

Digital Approaches for a Public Art Collection Between Conservation and Public Outreach: the “Mastroianni Experience”

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Digital tools for artworks can offer new opportunities and design new approaches for conservation and public outreach. This paper presents the experience carried out by the School of Conservation and Restoration of the University of Urbino to preserve a public collection of wooden artistic models assembled by Umberto Mastroianni and used as a project of original bronze and steel sculptures. The digital documentation supported the maintenance protocol and helped design the restoration work. Moreover, thanks to cutting-edge technologies, a virtual exhibition was created, testing an AR application that allows the public to better appreciate the results of the interventions. Digital storytelling about artistic meaning connected the models to original sculptures placed in various Italian landscapes, offering the public an artistic journey into Urbino’s architecture.

Keywords:

Conservation, Documentation, 3D Models, AR, Public Art.

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1. INTRODUCTION AND CULTURAL CONTEXT

Umberto Mastroianni was an Italian abstract sculptor who died in 1998. His art started from futurism and cubism, was inspired by the plasticity of John Arp and Henry Moore, and focused on studying and rendering dynamic values. Umberto Mastroianni's works can be found in over 280 of the most prestigious museums in the world.

The Mastroianni Experience project began in 2014 as a collaboration between the municipality of Urbino (PU), Italy, and the School of Conservation and Restoration of its university. Specifically, the project was developed in the context of an educational workshop about contemporary restoration techniques. During the classes, students worked to perform correct interventions on wooden artistic models that the city of Urbino has owned since 1977. Some of these models were showcased at the

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"Museo della Città" ("Museum of the City," today closed), and the larger ones were stored in hangars outside the city. At that time, the purpose was to imagine a new arrangement for the collection that could bring back to light Mastroianni's legacy, linking the wooden objects to the bronze monument made by the artist for the city of Urbino and placed in Fortezza Albornoz.

The research followed a general interpretation of Mastroianni objects starting from the rediscovered and restored artistic models. The main subject for the project's first phase was the study of the collection of models, focusing on different technical problems: techniques of execution, conservation conditions, and environmental parameters of the storage spaces. The educational program stressed interesting and original research topics that compared wooden models and original artworks placed in open spaces. The study began with an analysis of images and historical documents. Next, the application of the 3D systems was crucial in recording precise geometries and volumes of such complex shapes. Finally, a methodological proposal was carried out to classify each part and establish its location. The resulting guidelines supported the general maintenance for correct preservation, considering the relationship between the artwork and the museum environment/urban space.



Figure 1. Umberto Mastroianni, "Monumento alla Pace" (Monument to Peace), 1987, Cassino.

As the project progressed, it was necessary to imagine how best to promote public understanding of the restored models. Moreover, the opportunity to receive European funding led us to explore the

possibility of setting up a public art museum inside Francesco di Giorgio Martini's helicoidal ramp, a walkway connecting two parts of the city. The museum could remain open to the public and develop an "artistic promenade" without interfering with the usual use of the famous ramp as a link between the Piazza del Mercatale and the highest part of the Palazzo Ducale.

For this purpose, a scientific committee was organized to discuss proposed solutions to different conservation problems presented by Mastroianni's legacy and its public communication. The committee contacted many public institutions with Mastroianni heritage materials.

The project encountered several setbacks. For example, the dimensions of the collection did not allow for a correct balance between the artworks and the architecture. The lack of funds sometimes slowed down progress toward the project's final goal.

2. RESEARCH AIM: THE CONSERVATION OF MASTROIANNI'S LEGACY

The goals of the project evolved over several phases: digital documentation of the individual elements; the restoration and assembly of the models stored in the hangar; designing handbooks for assembling the works using 3D models; the development of a work plan for placing the models in a suitable location for their conservation and public communication; the preparation of environmental assessment protocols for the new exhibition sites; the preparation of a public communication approach using AR systems. What all the various goals had in common was the use of digital data throughout the process, up to and including the design of the virtual museum.

The exhibition project of the Museum of the Ramp involved a small number of wooden models. The remaining pieces will be included in a proposed new exhibition that adds some historical buildings – property of the University of Urbino – redesigned by Giancarlo De Carlo during the 1970s. An innovative dialogue between modern architecture and contemporary sculpture was framed, which could increase cultural tourism. At the same time, the original solution opened and transformed important urban spaces, including the university buildings, as a structural part of the urban and social fabric.

3. THE COLLECTION OF WOODEN MODELS: MASTROIANNI AND URBINO

3.1 A brief art-historical overview

Umberto Mastroianni (1910-1998) is considered a prestigious and brilliant artist, among the most significant of contemporary Italian sculptors. He was born in Fontana di Liri, near Frosinone, Italy. At the age of fourteen, he moved to Rome, where he attended his uncle Domenico's studio and drawing courses at the San Marcello Academy.

Two years later, having arrived in Turin with his family, he honed his sculpting skills in Michele Guerrisi's studio. Called up for military service during the war, he took part in the Resistance with a commitment to issues such as freedom that were later reflected in his artistic work. He received praise from national critics after his brilliant debut as a young figurative artist. His sculptures moved through an informal phase and finally to a mature plastic expression toward the end of the 1960s.

