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# From Museum to Theatre Digital Humanities Tools Towards Inclusive and Cultural Fruition

Francesca Fatta<sup>a</sup>, Maria Milano<sup>b</sup>, Jan Piechota<sup>c</sup>, Paola Raffa<sup>a</sup> and Ewa Satalecka<sup>c</sup>

<sup>a</sup> Department of Architecture and Design (dAeD),  
Mediterranea University of Reggio Calabria, Italy,  
ffatta@unirc.it, paola.raffa@unirc.it;

<sup>b</sup> Escola Superior de Artes e Design / College of Art and Design (ESAD), Portugal,  
mariamilano@esad.pt;

<sup>c</sup> Department of New Media Art,  
Polish-Japanese Academy of Information Technology (PJAIT), Poland,  
ewasatalecka@pjawst.edu.pl, janpiechota@pjawst.edu.pl

**ABSTRACT:** The aim of the research From Museum to Theatre concerns the enhancement and promotion of museum artifacts related to mask culture, for their use in innovative and inclusive digital environments and the possibility of making them an active part of their theatrical and social location again. The Erasmus Blended Intensive Program (BIP) workshop was prepared considering the interdisciplinary characteristics of the participants, both faculty and students, all of whom were directed to the focus of Digital Humanities and aimed at innovative and inclusive uses for the promotion of cultural heritage aiming at the involvement of diverse audiences through the use of digital projects, three-dimensional prototyping, VR and AR animations, videos, etc. The project includes three phases to be held in three different European locations: the first and second phases of the study and analysis of classical Greek theater masks and Polish Carolinian masks have already taken place at the Aeolian Archaeological Museum's headquarters in Lipari and at the PJAIT headquarters in Warsaw; the third phase involving the design and creation of a traveling exhibition will take place at the ESAD in Porto.

## 1. INTRODUCTION

As part of European exchanges between university an Erasmus Blended Intensive Program (BIP) has been carried between the Mediterranea University of Reggio Calabria, Department of Architecture and Design (dAeD) together with three European partners: the Polish-Japanese Academy of Information Technology (PJAIT), Department of New Media Art in Warsaw, the Escola Superior de Artes e Design / College of Art and Design (ESAD) in Porto, Portugal, the Democritus University of Thrace, Department of History and Ethnology in Komoni.

A total of more than sixty students, teachers and experts in the field of humanities, representation and visual communication of cultural heritage participated. Erasmus Blended Intensive Programs allow for an internationalization experience that combines a short virtual mobility of scientific and organizational introduction with physical

mobility. The aim of the BIP From Museum to Theatre concerns the enhancement and promotion of artifacts related to mask culture for their use in innovative and inclusive digital environments and the possibility of making them an active part of theatrical scenes again.

The first phase of the project took place in May 2024 at the Aeolian Archaeological Museum “Bernabò Brea” in Lipari (Aeolian Islands). In this phase, artifacts related to classical theatre culture were studied. Scientific partners who are experts in classical philology and ancient theater culture as Elisabetta Matelli professor of Classical Philology at Università Cattolica del Sacro Cuore in Milan, and Roberto Danese professor of Classical Philology at University of Urbino lectured respectively on the use of masks in Greek theater and on the symbolic representation and meaning of the masks in *Commedia dell'Arte*. Also involved were, Maria Clara Martinelli, archaeologist, and Rosario Vilardo Director of the “Bernabò Brea”

Museum in Lipari who proposed interesting presentations on the significance of the masks stored in the museum.

The in-person activities, over a period of six days, took place on the Island of Lipari where some of Greek masks were surveyed and represented. The second phase took place in November in Warsaw at the PJAiT, here masks of traditional rural culture stored at the Muzeum Etnograficzne im. Seweryna Udzieli in Krakow were studied and analyzed.

