Designing interactive exhibitions based on innovative narrations guided by architectural space and digital technologies

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Abstract: Although museums started to employ varying interaction modes using advanced networking and displaying technologies to improve their roles in conveying information through participation, the analysis of the latest interactive exhibitions reflected an insufficiency to create compact and unique intelligent environments for exhibiting. However, developing the narrations of exhibitions on the basis of the physical qualities of the space and advanced technologies for interaction will increase the potential to stage varying interactive experiences. This paper searches for alternative solutions to generate innovative narrations to bring novelty to the design of interactive exhibitions and contribute to the interpretative processes of museums. In parallel with our aim, 55 conceptual design projects created for interactive exhibiting in the Spatial Interaction Studio Design Course in the Department of Communication Design of a well-established university between the years 2009-2012 were analyzed. The findings show that the innovative narrations were significant for making use of architectural qualities of space or supporting the physical space with the use of an additional mobile or wearable tool to link the performed experiences within the design, which enhanced the entertaining, informative and explorative aspects of the exhibitions.

Keywords: interactive exhibiting, narration, innovation, architectural space, digital technologies

1. Introduction

As traditional forms of art started to be replaced by process based and participatory installations, museums and galleries begun to make use of the rich sources of networking and displaying technologies (Bullivant, Responsive Environments, 2006). These improvements in technology brought alternative modes of communication. Visitors had the opportunity to interact with artworks in various ways and museums and galleries developed different exhibiting strategies, in order to maintain the permanence of art, knowledge and cultural heritage (Lorenc, Skolnick, & Berger, 2006).

The initial point of integration of the concept of participation in exhibition design started with “hands-on” exhibitions in the 1960s where visitors started to learn by the experience. The evolving virtual exhibitions also gained popularity for providing some kind of interactivity on the Internet. However this had not decreased the interest in the physical and live experience of an exhibition and eventually a new visitor profile was introduced, defined as the kinaesthetic learner (Hughes, 2010). Nevertheless, recent studies show us that the architectural qualities of space had not been taken into account for the design of varying interactive narrative experiences, ranging from video games to participatory art installations. Moreover, in terms of exhibiting, it was recognized that the interactive exhibitions focused more on the adaptation of technology, rather than using technology as a means to convey the message by connecting user, technology and the content of the exhibition (Bullivant, 4D Social Interactive Design Environments, 2007) (Cautlon, 1998). As a matter of fact, it is possible to say that most of the analysed exhibitions that made use of digital technologies can be perceived as sets of interactive experiences placed one after the other in a physical space. The audience’s curiosity to interact with the device takes precedence over their understanding of the concept of the exhibition and the story behind it (Simone, 2010). We believe that proper use of the dynamics of the architectural space combined with participatory digital technologies may enhance the narration and bring innovation to the concept of interactive exhibiting.

Considering the fact that the today’s artwork is defined as the whole process that involves the participant interacting with the art object (Buskirk, 2005), we believe that the narration of any exhibition design needs to integrate the qualities of the architectural space and be a guide for the selection of the digital tools to perform the interactive experiences. On the basis of these issues, we examined the impact of architectural space and digital tools on the narration of interactive exhibitions and investigated if innovation brought by narrative means may be used as a strategy to transform these physical spaces into intelligent environments. In parallel with this research, we tried various approaches to, and different versions of, space and digital technologies in order to develop narrations for the design of conceptual interactive exhibitions. We then analysed the design works to see the outcomes and reach for conclusions.
2. The relationship between narration, architectural space and digital technologies in the frame of interactive exhibiting

In order to develop innovative narrations that would transform museum and gallery spaces into interactive environments, we needed to explore and define the relationship between the narration, architectural space and digital tools. Through this we could see how physical space and interactive tools were able to enhance the innovation in the narration of an interactive exhibition.

Being an immersive and participatory area, interactive exhibiting addresses the concept of visitors becoming actors, perceiving and navigating in the narration by interacting with tools, works and applications (Porteous, Cavazza, & Charles, 2010). Being one of several strategies leading visitors with an interest in exhibitions, narrations are the main instruments, which structure our perception and communication on the basis of making meaning (Bruner, 1990). The language of narration is very significant to the story and the design of the setting becomes an important tool to enhance and reveal the text and the story behind it (Lorenz, Skolnick, & Berger, 2006). However, spatial aspects start to appear, as the story represented by text becomes a visible scene when describing activity and communication between people. By itself, space is neutral and vacant, and it can only attain its full potential when action is taking place (Parker, Craig, & Block, 2008). So, space becomes a meeting point for the potential visitors and actors for the creation of interaction.

Interactive exhibiting can be defined as the idea of communicating a story in three-dimensional space using participatory digital technology that links varying interactive actions (Howard, 2002). The design of interactive experiences combined within a narration is sustained by the architectural quality of the space (Ozcan, 2002), whereas the concept of interactivity defines the limits and parameters of the navigational actions required for the user experience (Kolko, 2007). So the narration will both conduct the exhibition design and serve to define the constraints and the active intent of the experiences (Lock, 2011), which in turn will define the set of operations and actions related to the experience (McCullough, 2004). Mediation of tools with activities, combined with visual and audio elements to support the narrative expression, will be embedded in the physical space giving visitors the chance to become active participants (Hughes, 2010). So, the visitors’ primary form of communication with the exhibition can be viewed as navigating in the narration, which is structured upon the organization of the spaces of information supported by digital tools (Saffer, 2007).