Referring to Mastroianni's post-war sculptural work, Giulio Carlo Argan wrote of a "poetics of Resistance" that increasingly took on the monumental value of a cultural rebirth [Argan 1971; Argan, 1980]. His eclecticism led him to experiment with a wide variety of techniques on different materials, but he is known as the author of monuments to the Resistance scattered throughout Italy, including the "Monumento alla Resistenza italiana in Cuneo" (Monument to the Italian Resistance in Cuneo, 1969), which he himself acknowledged to be his masterpiece; the "Monumento alla Pace in Montecassino" (Monument to Peace in Montecassino, 1971-1977, Fig. 1); and the "Monumento alla Lotta partigiana" (Monument to the Partisan Struggle, 1975-1980), located in Cuneo's Resistance Park. In 1951, his first solo exhibition was organized at the Galerie de France in Paris, one of the most important galleries in Europe at that time. In the following decades, the artist's work evolved to plasticism, addressing a total geometric, chaotic, and angular spatiality [Barbero 2005]. The Mastroianni Foundation was established in the early 1990s in Arpino (FR), Italy.

The situation in Urbino was different. Here, the Museum of Wooden Sketches was planned: a collection of fifteen monumental wooden works preceding bronze or steel casting donated by Mastroianni to the city in 1977. This came after an exhibition of "chromatic reliefs," drawings, wooden sketches, and engravings curated by Floriano De Santi, highlighting a creative expression seldom investigated by scholars [De Santi 2002]. Mastroianni died in his house museum in Marino in 1998. In October 1998, another exhibition of seventy-one unpublished works on paper was held in the Palazzo Ducale in Urbino. It displayed the multiplicity and complexity of this famous artist's rich artistic production [De Santi 1998].

3.2 The artistic value of Mastroianni's wooden models

The city of Urbino preserves a substantial number of Umberto Mastroianni's wooden models and one original artwork, the "Monumento alla Resistenza" (Monument to the Resistance.), located in the garden of Fortezza Albornoz.

Fifteen models were offered by Mastroianni to the city, but in the absence of suitable spaces for their display, the wooden objects were the subject of a troubled and complex story. In 1998, the municipality, in cooperation with the provincial government, launched a recovery project to enhance Mastroianni's heritage. Each model was thoroughly studied to perform the intervention, and fifteen artworks were assembled. The important result was an exhibition named "Fucina Mastroianni," set up in 2002 in a large space outside the city.

This temporary museum was dismantled in 2007. Some models were moved to a new museum, the Museum of the City, which had been re-opened for the occasion. Noting the current artifact conditions, the temperature and relative humidity were monitored to maintain the correct conditions in the new exhibition space. The rest of the pieces, constituting the biggest models, was disassembled and stored in a warehouse to await a new arrangement.

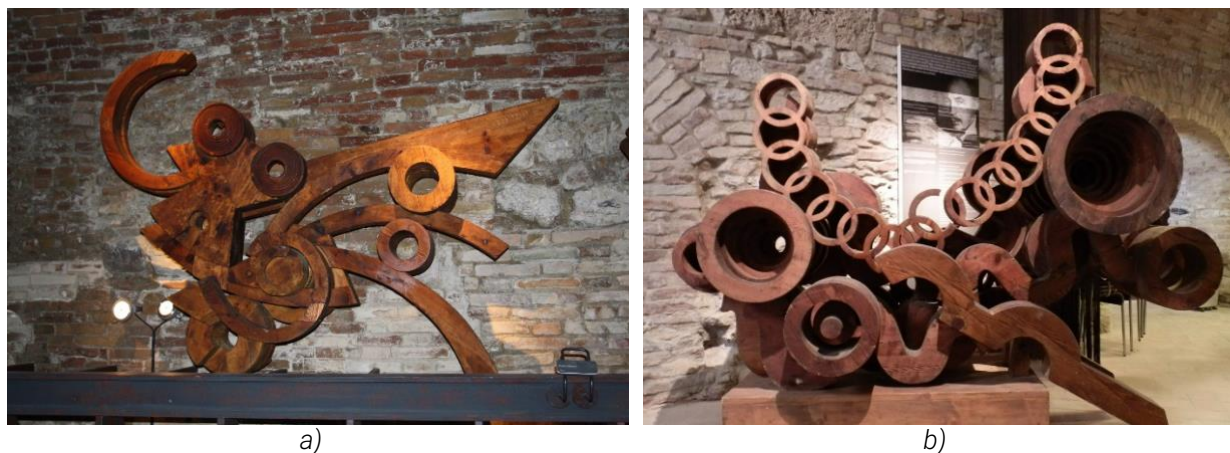


Figure 2. Examples of Umberto Mastroianni's sculptures: a) "Oeil Intérieur" (Interior Eye), 1970, size: 182 x 155 x 58 cm; b) "Ritmi Plurimi N.2" (Multiple Rhythms N. 2), 1976, size 175 x 216 x 90 cm.

The collection is an example of public art, a distinctive product of an art-historical period, and an emblem of a harmonious relationship between the artist and the city that held his last important exhibition (Fig. 2). The models, and the design sketches, represent a guide for the artist and his collaborators to create larger steel artworks.

"[...] Almost all the medium-size and large woods worked by the artist are models for foundry forming, or for the preliminary verification of the assembly of steel elements, or even for measurements of the 'lifting' in the marble technique." (De Santi, 1998)

The models have their own artistic autonomy. In fact, they present various structural modifications and some aesthetic changes with respect to the final full-size metal sculptures, which were executed with modifications as independent artworks.

A factor of the wooden sketches' autonomy is reinforced by the large number of exhibitions in which they have participated, not for their function as "purely interim elaborations" but for the completeness of their forms and their strong, autonomous artistic message. The wooden models, therefore, represent a decisive moment in Mastroianni's creative phase, maintaining an autonomous artistic character that makes them an important group of works representative of the artist's artistic development and maturation.

