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A Multi-perspective Approach for Designing Interactive Experiences to Reveal Cultural Heritage

F. Jongejans & J.W.M. van Kollenburg
Department of Industrial Design University of Technology Eindhoven
Den Dolech 2,5612 AZ, Eindhoven, The Netherlands
{f.jongejans; j.w.m.v.kollenburg} @student.tue.nl

J. M.L. Kint
Department of Industrial Design, TU Eindhoven
Den Dolech 2,5612 AZ, Eindhoven, The Netherlands
Sint Lukas University College Brussels,
Paleizenstraat 70, 1030 Brussels, Belgium
J.M.L.Kint@tue.nl

Abstract—This paper describes the design approach of a two-week workshop on cultural heritage, resulting in an interactive lighting installation to reveal cultural insights on group dynamics. The paper illustrates the use of designed interactive experiences to unravel cultural subtleties and the use of new technologies to support the design and observation of these experiences, developed by one of the three project teams participating in this workshop. This design approach supports our conclusion that the diversity of perspectives in the creation of depth is an essential issue when revealing cultural heritage.

Keywords-cultural research; interdisciplinary; multi-cultural; research-through-design; interactive installation;

I. PROJECT INTRODUCTION

The aim of the Light Through Culture workshop was to explore the value of interactive design as facilitator to reveal cultural heritage. Currently, cultural questions are almost solely studied and explained through anthropology, sociology or psychology, but are seldom physically experienced through our senses. The facilitation of interactive experiences dealing with cultural issues may stimulate active dialogue between the visitor and the installation or between visitors on the determined cultural matter. In such interactive installations, the visitor is not an observer but becomes participant of the installation. A multi-sensorial experience of cultural differences may lead to better understanding of different backgrounds and depth in cultural dialogue. The interactive installation of this workshop focused the medium of the future: light.

The workshop and the exhibition of the interactive installation took place in the faculty of Architecture of the Middle Eastern Technical University. The project team for this two-week challenge consisted in total of eight female students, a mixture of bachelor and master students of the faculties of Industrial Design in Eindhoven, in Ankara and the faculty of Communication Design in Brussels. As the act of designing is supported by a strong personal vision[1], these students have all created a different identity and expertise in their educational paths. The interdisciplinary character of this project group was not only presented in their education, but also in their cultural backgrounds, including Turkish, Dutch, Belgian and Iranian.

To increase the interdisciplinary strength in the project, coaches with various expertises joined the students on a daily basis. The following professions were represented: lighting artist, conceptual designer, sociologist, industrial designer, art historian and communication designer.

The workshop was part of a variety of individual research projects on Turkish culture done by the students of the University of Technology Eindhoven. Before the workshop in Ankara they had constructed a theoretical framework on the concept of culture and specifically Turkish culture by doing literature studies in relation to design [2][3][4]. They became aware how culture is a dynamic concept which changes according to social structures in society [5]. The cultural and methodological insights gained from the approach used in this workshop serve as input for the individual research projects. In this paper we illustrate this approach, used by the project team to discover cultural heritage through designing an interactive lighting installation.

II. DESIGN PROCESS

This section describes the design process and approach followed by the project team. Inspiration was taken from the Reflective Transformative Design Process argued by Hummels and Frens [1]. The cultural subject is explored, which resulted in various questions. Ideation led to a concept based on an experience of the project team, which was afterwards translated into an interactive lighting installation.

A. Exploration

Inspired by the tight family bonding [3][6] observed in Turkish society, the project team started the exploration of cultural related questions, such as: What is the role of social relations as safety network for the individual? What is the significance of social quality time in the creation of social networks? What is the role of hospitality in the maintenance of family relations?

The common ground of these questions deals with the matter of being a group. Therefore the main research question the project team decided to focus on was ‘What makes a group?’. This question refers to the cultural matter of group dynamics, including aspects such as the members of a group, the creation of a group, the size of a group and the experience of a group- feeling. The project team aimed at finding possible answers to this research question by designing an interactive installation. To find an hypothesis, the members of the project team made rational assumptions about each others cultures resulting in a negative experience of being generalized. These assumptions led to stereotypical perspectives on not only Turkish culture, but also Dutch, Belgian and Iranian. To overcome the cultural discussion between nationalities within the project team, every member formulated her personal answer to the main research question. Sharing, instead of discussing, these personal experiences in the team created a group feeling between the members, exceeding cultural differences (Fig. 1).
B. Ideation

This experience of the project team of becoming a group illustrates a possible method of answering the research question from a personal perspective. The goal was set to analyse this experience and translate this method into an interactive lighting installation to enable visitors from different cultural backgrounds to experience what it is that makes a group.

