

# Infrastructuring museum exhibition

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**Abstract.** These pages propose some reflections on Cultural Infrastructure and on infrastructuring museum. We describe an ethnographical experience about understanding, interpretation and re-design of the exhibition environment by visitors. The experience allows us to follow different interpretation and use of the environment.

## 1 Thinking about cultural infrastructure

The manuscript must not have page number or running headers and footers. The research presented in these pages focuses on how an interactive enhanced museum environment is supporting a relationship between visitors and curators. Through this research on exhibition observation and analysis, we seek to extract information about exhibition design, introduction and use of different stages of interactivity in the context of museums. We indicate features about the sustainability of technologically enhanced exhibitions: i.e., how technologies and interactive media promote, replicate and support the sharing of knowledge among visitors and curators.

We decided to focus on these two groups of people considering as public (Le Dantec and DiSalvo, 2013) since participating to the museum activities implies have a common idea about preserving and maintaining knowledge and culture. Thus, in this context the meaning of sustainability refers to the capacity of the exhibition to be understood, reinterpreted and enjoyed. The sustainable feature of museum is directly related to the reflective scope of museum environment. Reflectiveness merges the capacity of people to be creative and critical (Prilla et

al., 2013). Thus, while the people visit an exhibition through the pieces exposed by curators and designers, they are called to interpret and think, creating insight and new perceptions. Very often, the reflective process is supported by the introduction of technologies that might suggest one or more interpretation. In fact, the current practice of visiting and curating museums is improved, transformed, modified, enriched by Information Communication Technologies (ICTs) and new media (Kaptelinin, 2001). Visitors interact with an enhanced environment; curators and museum designers improve their activities through the use of new media and they *play* introducing interactive artifacts to extend the meaning of museums. Moreover, the extensive production and use of technologies invites for some reflection about museum institutions. The interdependency between visitors and museum staff, and the success of museums as places for fun, culture and knowledge, suggest the use of the frame of cultural infrastructure (CI) to emphasize the practices, the know-how, and the actors involved in the sustainability of museums.

With the concept of CI we refer to practices and relations concerning the spreading of cultural property, and to the ability to express and preserve visual and concrete representations of culture (Marcotte and Bernier, 2011). Thus, CIs are those cultural institutions, which produce and spread cultural material, and/or communicate and transfer cultures themselves. Following the thoughts of Marcotte and Bernier (2011), we consider museums as both material-spreading and communicative CIs.

Infrastructuring in a cultural context reflects the action of publics of sharing, enhancing, and expanding knowledge; improving reflectiveness; looking at the future acting in the present context. In the framework of museum infrastructuring, the dialogue and reciprocity between people and things supports and encourages a participative and spontaneous maintenance and support of technological artefacts that are an extension of the infrastructure. Hence, while the tradition of Participatory Design (PD) refers to designing information systems including multiple voices, here we propose reflections and thoughts about infrastructuring in a whole cultural environment. In this frame the lens of PD supports and stimulates reflections on museums as a form social innovation hub, in which different publics participate in creating new and shared understanding and in *design-while-using* the exhibition. Here, we adopt the design-while-using instead of design-in-use (Binder et al., 2011) in order to underline the *in time, temporary* and *contextualized* museum experience. In this perspective, the *design* is opened to different interpretations and multiple hands.

These pages have the purpose to acquire and open the discussion on what infrastructuring in a museum context means. And, how the increasing use and

introduction of different forms of interactive artefacts, and the creation of interactive environments support and sustain an exhibition in a long-term perspective. Reflecting on *long-term perspective* and following the concepts of Hillgren et al. (2011), infrastructuring implies an open interpretative exhibition, for a sustainable use and maintenance of culture and knowledge. Thus, here sustainable infrastructuring has roots on the transparency and on the visibility of infrastructures (Bowker and Star, 1999). In fact, the introduction of ICTs that encourages new and different ways to practise in the museum reproduces the design process of the exhibitions: the current intense presence of interactive elements invites for *appropriating* and *reinterpreting* the meaning of the environment. By talking of appropriation and reinterpretation, we underline the action of people to understand, modify and discover the exhibit following their personal tastes and needs.