4. THE APPLIED RESEARCH METHODOLOGY OF THE SCHOOL OF CONSERVATION

From the beginning of the program presented in June 2012 and on the basis of a public agreement with the municipality, the School of Conservation proposed a practical intervention focused on different research topics: technical issues about the assembled method, material preservation aspects, and physical and microclimate conditions for setting up future exhibitions.

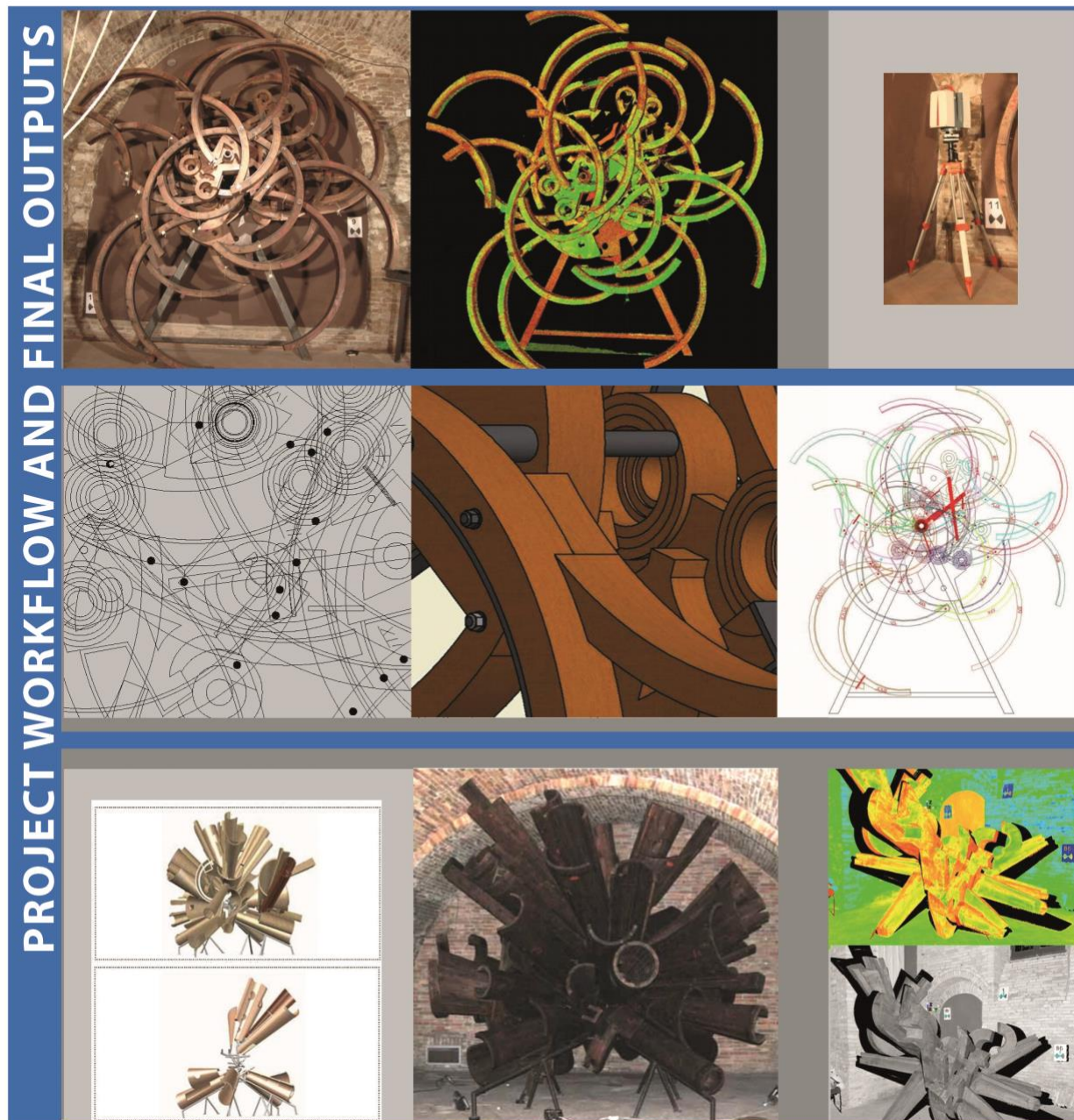


Figure 3. Summary of the different project phases.

Our approach, pictorially summarized in Fig. 3, was to find a data integration method using a digital tool. Our research was not focused on technological aspects; our interest was rather on methodological issues. We used well-known technologies that had already been assessed in the scientific field with the aim of exploring a new method of data integration. The innovation of our research lies not in the technology but in the aim of ensuring that no aspect of the preservation process was neglected.

The Mastroianni collection needed to be analyzed from a scientific point of view. In an effort to fully understand their construction and assembly systems, especially the mechanisms of deterioration, the conservators and the students examined each technical aspect of the models starting from the research on the typology of wood. Moreover, a deep archival investigation was carried out to discover the different objectives of the artist and to find possible old restoration works that could have compromised the artworks' originality.

During the investigation, we identified some microbiological attacks on the models showcased in the Museum of the City. Therefore, samples were prepared to obtain specific indications of biological deterioration. Moreover, the wooden surfaces were deeply studied to define better the point of oxidation caused by several metal nails. In addition, the students monitored the temperature, relative humidity, and intensity of the lighting over the artwork surface to support exhibition design choices for future presentations.

The analytic process was different for the models stored in the hangar. In this case, the research focused on the artworks' assembly systems and the exhibition space design owing to the models' larger size.