An initial introduction to the culture of folk masks was given by Mirosław Kocur professor at Uniwersytet Wrocławski who refers about Masks in the theatre, while a specific lecture was given by Magdalena Zych curator of vernacular collection at Ethnographic Museum of in Krakow. The museum tour took us through the rural world of the region and to the knowledge and understanding of ritual manifestations of different social groups. Finally, the meeting with the curator of the Modern Art Museum Famous Sebastian Cichocki tell us about his curator vision of the modern exhibition.



Figure 1: Greek masks stored in the Aeolian Archaeological Museum Bernabò Brea in Lipari.



Figure 2: Traditional masks stored in the Muzeum Etnograficzne im. Seweryna Udzieli in Kraków.

## 2. FROM MUSEUM TO THEATRE

The workshop project was prepared considering the interdisciplinary characteristics of the participants, both teachers and students, all addressed to the focus of Digital Humanities and aimed at innovative and inclusive uses for the promotion of cultural heritage, and the involvement of a diversified audience, thanks to the use of digital projects, three-dimensional prototyping, VR and AR animations, videos, etc. Six thematic workshops were proposed.

### 2.1 DIGITAL SURVEY AND MODELING OF THE MASKS

Photogrammetric surveys of Greek masks [1] kept at the Aeolian Archaeological Museum and traditional ritual masks found at the Muzeum Etnograficzne im. Seweryna Udzieli in Kraków.

Based on the acquired photographic datasets, we were able to experiment with the photomodeling process aimed at digitizing the museum artifacts, sharing them online, and 3D printing them.



Figure 3: Photogrammetric survey and 3D model of Greek masks.

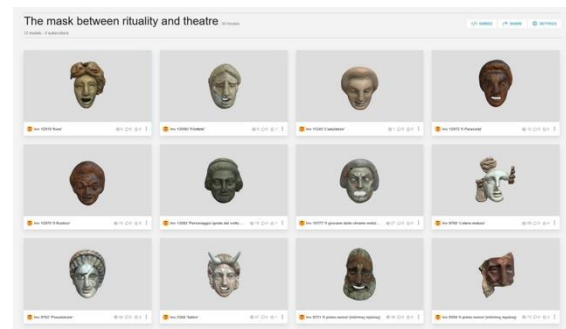


Figure 4: Digital open sharing: the masks between real and virtual.

Initially, work was done on digitizing and translating the archival cards related to the selected masks.

Then the images were aligned through the use of Agisoft Metashape software for the production of the dense point cloud and the processing of the mesh and its texturing. Digital models were then extracted and shared with other laboratories through the use of a web platform [2].

The masks selected for this project were the greeks Pseudo-core and the satyr Io, while for the traditional Polish masks was surveyed some decorated wooden masks both carnival and ceremonial ones. 3D printing at different scales of reproduction, including at the 1:1 scale, was also experimented with.



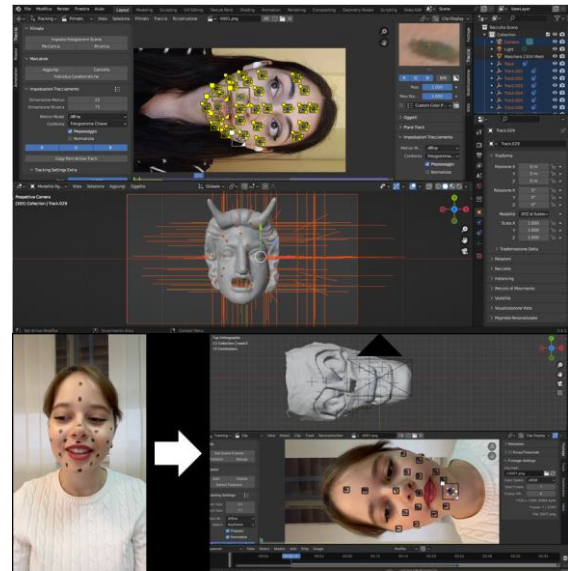
**Figure 5:** Survey and 3D model of Polish traditional masks.