We discuss that museum infrastructuring is about creating new understanding and meaning through the exhibition, through a participative and while-using design and use of exhibition artefacts and environment. In the next two sections we describe a museum context in which we experience the episodes of infrastructuring.

## 2 *Maxi ooh*: an open interpretive exhibition

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During the recent years, museums all over the world are offering several and differentiated examples of interactive artefacts and enhanced environments (Carr, 2011; Stogner, 2009; Hall and Bannon, 2005). The introduction of ICTs and new media in museums' environment impacts the educative and the fun purpose of museum; stimulates visitors' participation, principally young visitors, as Stogner points out (2009) and improves reflectiveness and new understanding for our everyday life (Bennett, 1995).

Currently, we are observing how really young audience, accompanied by adults, is reacting to a new totally interactive permanent exhibition at the "Muse" - Museum of Science in Trento (Italy): the Maxi Ooh, for children from zero to five (and then for adults). The design of this exhibition impacts the internal structure of the museum through a separated environment with three rounded rooms. Each room has a different theme and involves three senses: visual, tactile, and aural. Additionally, to access this zone of the museum, visitors are asked to take off their shoes, feeling free to be involved in the environment. Taking off the shoes

and feeling free to move in the space without following a specific strategy and path, is the first step to involve people in infrastructuring.

Even though the materiality and the design are rigid and strict because of a prescribed space division, visitors are interacting in what we can define as neutral space: everything is white and the few touchable objects are ready to be reinterpreted and moved. Through interactive sensors the environment changes and activates *if* and *when* visitors move: virtual and interactive environment turns on only whenever visitors get the intent of the exhibition.

During the opening on 19<sup>th</sup> July 2014, the big challenge was making all the interactive technology work, and making it understandable. In fact, since this kind of exhibition is totally new and unexpected every organizer and curator was open to different reactions and views about the exhibition.

### 3 Infrastructuring WHILE visiting *Maxi ooh*

The opening was a stimulating event. A multitude of people visited and participated to the exhibition in very different ways: some people were actually interested to the exhibition, some demonstrated some scepticism, and others express some displeasure. Exceptionally for this event, people of different ages were allowed to visit this 0-5 zone of the museum. The observation during the opening day was related to a half an hour before the official presentation of the new exhibition, and to eight sections of 20 minutes each. During every section 50 people were free to enter, move and enjoy the space.

In the first half an hour of observation there were 7 people, including a child, moving around and trying the new technologies. In this short period of observation, the interpretation and the use of the environment was gradual and related to the intervention of the museum staff that explained how to use the different artefacts. Differently during the open sections when a different amount of people did not allow an intensive support of the staff, visitors were feeling free to try, use and activate the infrastructure by themselves.

During the second part of observation, we concentrated our attention on two areas: in the visual/aural room we concentrated on one of the two phono-screens (see Figure 1), while in the tactile room we focused on the interactive projected imaginary environment (see Figure 2). Under an infrastructure perspective, we consider the three rooms as nodes of infrastructure; thus, each room has a proper function and an appropriate set of practices that arise during the visits.

### 3.1 How does your voice look like?

We spent the first four sections observing and interacting with visitors playing and talking on microphones connected to a screen (see Figure n.1) in the audio/visual room.

While breathing or speaking on at least one of the two microphones, people can see movements and colors associated to their voice: the choice of two microphones instead of one, is meant for allowing more than one visitor to mix their sound and create different colors and shapes.

The interaction with this artefact some time caused difficulties in understanding, making the element inaccessible. When difficulties occur people try to modify their behaviour and to change position moving around the object, since the artefact cannot be modified. For example, one child, unsatisfied by the results from the lower microphone, changed his position and adopted one of the pillows on the floor as a step to reach the other microphone (see Figure 1). Doing this small action, he created a new trend: other children could also use the higher microphone and could play without adults; in addition, he modified the way to use the pillows, making possible a new way to use the environment.