The goals pursued in different classes were presented in two master theses focused on different schematic phases:

- documentation and detailed mapping of single works using three-dimensional systems capable of high accuracy in recording objects with complex and articulated volumes;
- digital storage and maintenance;
- creation of assembly manuals for individual artworks using three-dimensional surveys;
- preparation of environmental assessment protocols for the new sites identified for their definitive location through a study of the climatic conditions of the likely exhibition environments;
- guidelines, specific to each work, fundamental for conservation purposes and in view of possible movements, always considering the general relationship between the work of art and the environment
- reassembly of the works located in the sheds, the first example of which was the installation of the sketch at the Peace Monument in Cassino.

The “Mastroianni Experience” project can be considered the general result. The program envisages the reunification of the elements of the general collection, providing the restoration and designing a

new approach for their fruition. The project focuses on a specific issue that considers conservation activities a way to open up the collection to a wider public.

We planned to create a museum that would be situated in the access area of the Ramp designed by Francesco di Giorgio Martini. Moreover, the exhibition continues with a city tour throughout the University buildings redesigned by architect Giancarlo De Carlo, encouraging visitors to explore the city's modern features.

4.1 The successful proposal of a museum open to citizens

All these conservation activities helped us achieve our goal: reinstall wooden models in an innovative exhibition space. The idea was to transform the legacy of Mastroianni into a public art collection that could connect city architecture with the artistic value of the objects.

As the first exhibition plan was developed, the initial thought was that the characteristics of the ramp should be emphasized because of its architectural peculiarity. But, as a part of a specialist conservation institution, we were concerned that the conservation parameters for artistic objects should be correct and adequate to support a real conservation plan and not solely an exhibition plan. In fact, we considered various issues, such as how close people could safely walk past the artworks.

The project has moved beyond traditional gallery concepts to give Mastroianni's wooden models a new artistic life. This has been achieved by studying and developing new access to this heritage.

The research was engaged with several questions: How can the work of Mastroianni be installed in a new context? What are the conservation challenges presented by these objects?

To provide a functional process, the research for the new exhibition area followed three general rules: conserving, installing, and using. According to this flow, the results obtained from the intervention were the starting point. The opportunity to give conservation data a vital role led us to explore a new approach to documentation as an operative tool to share important decisions and to define solutions.

Emerging digital tools helped us to study the complex interrelation of layers of conservative documentation. Structuring a new and digital acquisition process, we could distinguish two different layers: one technical for archiving data from intervention, and one more empirical for describing the value evolution.

The Museum of the Ramp was installed as a public open space in 2015. The overall mission of this first project output was to preserve the Mastroianni collection through preventive care and open access to its enjoyment. During the next few years, the project grew in scope. From this first exhibition experience, new research evolved with new opportunities for digital documentation.

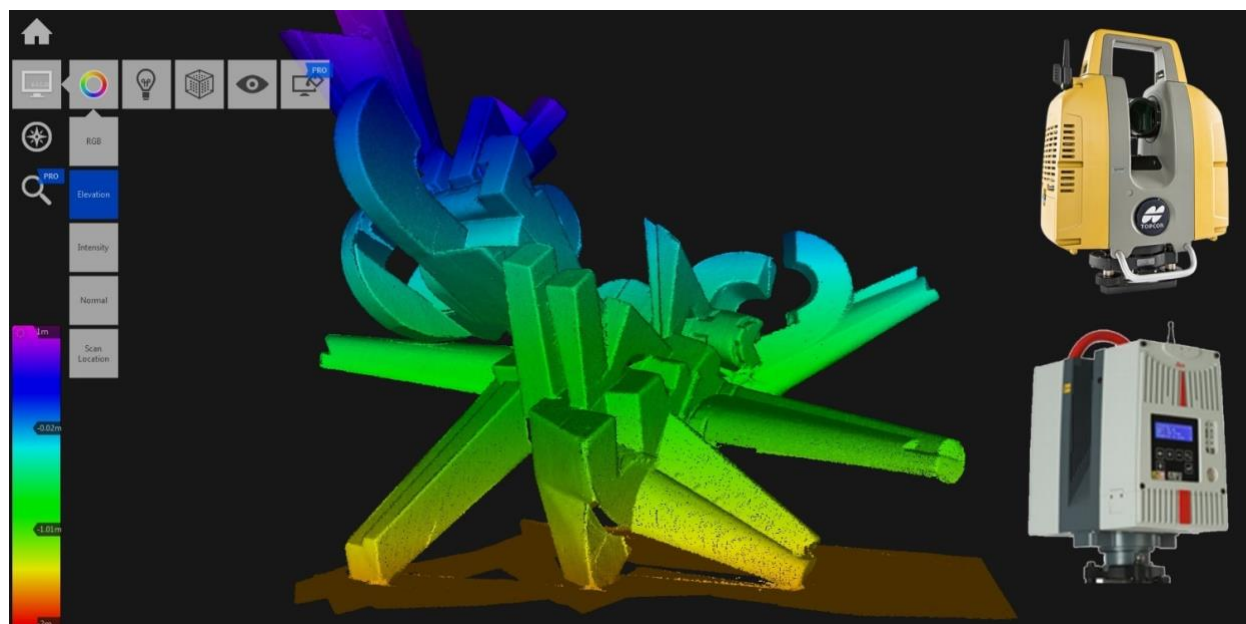


Figure 4. Digital survey of a Mastroianni's sculpture performed with a laser scanner.

5. DIGITAL TOOLS FOR CONSERVATION

The Museum of Ramp was the first attempt to display the Mastroianni legacy as a whole. It was the first conservation effort in terms of the general collection. Designing the museum, we hoped visitors and citizens would walk away with an appreciation of the general significance of Mastroianni's work, observing his studies and wooden models together in one location. The specific conditions established inside the Museum of Ramp allowed the objects to function as if they were real original artworks.

