2. Methodology for cataloguing and digitising the Espacio P documentary material to contribute to the essential functional and structural change underway in contemporary art institutions and the role of new artistic practice (performances, videos and electronic art): the cataloguing and indexing strategies set out hereunder are indivisibly associated with the web museographic thesaurus designed.

Both lines aimed to define broadly based working protocols adjusted to media art collection digitisation and web cataloguing with which to semantically tag the collections for interoperability with other thesauri. The result was the creation of a digital repository of two media art collections: one linked to Espacio P and the other the outcome of digitising part of the MIDECIANT collection (Archivo Media ART AEMA). The project largely involved defining valid tools for effective collection management, one of which was a specific media art thesaurus (Figure 1).
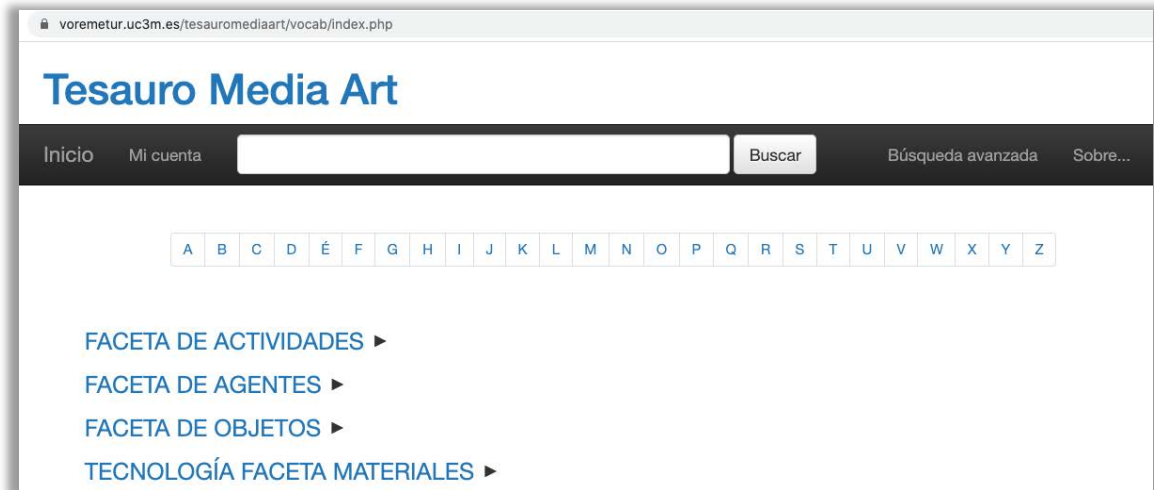

Figure 1: Media art thesaurus (Voremetur Project)

Source: https://voremetur.uc3m.es/tesauromediaart/vocab/index.php

The Omeka software chosen to manage the digitised descriptions and images supports linked open data technology to ensure future dissemination using vehicles such as a future network of media art archives and existing cultural platforms, including Europeana. A website was also designed as a dissemination tool to immediately upload the thesauri created and compile feedback from the scientific and artistic communities (Figure 2).

Figure 2. Voremeture project website: https://voremetur.uc3m.es/

When formulated, the Voremetur research project's digitisation protocol and technical specifications for quality control and digital capture were conveyed to the scientific community for application in a wide spectrum of institutions entrusted with the custody of artistic collections (Robledano Arillo, 2017). In keeping with that philosophy, the present article shares the experience acquired in standardising media art collection cataloguing.

4. Proposal for cataloguing digital objects on media art

The cataloguing methodology proposed here forms part of Voremetur Project objective 2: digitising, preserving and cataloguing collection objects with normalised protocols. The respective steps are described below.

4.1. Starting point: identifying artistic objects and contextualising collections

Prior to implementation, the proposal entailed identifying the digital objects contained in the two collections covered by the Voremetur Project: Espacio P and MIDECIANT. Information drawn from several earlier studies was applied to contextualise the collections from the artistic and documentary perspectives.