Using this technology, visitors are interested in what it is possible and in how to use the technology to understand differences and features on their voice. For example, while two children around eight years old were trying to identify the way to have a better result on the screen, one of them exclaimed: “Try to do this! It’s the breath” and the other answered “No! It’s the voice”. With these exclamations the two kids continued to use the object in various way, changing the position of their body and their hands, and modifying the volume and the frequency of their voices every few seconds to observe possible changes on the screen.

Observing the interactions between visitors, we understood some similarities in the way adults and children behave and relate through the technology. While using the interactive artefact and exploring different options of use, each visitor discovered an enhanced position and a satisfying shape and colour on the screen.

In some cases, singular visitors were asking for someone to join the activity of breathing and talking to better understand the potential of the technology. In one interesting case a kid exchange different *partners*: first his dad, then the little sister, to finish with an unknown woman telling her “blowing you too!”. The interaction with other people and the common need to understand how to use the technology on a better way, makes people to interact and exchange opinion, doesn’t matter their age: the important thing is understand how to reach the *best*



from this technology.

Fig. 1: Phono-screes, visual/aural room, Maxi Ooh!, MUSE

### 3.2 What is this?

Continuing our observation during this intense event, we had a different experience in the tactile room (See Figure 2).

In this case the environment change through interactions. Very often until a first unintentional interaction everyone was standing or sitting around surprised and confused, in fact in few cases both kids and adults were looking asking clearly “what is this?”. In six out of eight of the sections of 19th of July, people started to interact and use the environment without (almost) any restrictions only after an unintentional interaction: while kids were jumping from one side to an other and were creating interruption on the virtual river with stone-pillow, adults were touching the wall moving dots and creating trees (see Figure 2).

Even though the first interactive movement very often was unintentional, visitors easily and energetically maintained and interpreted the environment. For example, a young boy after some moments dedicated to the dots on the wal understood that also the virtual water was moving and started to play with it; then, with few trying to create something new he understood how to create some flowers on the water jumping on imperceptible decorations that represent stones.

In two occasions some visitors created small groups of three and five people, to investigate and modify the situation: the reinterpretation of the environment happens moving pillows and interacting with the wall. The reinterpretation and changing of the environment creates new forms of space and the virtuality becomes reality. This happens in cases when the creativity and the interest for



knowing push people for further interpretation and use of the environment itself.

Fig. 2: Imaginary forest, tactile room, Maxi Ooh!, MUSE

## 4 Reflections

While visitors were visiting, or better were acting and moving in the Maxi Ooh, they were creating new understanding about the environment: they were, in other words, *infrastructuring*. What does this mean? To our eyes, this means giving a personal interpretation to the exhibition even though the design and the structure are inviting for predetermined actions, instead of being totally opened.

The tradition of *infrastructuring* as interweave activities linked to an information infrastructure is not really distant to the interpretation of *infrastructuring* we are proposing here. In fact, we adopt a theoretical framework for the study of complex systems of socio-technical relations (Karasti and Syrjänen, 2004). In this

sense, talking about infrastructuring in the museum context refers to an ensemble of visitors and curators (publics) who are reviewing and re-understanding an already shaped design. Furthermore we are following the lines of infrastructuring as a process of drawing relationships among different agents acting in a technologically enhanced museum environment, which has the meaning of sharing and spreading knowledge.

By thinking about the embodied capacity of interpreting and *using* the museum as a flow of actions related to the environment, to the agents, and to the objects, we are reflecting on exhibition design. How should we plan *ready-to-hand* technologies for a live and in progress re-design and re-shape of exhibitions?

## 5 Conclusions

These pages present a discussion on episodes of *while-using* design set in the context of museum. We underline here the participative dynamics in experiencing a technologically enhanced and interactive exhibition. Through the emphasis on *infrastructuring* we aim to underline the number of interrelating components in *while-using* design. This way of thinking museum experience lets us to open the discussion on design exhibition and on the introduction of interactive artifact, proposing a reflection for open design possibilities that allow visitors to reinterpret the space and to improve relational involvements for the production of new understanding.

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## 7 References

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