This installation implied the presence of a specific conservation standard which had evolved based on contemporary digital technologies. In fact, the rapid rise in new digital technologies has revolutionized the practice of recording artistic objects [Marra et al. 2021]. In the last five years, several tools and applications for conservation have been developed to help the monitoring process [Acke et al. 2021; Apollonio et al. 2018; Abate et al. 2014]. However, before evaluating the functionality of the technology at our disposal, a clear documentation process had to be set up. In fact, the importance of documentation plays a central role in collection care (Fig. 4).

The challenging aspect of this project was creating digital content for conserving peculiar art collections like the one shown here that could transform documentation tools into effective and sustainable knowledge systems.

The collected data were deployed over the years: from a 3D model of the object to an integrated digital schedule to control the conservative parameters.

Using digital documentation tools, the general acquisition of data for conservation is changing from an empirical model of linear narrative description to incorporating diverse media and creating 3D objects, visualizations, and simulations [Cameron and Robinson 2007; Kalay et al. 2008]. Taking account of new technological potentialities [Willot et al. 2022], we could revise traditional documentation by recognizing a new poly-systemic model that considers each aspect of the object. In this sense, we could transform the intrinsic characteristics of conservation, extending its significance. For example, the way digital databases are structured today enables users to link information, store data, search information, and share technical meanings. This access sets the stage for a possible revolution of documentation for conservation.

Certainly, the use of technology has implications for the historical evolution and transformation of language and culture. In the same way, this can shift the general definition of conservation through a new approach to digital documentation.

In our case, the work of documenting Mastroianni's models has evolved into two principal steps: the first focused on a technical approach to conservation, and the second centered on communicative aspects.

5.1 The assembly manual designed for each object

"The graphic or photographic capturing of information describes the physical configuration, evolution, and condition of heritage sites at known points in time" [Letellier 2007].

Letellier argued that technical documentation is a significant part of the conservation process because it can virtually freeze and transmit a specific situation. He referred to heritage sites, but we can use the same method for movable assets such as works of art.

For the Mastroianni project, we strictly worked with graphical documentation obtained through many survey campaigns. [Letellier 2007].

The surveys were undertaken manually and digitally, as best practice dictates. New digital technologies are simply part of a larger kit of tools available to conservators.

Regarding digital surveys, the acquisition of three-dimensional data was conducted using laser scanner technology and photogrammetry. The geometric results obtained from these devices constituted an indispensable reference for any further analysis and study of the documented object [Marra et al. 2021].

Our goal was to obtain technical instructions to re-assemble each artifact. At the time when the work started, most of the individual pieces of the models were disassembled and stored in different hangars.

To better understand the internal structure of each dismantled model, virtual 3D reconstructions were developed using the dimensional data acquired from different types of surveys. The conscious distinction between 3D recording and 3D modeling was our general guideline in this context. In fact, interactive procedures to acquire and elaborate 3D data are preferred, since they provide more accurate metric results [Santana Quintero and Vileikis, 2011].



Figure 5. Abacus of elements of the "Monumento alla Pace" (Monument to Peace).

This integrated way of proceeding - analytic/digital; 2D/3D; automatic/interactive - was a great opportunity to correctly collect all the dimensional data. Throughout the course of the technical study, conservators of the School of Conservation and Restoration devised a method to identify the single elements of the original wooden sculptures from their virtual reconstructions. First, an abacus of elements was composed in order to know every single part of the object (Fig. 5). The second step was to design the sequential phases of physical assembly (Fig. 6). Finally, the digital 3D model was processed. Underlining the importance of a systematic documentation process to pinpoint conservation needs, we obtained a technical handbook for describing the correct assembly process of each part. Overall, the reassembly activities following the technical handbook were a great success. One of the key factors contributing to the correct setup of artworks was the support of digital reconstructions. Conservators collaborated actively to draft the booklet because they instantly recognized the usefulness of digital systems to achieve the required result.

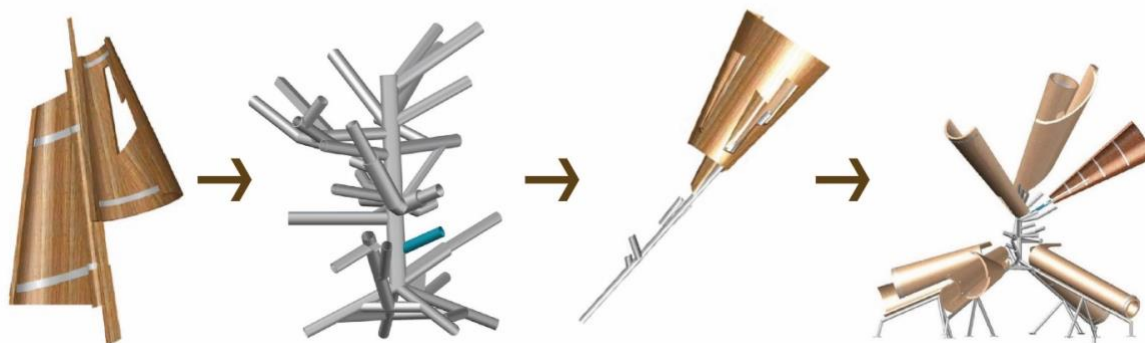


Figure 6. Representation of the assembly process for the “Monumento alla Pace” (Monument to Peace).