Analysing the process which was experienced by the project team, several essential components were found, like the recognizable personal input of every individual, the uniqueness which is created by combining individual inputs and the creation of a group-feeling. During an ideation phase of generating ideas with these components, the idea evolved of creating unique patterns which represent group dynamics. In this concept, every individual would contribute to the shared pattern, which will be unique based on the members of the group and their interaction. This experience of creating a unique pattern together may result in a group-feeling. The details of this concept were revealed in an acting-out session in which shadow patterns were literally created with body movement (Fig. 2). This made the concept experiential and the significance of collaboration and communication became explicit.

C. Creation

To concretize the process of becoming a group into an interactive lighting installation, the project team was split up in three design teams: interior design, interaction design and visual design. This division was made according to the individual design identities.

The interior design team, consisting of communication and furniture design focus, set out to create an intimate and inviting atmosphere in which time could be forgotten. They have used soft and dark materials to create a tent-like construction and a set of benches. Besides this, they set the request to enter the installation without shoes, according to traditional Turkish customs.

The interaction design team was responsible for capturing the physical group dynamics of the visitors inside the installation. This would allow users to become active participators in the design process for finding insights on cultural heritage. This component of individual input is supported by the argument of Tomico [7] to create depth in design processes by integrating user involvement. They created a cloth with multiple soft sensors, which were created with a focus on an intimate and inviting interaction. The placement of the sensors and distance between the sensors could support group dynamics. The expertise on intelligent textiles and the personal interest in technological integration brought this team together.

The sensor input was translated into a dynamic visual by the visual design team. This team was characterized by their analytical approach and their wish to explore the collaboration between ratio and experience design. They used a set of mathematical formulae to enable the creation of unique visuals influenced by the sensor input of the installation. Intelligent programming software was a tool to make the visuals dynamic and directly connect the sensor input to the mathematical formulae. This was done with the goal in mind to create a realtime interactive system in which the visitors receive immediate feedback on their interaction with the lighting installation.
III. DESIGN RESULT

Combining the three design teams created an installation in which the physical group dynamics of the visitors were captured through a set of sensors of which the input is translated into a dynamic visual. The installation did not suggest group dynamics, but only provided a corresponding atmosphere and set of tools. The installation was built to reveal insights on the matter of group dynamics in cultural heritage. Visitors were unconsciously invited to experience the process of becoming a group, they were never deliberately asked to join this process. By giving visitors the opportunity to create the visual with their own body movements, they became co-creators of the installation and provided possible answers to the research question. The visual which is created is unique for every group of visitors and unique for every moment in this groups experience.

A. Confrontation

The installation was visited by a variety of people from the university campus in Ankara. Students, professors and other staff members were represented in the group of visitors. Confronting the visitors with the installation made detailed interaction insights on the three method components clear: individual and personal input, uniqueness of pattern and experience of group feeling. The visibility of the personal input of every individual visitor became evident in the conversations amongst the visitors. After exploring their personal input in the pattern, they communicated on their collaboration or individual turns. The creation of the visual was unexpected to the visitor, but the personal influence on the visual is apparent, which made them curious to explore the installation for a longer period of time (Fig. 3). Moreover it was interesting to notice that uniqueness of the visual and its temporarily character created a common shared secret in the group of visitors, which enhanced the process of becoming a group. Photos from both the visual pattern and the group members, were regularly made as a memory of the experience and were shared afterwards (Fig. 4).

![Figure 3. Visitors captured by the unique experience of the installation.](image)

![Figure 4. Example of pattern created through group dynamics inside the installation.](image)

IV. DISCUSSION

The project team set out to explore the value of interactive design in the process of revealing cultural heritage. They have tried to find answers to the research question ‘What makes a group?’, but recognize the difficulty of drawing conclusions on cultural matters. Culture is a constant product of itself, subject to social changes in society and time. This makes it impossible to capture culture without taking the dynamic character into consideration. This dynamic and personally influenced concept of culture became evident in the sequence of patterns created in the installation that were never alike. One could draw conceptual conclusions from the dynamic visuals which were now created in the installation, but as culture changes, so will the visuals the do. We therefore emphasize the temporarily character of the conclusions drawn in this paper.