The Espacio P(erformance, 1981-1997), also known as Espacio P(olyvalent), collection included the legacy of an independent, self-managed and -financed centre, a video art pioneer in Spain, and its creator, Canary Island artist Pedro Garhel (Puerto de la Cruz, 1952 – La Guancha, 2005). The sizeable store of documents on artistic objects generated by Espacio P includes a collection of videographic and audio material, along with administrative paperwork on the centre's courses and exhibitions: estimates, invoices…

Pedro Garhel's personal archives, organised as a section of the Espacio P archives, include the documents generated by the artist. These widely diversified papers illustrate all the multi-faceted but interconnected activities in which Garhel engaged in the plastic, visual, scenic, and audio arts: personal correspondence and documentation, educational materials, media art undertakings and performances. That legacy was the object of a pioneering project that explored interdisciplinary artistic practice and digital continuity. It called for preliminary organisation, cataloguing and digitisation of the collection to guarantee its digital continuity and dissemination in keeping with archival science, information management and digitisation criteria (Archivo de Espacio P, 2013).

The MIDECIANT collection, in turn, includes digital objects forming part of the Museo Internacional de Electrografía - Centro de Innovación en Arte y Nuevas Tecnologías (MIDECIANT), headquartered at Cuenca, Spain. The museum, which houses a collection of graphic and digital art and has operated as a digital technology workshop since 2012, is regarded today as a benchmark media art laboratory. Since its inception it has engaged in activities geared to conserving and disseminating its archives (Alcalá and Escribano, 2016). The measures that had already been taken when the Voremetur Project was initiated included the terminological cleansing of glossaries and basic collection cataloguing based on minimal descriptive metadata.

Identification of the objects analysed also entailed classifying the typologies in place. One of the challenges involved in their conceptualisation was the collections' diversity. Content ranged from creative works and artistic projects (pictorial oeuvre, drawings, media art, electronic music…) to administrative documents describing artistic processes (personal and professional correspondence, photographs and slides of artistic productions) and the Espacio P papers (brochures, exhibition catalogues, artists' dossiers…). In the case of Espacio P, the classification chart generated by the project itself to organise and recover the collection and Pedro García's personal archives was used to categorise that set (Castro-Morales et al., 2015; García-López et al., 2017).

Contextualisation of the two collections was followed by digital object structuring under the following headings: paintings, drawings, photographs, brochures and monographs, inventory of slides and negatives, correspondence, audiovisual material, contact sheets, Pedro Garhel & Espacio P and MIDE.

4.2. Entering digital objects on media art in Omeka

The cataloguing team based their assessment of the software best suited to the task at hand on catalographic criteria. Of the two systems, DIGIMUS and Omeka (open-source software) analysed, the former was ultimately ruled out due to the shortcomings detected in museum digital object-sensitive areas, specifically issues around intellectual property.

Omeka was chosen on the grounds of its aptness for digital collection and virtual exhibition management and publication and of the adherence of its open source code to internationally accepted standards (Dublin Core, W3C). A review of the scientific literature on its implementation in virtual collections was a determinant in the choice. Its use in mid-sized institutions such as the Metropolitan New York Library Council (Kucsma, Reiss and Sidman, 2010) was viewed favourably, as was the fact that it supports digital humanities and digital exhibition projects (Rath, 2016; Alcaraz Martínez, 2011; Pérez, 2011) and is applicable to new media projects. (It was in fact developed to digitise the George Mason University Center for History and New Media, CHNM).