5.2 The monitoring process

This section draws on the findings of a monitoring process capable of transforming the simple collection of environmental data into effective knowledge useful for correct conservation activities.

The study explores this issue across the breadth of the documentation methodology and led us to a new interpretation of a documentation schedule. The general aim, in fact, was to digitally create a knowledge base able to store, explain, and narrate the conservation data of the art collection using only one web-based management tool.

We needed a flexible method in an open context, such as the Museum of the Ramp. The traditional approach to monitoring was inadequate, since it tends to register only the technical data and use them to evaluate the state of conservation.

The collection of Mastroianni models in its new interpretation has multiple dimensions, often incorporating a public dimension. The museum conservators must consider this issue and accept that the significance of preservation is not fixed for each object but rather is a product of its life [Konsa 2015]. Today, this also means opening up knowledge about collections through digital processes and digital channels [Gasparetto and Devecchi, 2020].

From this perspective, the monitoring of collections must be viewed in a new way, in that the value of technical data about environmental and physical conservation must always be accessible to a wider public composed of the general population.

Generally, digital technologies create greater public participation in all types of art collections [Schonfield et al. 2021; King et al. 2016]. However, they are also effective as support for conservation activities. In this case, we experimented with a website that presents the technical details of the artwork in an organized framework, allowing us to generate an easy-readable report for non-experts. Furthermore, thanks to its flexible structure, the digital tool efficiently manages different types of data, from the description of the state of conservation to the project of intervention.

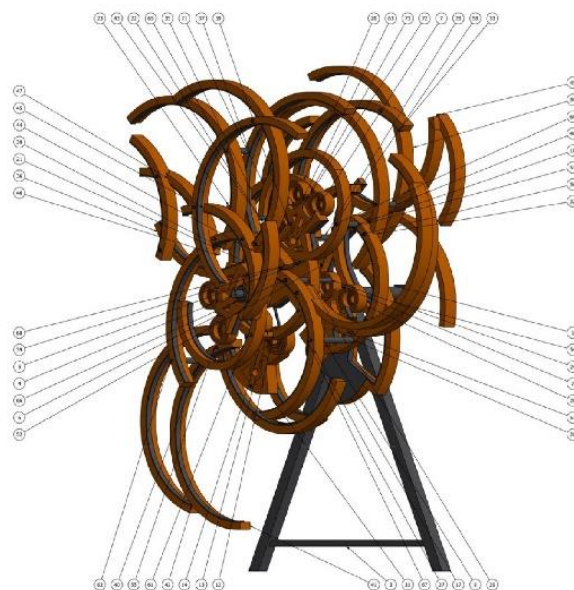


Figure 7. Table of links, "Parabola Umana" (Human Parable).

In this sense, the digital approach changes traditional monitoring activities. Although the digital approach was previously insufficient compared to the needs associated with diagnosis, exhibition, preservation, and public outreach, today, digital tools are helping us to work interactively.

6. A NEW DIGITAL METHOD FOR CONSERVATION

Monika Jadzinska, conservator-restorer and member of the Faculty of Academy of Fine Arts in Warsaw writes: "Only after having accumulated such knowledge can one create strategies for the active and preventive care and conservation for given object" [Jadzinska, 2016].

Why is it so important to focus on knowledge and documentation? And why are we talking about the importance of knowledge communication and transmission?

Using digital technologies and applications has an impact on contemporary conservation.. To design a correct process of art preservation, we need to start from a set of data and transform them into possible courses of action. The conservator employing digital tools acts as an expert in data analysis who selects and defines all possible links between art, its conservation, and its relationship with users/visitors.

The digitization of useum collections affects both conservation and public understanding. Conservators should skillfully distinguish between these two things. Contemporary ICTs extend far

beyond the recent and famous applications for public outreach and appreciation of CH [Fernandes Vaz et al. 2017; King et al. 2016]. Conservation also depends on ICT systems for recording, monitoring, and transmitting information.

Conservators today are engaged in the new activities of digital conservation as an integrated approach. These kinds of innovative perspectives open creative ways of connecting conservation efforts and communication with the general public. When new technologies are designed and applied as real tools for conservators, they can correctly display the work beyond laboratory walls and engage museum visitors in the preservation process.

7. FROM CONSERVATION TO PUBLIC OUTREACH: A VIRTUAL OPEN TOUR TO VISIT THE MASTROIANNI MODELS

Since the Museum of the Ramp opened, the Mastroianni legacy has been connected to the city of Urbino. Even though the idea of a public museum open to the citizens and tourists was a great opportunity for public outreach, the difficulties of exhibiting the artworks in the space were greater than expected. After almost two years of research and many experiments, our work had not fully started. By using the assembly handbook, we have been able to put together no more than two models.

In fact, virtual reconstructions showed us we had little chance of actually seeing the museum inside the ramp due to its narrow space. So, to achieve our goal of public outreach, we came to the conclusion that in designing the Mastroianni museum we would also be open to virtual heritage solutions. Following the contemporary idea of a pop culture open to modernity and able to dialogue with digital tools, the new project proposes a mixture of physical and digital artifacts [Giannini and Bowen 2021; Lupo 2021; Giannini et al. 2019; Vermeeren et al. 2018]. This possibility allowed increasing the number of models on display, overcoming the problem of the limited ramp size. Moreover, this made possible a new interpretation of museum collections as an explicit attempt to produce cultural experiences through a digital approach and ICTs.

The new proposal had to meet two specific challenges: to support free access to the enjoyment of the different Mastroianni wooden models and to integrate the virtual and real as part of the visit.