While it is possible to say that any narration cannot be presented without a suitable setting, each architectural space has its own dynamic, which can be described as its geometry and characteristics. The vertical, horizontal and diagonal measurements describe the geometrical aspects of a space, helping us to visualize it. Characteristic qualities include a space’s “atmosphere”, which is important and influential to the experience of the audience and the actors. Each space has its own individual characteristic derived from the materials used, the architectural elements, the lighting etc… (Parker, Craig, & Block, 2008) (Dade Robertson, 2011).

In terms of interactive exhibiting, this research questions how narrations of interactive exhibitions benefit from the different geometries and characteristics of the architectural space. Moreover, although the selection and combination of participatory digital technologies in parallel with the narration brings a level of interactivity directly to the exhibition design, are there any other solutions brought by the use of these technologies, that can improve and make the narration more innovative?

In parallel with the above identifications and discussions, we tried to propose a general framework illustrating connections between architectural space, digital tools and narration. Using these definitions, we tried to develop narrations for conceptual interactive exhibition designs for varying forms of architectural spaces and different technological tools to obtain findings, which might be adaptable for the designs both for virtual and physical environments.

3. Methodology

This research looked for various ways to develop narrations for exhibition as a three-dimensional image, including the planning and the layout of the actors and objects in a setting to match the story (Parker, Craig, & Block, 2008). With the aim of developing innovative narrations for interactive exhibitions, the method for this research was configured on the basis of working on different architectural spaces with varying geometries and characteristics. The themes and stories developed
for the narration were expected to resonate with the architectural qualities of the space while providing a scene for the interactive experiences to take place.

In order to obtain alternative solutions for design, a studio design course based on spatial interaction was planned within the Department of Communication Design of a well-established university that would focus on developing conceptual interactive exhibition designs. Two different exhibition areas were selected as case studies, and students chose either one of them to create conceptual interactive exhibitions. This course was carried out for 8 semesters between the years 2009 and 2012 with an average of 15 students each semester. These students had no prior experience of architecture but were well trained in creating interaction designs using different mediums. The following design briefs were defined:

1. Design brief based on a single story linear space

The students were expected to design interactive exhibitions for a linear space. A corridor of the ground floor of a building, having two entrances, a length of 35 meters, a width of 2.8 meters and a height of 6.5 meters was chosen as the first working site (Figure 1). The students were encouraged to make use of the height of the space within their projects as the space would be able to house it. The choice of audience profile was left to the students to decide in relation to the theme.

Figure 1: Plan of the linear space

2. Design brief based on a multi-story square shaped building

This brief focused on creating designs for a 3-story building, with two entrances from different levels, an area of 16 meters by 16 meters per floor and 2.5 meters floor height for each level (Figure 2). The students were advised to make use of the total floor height, including the possibility of adding or deleting a floor. Students would be able to select the audience profile as in the previous brief.

Figure 2: Plan of the multi story square planned building

For both design briefs, the choice of the narration was up to the student's preference, but the choice relates to his or her inspiration from, and attraction to, the spatial data. Within the process of
developing the narration, the students also carried out research into digital tools and media used in physical spaces in order to integrate suitable technologies with the theme and architectural space. The works were examined on the basis of the innovation brought by analysed design projects.

4. Evaluation of the works

For 8 semesters, 55 design projects were developed and examined to find innovative narrations brought by the use of the qualities of architectural space and digital tools. The general outcomes reflected the fact that all of the students integrated digital tools in parallel with the interactive experiences and the narrations. Most of the students perceived the spatial data to organize the activities, while some of them failed to develop narrations to match the qualities of the exhibition area.

In parallel with the aims and objectives of this research, the outcomes can be grouped under two topics:

4.1. Innovation by the use of the architectural qualities of space to shape the narration

The successful design projects of this group formed their narration to match the perceptual aspects provided by the geometry and characteristics of the space. In parallel with this approach, the long corridor was inspirational to the development of narratives that were composed of a linear sequence of events and experiences.

Figure 3: An example of a conceptual exhibition design for the linear space

Selecting a theme that involved a linear sequence of objects, events, sequences or experiences and shaping and adapting the narration to the architectural space with proper digital tools created a unity within the space. This was observed as an appropriate strategy for design. The suitable themes centralized around historical events, timelines, planetary configuration of space and geographical layouts. With the analysis of the works, we recognized that the linear form of the space limited the choice of technological tools and guided most of the students to make use of screens and displays for their designs. Figure 3 shows the conceptual exhibition design named “Off Limits”, by Doruk Saglam. In this exemplary work the exhibition area is organized in accordance with the planetary sequence. The aim is for the users to experience the different qualities and conditions of the sun, planets and space. The developed interactions were based on the use of multi-touch surfaces, augmented reality, projections and static visuals.
In terms of the multi-story space, we recognized that the students struggled with the form and the nonlinear configuration of the architectural space, which required different spatial solutions. However, the successful designs showed innovation through much more creative and experimental themes and narrations. The students solved the design problem of organizing the multi-story space by structuring the narration in parts or episodes (generally 3 parts), where each part would fit one floor. In each floor they placed different digital tools and were able to make use of a variety of technological platforms. Non-linear navigation can be maintained within this spatial geometry, but it was difficult to preserve the unity of the exhibition, as the whole experience is divided into 3 parts.