The program was explicitly set up to facilitate cataloguing performed with the descriptors envisaged in the media art thesaurus created as part of the Voremetur Project using a data entry form that includes both descriptive and indexing metadata, (Figure 3).
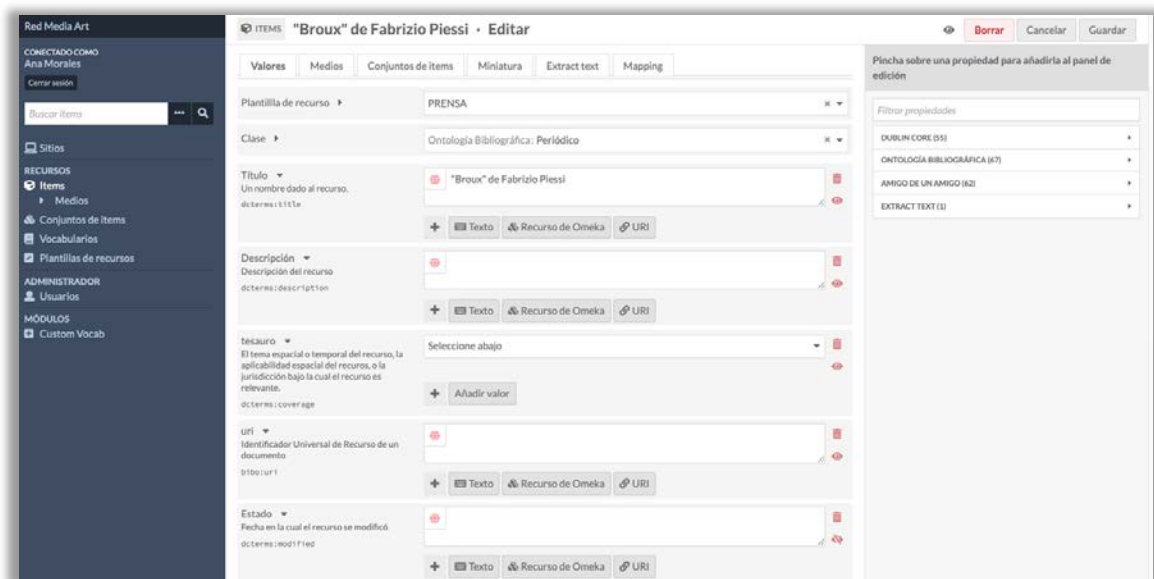

Figure 3. Omeka S – Version 2.1.0 (Voremetur Project)

Source: https://voremetur.uc3m.es/redmediaart/login

4.3. Descriptive metadata for museum digital objects: Voremetur Project

A number of resources was reviewed to define the minimum descriptive metadata needed bearing in mind the descriptors defined in LIDO (Lightweight Information Describing Objects),

an XML cultural heritage information harvesting schema that allocates records to the following fields or items: objects, actors, places, events, concepts and schemas.

Attempts were made to honour LIDO conceptual categories in the metadata selected for Voremetur Project cataloguing. The primary criterion, however, was the pursuit of a scalable, Omeka-compatible metadata system. Although several media art cataloguing policies were compared, such as the Netherlands Media Art Institute model and the one proposed by the European project Inside Installations: Preservation and Presentation of Installation Art, the specific working methods defined were adapted to the features of the collection analysed. The Netherlands Media Art Institute's Media Matters model, with its meticulous description of types of media art and necessary metadata sets, guided the choice of minimum and supplementary fields.

The cataloguing model proposed consequently covered:

- data describing the work

- harvesting or recording data

- data on the production of the work and its context

- preservation requirements compatible with the needs of the company hired to ensure the digital continuity of the digital objects.

A review of the aforementioned resources led to the use of the expanded Dublin Core metadata schema. The metadata structure chosen was adopted bearing in mind the 15 basic items in the Dublin Core Metadata Element Set, expanded to include the additional elements.

Dublin Core was chosen for its:

- scalability

- interoperability

- integrability with the project indexing system, the media art thesaurus

- modular structure, whereby fields populated with unstructured text may be added to include further information as necessary (copyright, installation issues, origin…)

- integrability with Omeka software via a plugin with supplementary fields.

That notwithstanding, the choice of a metadata standard is complex and may give rise to blind spots when cataloguing digital objects on media art. That disconnect between metadata standards and their users was addressed by Maron and Feinberg (2018) with specific reference to Dublin Core and its adoption by Omeka. Certain gaps in the implementation of Dublin Core by Omeka were shared by the Voremetur Project. What initially may have been a shortcoming was corrected by defining unstructured fields for certain elements. The choice of the Omeka-Dublin Core tandem was in any event deemed to be the most cost-effective approach for processing and subsequently disseminating and heightening the usability of collection documents.

4.4. Drafting a procedures manual

The cataloguing proposal envisaged the preparation of a procedures manual with possible cataloguing methodologies and field definitions to describe digital objects on media art for entry

in the respective software. The manual was designed as a normalisation tool for recording data identifying each digital museum object and the context in which it was created.