Based on the photogrammetric survey and the three-dimensional rendering of some masks present inside the Muzeum Etnograficzne im. Seweryna Udzieli w Krakowie, the workshop consisted of the construction of a storytelling based on the facial motion capture technique, focused on the narration of the masks and the personalized involvement of the different users [3]. Based on the principles of edutainment, the 'talking mask' manages to tell the story and myths linked to the mask itself in a more engaging and personalized way [4].



**Figure 6:** Facial motion capture of greek masks.

During the workshop, each participant produced –from the drafting of the text, to the acting up to the video production– the animation of a mask, based on personalized stories aimed at its humanistic diffusion [5].



**Figure 7:** Process of Facial Motion Capture

## 2.2 AUGUMENTED INFOGRAPHIC

This work is based on innovative project that combines art, history and digital technology. The focus was on the reinterpretation of the Pseudokore, for a transposition into an interactive experience thanks to the use of augmented reality (AR), creating a digital poster that tells its story and its symbolic evolution. The project developed around an AR poster, with a QR code integrated into its center. By framing the code, the mask comes to life on the screen: it begins to tell its story, revealing its cultural and artistic meaning. During the story, something extraordinary happens: the mask takes on the appearance of a real woman generated with AI, embodying what it would represent in contemporary society.

The interactive experience combines additional elements: a virtual button that shows the original colors of the mask, allowing you to appreciate its liveliness and original appearance; an interactive little man who walks on a timeline and places the Pseudokore historically, offering a chronological and cultural context; a direct link to the 3D model of the mask that allows an even more detailed and complete exploration.

The result is a product that not only educates, but involves the user in an immersive experience, stimulating curiosity and reflection. Through Pseudokore, our group wanted to

demonstrate how technology can amplify the narrative potential of art, transforming an ancient mask into a bridge between past and present.



Figure 8: Interactive masks.

### 2.3 MAPPING ON MASKS

The workshop is based on video mapping for creating interactive masks. One of the main idea was to lay the concept of youth and old age. Initially, it created an interactive mask consisting of the shape of a young and an old face. The focus was on the eyes, because they are the only organ that does not change in size, throughout life. Also, 80% of all information a person receives from the outside world passes through the eyes.

At the beginning of the project, you can observe the faces from young to old in black and white, but the eyes remain colored throughout the project to show their power. The project ends on the frame, where the eyes completely cover our mask, creating a pattern on it.

The mirror reflection mask is an artistic representation of aging and self-reflection. The surface, composed of small mirrored tiles, fragments the viewer's face into multiple reflections.

You can see his eyes, visibly aged through the holes in his mask. This symbolizes how time reshapes the way we see ourselves, both

physically and emotionally, highlighting the fragmented and evolving nature of identity as we age.