Figure 4: An example of a conceptual exhibition design for the multi-story space

The high spatial quality and diversity of the selected interactive tools maintained by the narrations were benefits of working in a multi-story space. This can be observed from the conceptual design named “Stories of Childhood” by Öykü Çataltepe, Figure 4. The narration focuses on visitors experiencing varying imaginative perceptions brought by the stories. Nonlinear navigation provides the opportunity to make use of different stories - to be grouped according to their similarities.
4.2. Innovation by the integration of personal digital tools within the narration

This group of projects was recognized for their approach to connect the performed experiences with an additional mobile or wearable tool. As these tools were planned to carry information concerning the progress of the visitor in the exhibition, they not only guided the navigational aspects within the space but also gave the opportunity to privatize the experiences of each visitor. Besides providing connection to social media when needed, these tools were also beneficial in archiving each visitor’s experience and in providing the visitor with a permanent reminder of his or her experience.

Figure 5: An example of a conceptual exhibition design for linear space

Figure 6: An example for conceptual exhibition design for the linear space
The narration guided the design and the choice of tools. Tablets, eyeglasses, gloves, headphones, flashlights, helmets, memory sticks and cards were among the tool choices integrated into the design projects. The design project in Figure 5 by Dilara Dagli, uses both a watch and a set of headphones for the realization of the diving experience. The watch was planned to control the video displays on the walls and the headphones were devised to control the proximity between other people and to provide a sensation of pressure within the process. Likewise, the design project in Figure 6 by Yasemin Yildirim, made use of a flashlight to collect and disseminate information from varying sources in the “Media House” and to connect to social media. As seen from these examples, this strategy for design enhanced the individual experience and gave the visitor more freedom for navigation.

5. Conclusion

As an emerging concept, interactive exhibiting has great potential for staging participative experiences through the use of digital technologies, providing environments for different readings of the meanings of the exhibited artworks. Narrations, being one of the main instruments upon which we build our experiences, play an important role for finding meaning for the visitors to connect and perceive. While all narrations take place in a setting, we believed that making use of the spatial data and digital technologies would be an efficient strategy to devise narrations, bringing innovation to the process of interactive exhibition design. This study searched for relationships between spatial data, digital technologies and narration on the basis of interactive exhibiting and looked for clues for the appropriate use of the dynamics of architectural space and digital tools to develop innovative narrations.

In parallel with these aims, a spatial interaction studio design course was planned and realized between the years 2009 and 2012. This course focused on the development of innovative interactive exhibition design. 55 conceptual interactive exhibition design projects supported by various digital tools and embedded technology were developed for two different architectural spaces: a linear single-story space and a square planned multi-story space. These designs were then analysed in terms of bringing innovation to exhibition design by the narration.

Generally, it is possible to say that while some of the designs could not go beyond using the traditional approach for exhibiting, they were still fruitful for their generous use of visual data, for the integration of digital tools to create a participative experience and for the spatial organization of the activities. Successful works can be placed in two groups: (a) ones having narrations which were inspired by the form of the architectural space, and (b) ones that connected the performed interactive experiences by using an additional digital tool invented especially for the narrative.

To conclude, the following issues should be considered in the design of interactive exhibitions:

- It is understood that interactive exhibiting is more than just placing interactive tools or technologies within the physical space. Innovative solutions arise when the narration is planned and structured with respect to the qualities of the architectural space. Narration can also guide the selection of digital tools.

- In terms of the use of architectural space, it is recognized that every spatial condition brings its own circumstances, which in turn effect the choice and the structure of the narration. A sequenced narrative structure matches a linear architectural space well, whereas a networking or an episodic narrative structure is more suitable for a multi-story space.

- Interactive exhibiting can benefit from the integration of a mobile or wearable digital tool related to the narration. These tools are recognized to maintain the unity of the space while enhancing the adventurous, informative and experimental aspects of the exhibition, as they connect each performed interactive experience and provide guidance for navigation within the exhibition. Moreover, visitors can actually influence the narration and their own navigation with their performances guided by the technical competencies of these personal tools.

From the exemplary works and outcomes, it is possible to understand that the area of interactive exhibiting has huge potential for innovative solutions. Moreover, this area can show the way for new inventions for networking and displaying technologies, as these cases arise from narrations. As interactive tools and technologies continue to develop and become more advanced, the appropriate use of spatial data and the refined use of digital tools will gain more importance, enabling the development of unique designs. We believe that the area of interactive exhibiting will benefit more from innovative approaches for design with the original combinations of narrations, architectural space and digital technologies, where the concept of participation drives the design.
References