5. Scope and limitations: the challenge inherent in describing a collection of these characteristics

Voremetur Project cataloguing is ongoing at this writing. A total of 8884 digital objects, populating 3919 items, have been uploaded to Omeka. The problems primarily encountered have less to do with volume, however, than with the difficulty involved in contextualising complex digital museum objects. Many of the Espacio P materials, for instance, were intended to document or record ephemeral performances. On occasion, finding information on the context in which such works were created involved some investigative sleuthing.

The challenges encountered in cataloguing are summarised below.

- Misaligned cataloguing levels: as the inventories on which cataloguing was based were very dissimilar, Dublin Core mapping required much time and effort to reach a consensus on the most appropriate field.

- Limits to Omeka implementation of Dublin Core: although the metadata were personalised, adhering to a specific metadata standard was not always straightforward. Much of the contextual information on performances or installations had to be entered as unstructured text.

- Digital objects lacking attribution or origin: analysis of the digital objects revealed a paucity of data on the origin of many works. The data on attribution were also sparse at times, for given the ephemerality of media art creation, its works are often deemed 'acts for the present' not intended for future preservation. Anonymous works lacking authorship constituted another typology.

- Personal documentation: as Post (2017) noted, creating media art works entails creating support and media materials and tools that form part of the preparatory documents on the oeuvre. Much of that material was reused by the artists themselves and some was never meant to be conserved. A catalographic solution had also to be found for Espacio P, where art works per se often co-exist with artist Pedro Garhel's personal collection.

- Sample non-uniformity: whereas Espacio P and Pedro Garhel shared spatial-temporal coordinates and earlier studies helped classify the collection, the MIDECIANT collections could not be so classified due to the complexity of the sample.

- Lack of context for the work of art: here also, a substantial share of the material was characterised by a shortage of descriptive elements, sometimes with very scant metadata consisting in little more than a generic title and a format or form of expression (such as U-matics, VHS…).

- Some works were undated.

- Artist/creator, institution or place names were not always standardised.

- Difficulty inherent in specific subtypes: Chiantore and Rava (2012) singled out performances, installations, conceptual art, and media art as elements calling for more radical and different preservation strategies than in place for analogue works.

- Common, widely used catalographic criteria could not always be applied due to the loss of information involved.

6. Conclusions

The purpose of this article is to describe the procedures involved in cataloguing a collection with 8884 digital objects on media art, drawn from two separate collections: Espacio P documents and the works collected by its creator Pedro Garhel; and a selection from the Museo Internacional de Electrografía – Centro de Innovación en Arte y Nuevas Tecnologías (MIDECIANT) collection that forms part of the Cuenca School of Fine Arts' Colecciones y Archivos de Arte Contemporáneo. The exercise furnished answers to the research questions posed. By way of reply to the first, the Voremetur Project experience revealed the particularities of media art work processing and preservation. The ephemerality of such works, the complexity of their conception (involving both hardware and software) and the retrospective nature of the endeavour made collection cataloguing and indexing key mechanisms for providing context for the collections studied. A need was identified to systematise and document cataloguing by the custodian institutions. The decision to adopt a metadata and software standard for collection management should not be based solely on technical criteria but embrace the flexibility inherent in the diversity of museum objects that require likewise diverse catalographic information. That consideration, by invoking collection complexity, links into the second research question. The Voremetur Project encountered a collection difficult to contextualise, with works devoid of any information whatsoever, many anonymous and others specifying only the software or recording format. In some cases, those gaps could be filled by researching external sources, although contextualisation was not always possible. The proposal for the future is therefore to publish these collections on the web in conjunction with their metadata and enable some degree of cooperative attribution extent via folksonomy or social tagging once the works are available to website users. That could further the creation of a network of experts and collaborators able to shed light on many of these unknown pieces.

This article highlights the importance of cataloguing and the need for multidisciplinary teams to manage virtual media art collections. As such management is still incipient in Spain, in reply to the third research question, the Voremetur Project's systematised cataloguing is deemed able to generate the necessary debate and initiatives around the issue, in particular since with its digital repository the project aims to establish the foundational requirements for a national network of media art.

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