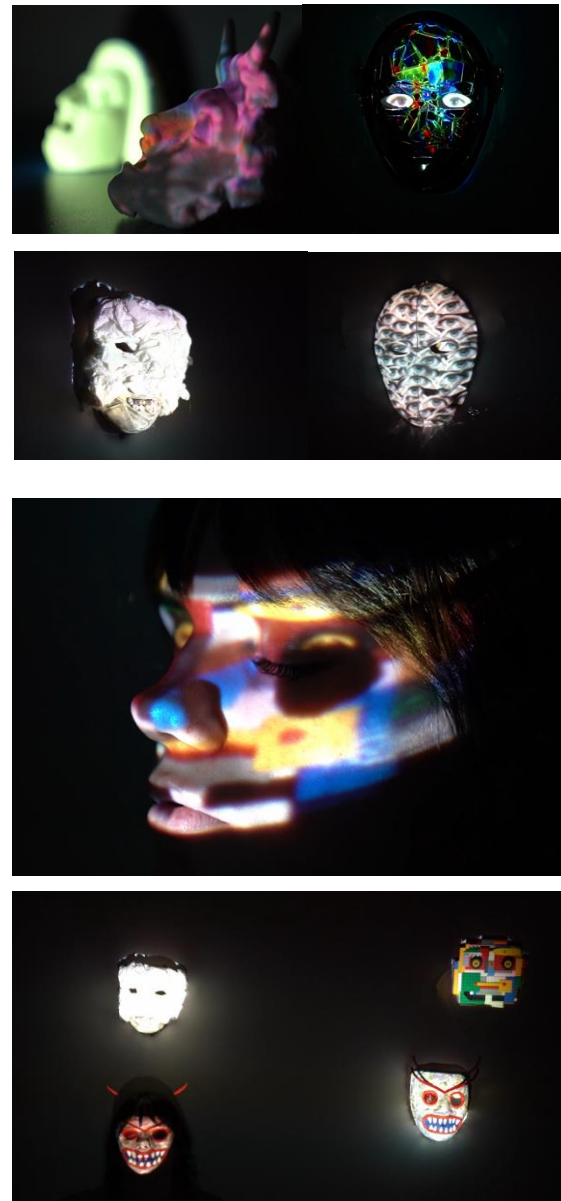


Figure 9: Projection Mapping.

### 2.4 VISUAL IDENTITY

The project involved integrating photographs of incomplete ancient Greek theater masks from the archaeological museum in Lipari with elements of local flora, patterns painted on ceramic tiles, and fragments of other projects created by the students during the workshops. By combining these visually disparate elements, we aimed to reflect the diverse interpretations of the local context.

The result of this collaborative effort was a logotype titled "Masks: From Museum to Theater," featuring handwritten lettering to emphasize the humanistic philosophy of the project. We also developed a series of posters

showcasing the adaptability of the designed identity through the use of masks.

In the second part of the workshop which took place in Warsaw, the visit to the Ethnographic Museum of in Krakow provided students with a chance to explore the folk traditions of southern Poland, which starkly contrasted with the classical aesthetics of ancient Greece. The masks used in festivals and rituals, crafted from materials like cloth and fur, served as both inspiration and a challenge for expanding the existing identity project to incorporate new cultural contexts and visual forms.

Looking ahead to the third workshop planned in Portugal next year, we decided to shift our approach. Instead of relying on photographs, we focused on combining drawings of selected masks, offering students greater flexibility in blending various visual elements. To further unify the project, we introduced a color-coding system: blue for Italy, red for Poland, and green for Portugal.

Through joint discussions and consultations, students gained invaluable experience, which I regard as one of the most enriching aspects of the workshop. The resulting identity design remains true to the principles established during the first workshop, with the flexibility to adapt and incorporate distinctive elements. This dynamic approach allows the identity to appear fresh and varied while retaining a cohesive and recognizable structure.



Lipari			Krakow			Porto		
Fico d'India	Oleander	Olive Trees	Field Poppy	Cornflower	Marigolds	Camellia tree	Citrus Identifier	Rosa de Portugal

Figure 10: Visual Inspirations.