Starting from an analysis of the digital material collected during the preservation process, we began to develop this new hybrid solution. The principal goal was to use conservation results to achieve a public story we could share with visitors. Although this is not currently something easy to achieve, we planned to mix physical results with digital visualizations. Before finding suggestions on how to make virtual information tangible, we started to research the attempts to apply digital 3D models of artworks. These models were used to realize the maintenance booklet.

For these reasons, we designed a possible evolution in an application for 3D data using AR technology.

Our first motivation in adopting an AR solution was to engage the public through a digital application [Verhulst et al. 2021].

For this reason, we envisioned an application named MastroApp. The development of the project is still in progress. The technical part is already developed, but implementation of the digital solution, which depends on a collaboration with the municipality, is not yet planned.

The development of the contents of the app followed a precise technical workflow. The geometric starting point was the result of a laser scanner survey that provided exhaustive documentation of the general morphology of Mastroianni's works. Homogeneous models were post-processed using dedicated software devices such as Autodesk Recap and Gexcel's Reconstructor. The resulting point clouds were imported into AutoCAD to generate the geometric primitives of each constitutive element. Later, the 3D models were imported into Autodesk 3D Studio Max by loading the AR-Media plugin. As a result of the Autodesk system, the Inglobe Technologies Augmented Reality (an Augmented Reality platform) platform can be accessed directly on the cloud. In this digital environment, once the upload is completed on the cloud through the Inglobe Technologies AR-Media account, we could prepare the model for its final use.

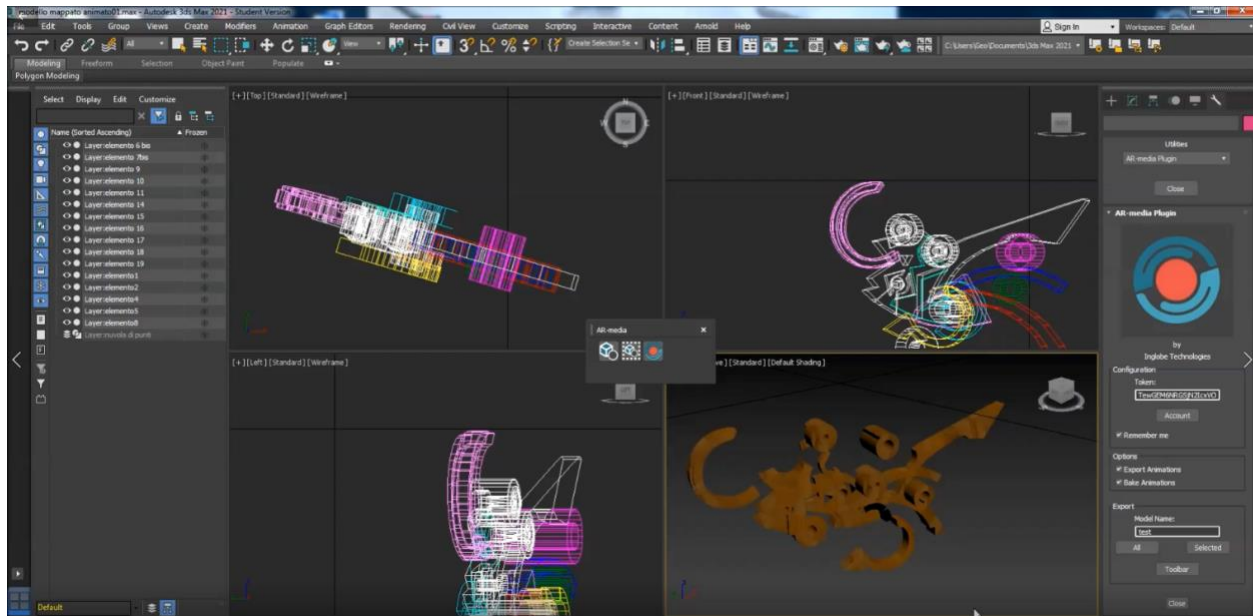


Figure 8. Data post-processing in 3D Studio Max.

Trying to address an application problem, we developed a stunning digital representation of objects, and this raised the issue of creating a virtual environment for the exhibition. The centrality of the location of the museum remained an important aspect of the project. The space in which we use the virtual heritage is not neutral ground. The application of digital media to cultural heritage must maintain a dialogue with the context and create a strong cultural link.

The proposal for Mastroianni's virtual heritage reconstruction exploits the city of Urbino. As in the first solution of the Museum of the Ramp, characterized by a special focus on historical architecture, MastroApp sets the important buildings of the University of Urbino as a backdrop in both physical and virtual terms.

In recognition of the countless opportunities that digital solutions offer to open all kinds of heritage, we thought of a cultural promenade as a new idea of integrated experience. Walking through the

narrow street of the Renaissance historical center and entering the principal courtyards of the university, users will interface with the art and architecture of Urbino.

By using a code located on a wall, the users will be able to view on their devices the architectural environment with the digital models of the artworks that can be separated into all their constituent elements.

In order to employ all data about preservation interventions, another MastroApp solution was designed. In the few cases where models are present, MastroApp provides AR information about the morphology and mounting system of the structure.