Using designed experiences to unravel cultural subtleties makes use of the analysis of the subtleties of human behaviour. Experiences are multi-dimensional, dealing with not only movement and collaboration, but also with intrinsic motivations, emotions and context in the moment. We question the possibility of capturing and analysing these multi-dimensional experiences with mere ratio. The subtleties we aim at are embodied by behaviour in experiences and might not be possible to capture through observation and cognition.

The proposed method to use designed experiences in cultural heritage projects, supports the search for reliable techniques in dealing with cultural matters. Experiences are however always personal and related to the individuals perspective. This aspect of designing experiences blurs the boundary between culture and personality. The influence of every individuals personality strengthens the multi-perspective approach in a cultural project, but also increases the difficulty to draw conclusions on the influence of both phenomena in our findings from the installation.

The cultural and design conclusions below are drawn while taking the discussion points into account. The cultural conclusions from our installation are from a temporarily character, as culture is a dynamic concept. They are conclusions draw with ratio but based on intuitive experiences and the influences of culture and personality are difficult to separate.

V. CONCLUSIONS

Purpose of the Light through Culture workshop was to explore the value of interactive design as facilitator to reveal cultural heritage. In order to specify the cultural subject, the project team focused on revealing cultural insights on group participation. The project team developed a light installation based on the research question of group dynamics.
Every individual carries along a cultural perspective which influences the way of dealing with cultural matters. To create a complete picture of cultural matters, diversity is essential. Cultural interactions should be fuelled by as many perspectives as possible. Whereas every individual embodies his or her cultural background, this is unconsciously expressed in every subtlety of behaviour. This behaviour is caused through cultural-related intrinsic motivations. To capture a broad range of perspectives, one must capture the subtle expressions of culture. These subtle expressions can be determined through experiencing. We have used interactive installation design to gain cultural insights from a variety of perspectives by capturing the subtleties in group dynamics through light visualizations. Visitors were never conscious of answering the research question, but the nuances of their behaviour gave away their cultural perspective.

Opposed to researching cultural dimensions and heritage through theoretical studies, the usage of interactive design allows the unravelling of abstract cultural issues by examining cultural subtleties. The smallest details of cultural situations can provide information on abstract cultural dimensions. The design of interactive installations provides a method to facilitate the occurrence of these details in human behaviour. We therefore argue that design is a strong facilitator when it comes to studying abstract cultural heritage through concrete cultural details.

This method of exploring cultural perspectives was also embodied by the project team in this project. Not only did the team contain a variety of cultural backgrounds, but also a range of different disciplines was represented in their perspectives. This diversity presented in the project team led to many valuable discussions and dialogues on different perspectives. Dialogue and discussion fuel the creation of depth in design and therefore the variety of disciplines supported the multi-perspective approach of dealing with cultural heritage.

In this project, the perspectives of project team were extended with the visitors perspectives on the matter. The designers became the facilitators of the installation to get cultural insights, while the visitors became co-creators by sharing their cultural perspectives through their behaviour in the installation. They became participators in the research on cultural heritage. In conclusion, we preach for both multi-cultural and multi-disciplinary teams in cultural heritage design projects to support a multi-perspective approach. Depth in cultural heritage projects is created through diversity of perspectives.

A. Conclusions for design

In order to capture cultural subtleties, visitors should be able to intuitively connect to a design experience. To enable this intuitive and unconscious connection, the experience has to stay away from stereotyping. The image of oneself does never fully correspond with a presented stereotype. A designed experience should therefore allow an infinite range of possibilities, instead of presenting a set of options.

In our installation visitors were not presented with a set of predefined patterns, but were able to construct the patterns themselves by playing with the parameters. The freedom in the creation of patterns in this experience reveals the cultural subtleties by supporting an intuitive connection between visitor and installation. The experience of this freedom was made possible by the use of a mathematical approach. This mathematical approach was embedded in a software system that in turn supported the discovery of insights in a cultural heritage project.

By making use of this software system, visitors experienced the installation as providing an infinite range of options in creating patterns. The patterns are however created with a set of rules, which limits the outcomes mathematically. These boundaries were never experienced by the visitors, but did enable the project team to analyse the visual outcomes created in the installation.

We have used the newest technologies in lighting design and interaction design to design an intuitive experience to reveal cultural subtleties in human behaviour. This project illustrates how the use of new technologies can both support the design of experiences to reveal cultural insights and the analysis of these experiences.

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