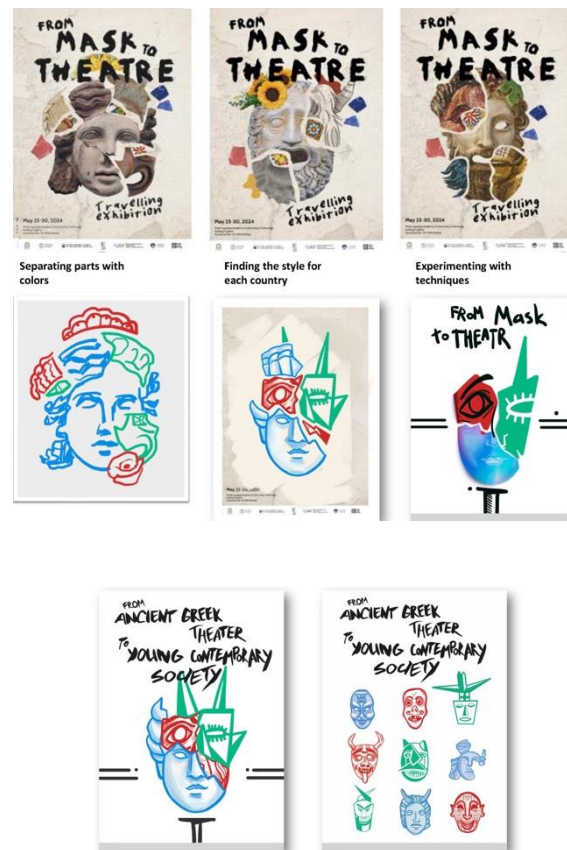


Figure 11: Elaborations of the posters.

## 2.5 TRAVELING MASKS

In this multidisciplinary context, the Traveling Mask workshop is linked to the possibility of communication and dissemination of the results of the BIP, a series of devices that can guarantee the dissemination of the project in a traveling exhibition.

The installation uses the fundamental parameters of architecture, such as space, shape, light, proportion, materials, rhythm, measure; while the design is based on the experience of space, the design of atmospheres, proxemics, which includes the experience of the use of space, the behavior of man in space, and the meanings that are attributed to it, different, depending on the different cultures.

The exhibition of the masks presupposed the study of a series of spatial, psycho-perceptive and temporal conditions so that the objects produced, of different nature and consistency, could establish a relationship with the exhibition space, but above all generate meaning, conveying and inducing an experience [6].

During the first workshop held in Lipari, in collaboration with all the other groups, the themes and contents of the traveling exhibition program were defined. The role of Greek masks

in antiquity, in relation to the places that generated them and in relation to society. A process of defining the objectives and the design of the exhibition devices was started. In the second stage of the workshop, in Warsaw, with the study of traditional Polish masks it was possible to fully outline the contents of the research and the elements to be exhibited [7].



Figure 12: Concept of masks exhibitions.

A programmatic text was built by relating the two types of masks, that of classical theater and those of Polish popular traditions, thus defining a programmatic text, capable of communicating values and meanings of a cultural heritage that includes many European countries, specifically the three countries involved in the workshop: Italy, Poland, Portugal, today represented by classical masks and those of popular tradition. The programming of a further stage that will be held in Portugal, all groups of students will be invited to build the exhibition devices designed in Warsaw, in a self-construction process, and to design the installation of the first traveling exhibition that will be held in the ESAD atrium in Porto [8].

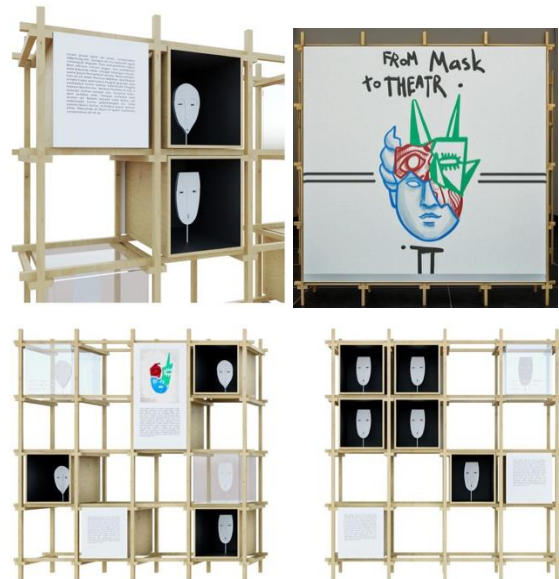


Figure 13: Design of exhibition furniture.

## 2.6 MASK TO PERFORMANCE

The characters present in the reproduction of the Aeolian masks are linked to the literary genre to which they belong. They represent the testimony of the presence of a rootedness in the cult of Dionysus and the relationship with all the theatrical production of tragedy and comedy, in which the themes are used as symbols of a happier world.