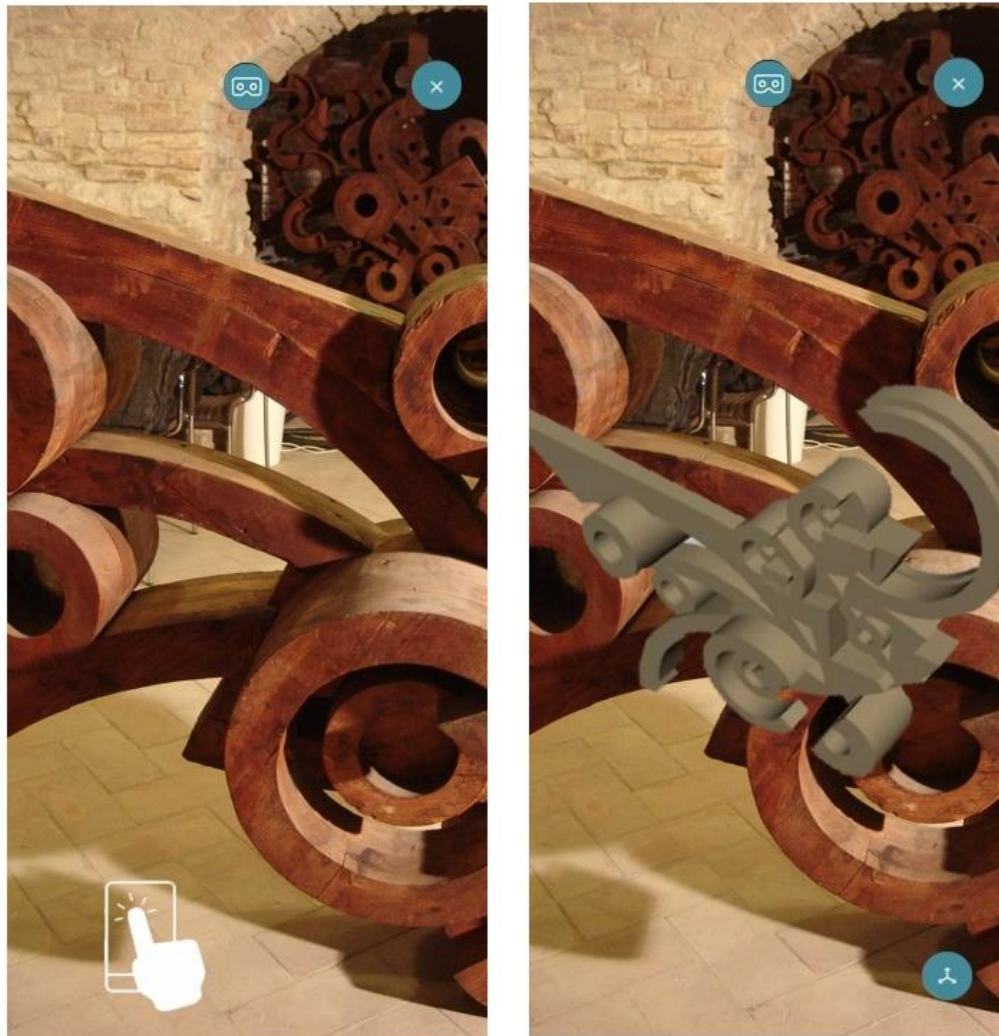


Figure 9. AR content delivered with the MastroApp, on a smartphone in front of the wooden model "Oeil Interieur" located inside the Ramp Museum.

The MastroApp project manages to bring together digital content with physical spaces in a unique experiential solution. In this way, visitors and citizens will be invited to tour the city, discovering the most important places for its university, which will also offer an opportunity to explore virtually Mastroianni’s collection of models.

The finished project will provide a dynamic public outreach tool for Mastroianni’s work and the city of Urbino. Moreover, it can promote the public’s appreciation of original wooden models virtually placed in different urban historical areas.

MastroApp is now a beta version, and it is not yet used by tourists and visitors to Urbino. Different concepts will be applied to measure and evaluate the user’s experience of this research project, including engagement and enjoyment as well. In this context, engagement could be principally focused on technical aspects to demonstrate ICT’s importance in the global conservation process.

8. CONCLUSIONS

Our research has confirmed that the digital approach entails additional challenges in conservation and public outreach projects. The main research results led us to an integrated method for digital documentation in the cultural heritage field, which can help technical staff in its everyday conservation activities and visitors during their cultural tours.

The principal target audience for research is contemporary restorers engaging with digital issues in order to support their work. The paper raises awareness about the use of digital technologies in the field of conservation as an operational tool, improving a standardized approach to the preservation of all kinds of artistic objects.

The conservation field faces new challenges as a new digital reality dominates the artistic world. Looking at these challenges from within the laboratories, professionals are thinking about what their interventions should become. This means finding new solutions to help the ongoing transformation without losing a scientific approach.

In this sense, the paper demonstrates that the contents of technical documentation could transform the traditional appreciation of a museum collection. In our work, conservators had the possibility to digitize technical data and organize them in a sustainable knowledge environment open to the general public as well. As the conservators collaborated on this project, they changed their goals and created a digital ecosystem that democratizes conservation data both for experts and the general public alike.

We also came to understand the potential of AR for its experiential value and as a technical solution that could be used to tell engaging stories about the art and its conservation. As noted, our AR solution, MastroApp, is still in development and assessment, and so this part of our study has not yet been brought to a conclusion.

In summary, the general aim of our research was to defend a rich public art collection that could no longer be displayed owing to administrative circumstances and the most disparate sets of problems. The conservation program proposed by the School of Conservation and Restoration developed a

documentation method and underlined the potential of digital technologies to create 3D objects, easy visualizations, narrative descriptions, and conservation indications using recorded data.

Our work on the Mastroianni Experience project helped us to rethink the role of this public collection of wooden models, and it enabled us to make publicly accessible an important part of Urbino's cultural heritage using technical data we originally collected purely for purposes of conservation.

9. ACKNOWLEDGMENTS

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