The study of the figurative characters of the theatrical masks stored at the Museum of Lipari was mainly based on two examples of female figures: the Pseudokore with a serious style, soft features and draped hair and the figure of the priestess Io, a young satyr, identified by the presence of horns after the transformation into a heifer.



Figure 14: Physic model of Greek masks.

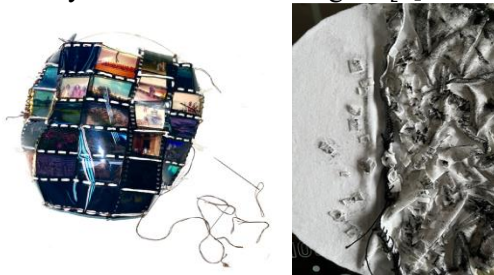
The production of the two masks enlarged to a congruent scale to be worn by an actor allowed us to consider the specificities of every detail of the Aeolian *coronoplastica* that for each character sculpts a personal expressive communication. The masks were staged in narratives aimed at creating an original production of stories and images.



**Figure 15:** Scenic performance.

The experience of Lipari supported the idea that physical representation through masks is capable of being a vehicle of communication with a high emotional value.

In the Warsaw workshop, the reference to popular ritual masks was interpreted as an element of narration of interesting themes deduced from everyday life (the characteristics of family resemblance, or cartoon characters, etc.). The masks created by deconstructing not other images, but a narration of the contemporary world, made visible social themes and behaviors in relation to cultural origin. The experiment of staging in urban environments documented the emotional state in which it is evident that “images in modern society have a practically unlimited authority and the capacity of these images derives from the very characteristic of images” [9].



**Figure 16:** Modern interpretation of masks.



**Figure 17:** Research of new social code in masks.

### 3. CONCLUSION

The production, digital and analog, of the masks and the experiments through performances will be used for temporary or permanent installations, as an incentive to enhance the cultural and touristic value of the territory in which they will be hosted and as an example for a wider and new cultural diffusion in compliance with the principle of maximum diffusion and accessibility of research products. The interdisciplinary experience of the BIP *From Mask to Theatre*, through the study of Greek masks and Polish ritual masks, has highlighted the aspect of symbolic communication through images: “the presumed effectiveness of images to propitiate and control powerful images” [9].

The survey with digital techniques has allowed the museum finds to be used in an innovative and more inclusive way, both in the museum context (permanent and temporary exhibitions) and in the theater context (setting up shows).

All phases of the project were aimed at the scenic performance linked to the use of the mask, within the anthropology of the scenic gesture, based on the literary, Greek and Roman production and the photographic production of Polish masks.

The 3D reconstruction of the masks promotes knowledge of the artifacts exhibited in museums according to the paradigms of the semantic web.

This encourages the sharing of new knowledge, interactive dialogues, personalized stories, engaging multimedia content.

The project that aims to identify the functionality of the mask in the contemporary cultural context is based on the idea that the search for visual representation through symbols can dialogue with the themes of contemporary culture, through the production of events, exhibitions and theatrical performances that enhance the heritage of material and immaterial culture linked to the territory.

#### 4. ACKNOWLEDGMENT

The paragraphs described in the article correspond to the six laboratories workshops that were held in the Erasmus BIP, specifically:

- *Digital Mask: Digital survey and modeling of the masks*, tutor: Francesca Fatta, Sonia Mollica Lorella Pizzonia, Francesco Stilo.

- *Augmented infographic*, tutor: Marcin Wichrowski, Maria Trombetta.

- *Mapping on masks*, tutor: Mateusz Król.

- *Visual Identity*, tutor: Jan Piechota.

- *Traveling Masks* tutor: Maria Milano.

- *Mask to performance*, tutor: Ewa Satalecka, Paola Raffa.

A total of other 50 students from the Erasmus partner universities participated in the six laboratories.

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