ETHICS IN DESIGN EDUCATION, BUT COMPLETELY DIFFERENT: TEACHING THROUGH INTERACTIVE INSTALLATIONS

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ABSTRACT

In a collaboration between the University of Twente and the Saxion University of Applied Sciences ethics education is explored from a tool-based, practical perspective. In this ongoing project the focus lies on the question if and how practical tools for ethical deliberation can be helpful in ethics education for engineering students. To adhere to the practical perspective, the approach uses a focus on the impact of technology as a way toward ethical deliberation. The idea is that engineering students should actively take the probable, desirable, *and* possibly unwanted effects of their designs into account *during* the development of their projects. To foster this process, we have the desire to build an ethics lab, analogous to an engineering lab or a design studio. As part of this ethics lab two students of the bachelor Creative Technology have designed an interactive installation to let the visitors of this lab experience classical ethical dilemmas in a contemporary manner. This paper will present the installations -representing Plato's cave and the Panopticon- as well as some preliminary experiences with "teaching ethics through interactive installations".

Keywords: Ethics of technology, reflective skills, ethics lab, interactive installations

1   INTRODUCTION
Designers have social responsibility by the very nature of their activities: bringing new products and services into the world of the user [1]. This responsibility calls for ethical awareness in the practice of design, as designers will be inevitably influencing the context of people and society for better or worse. Different approaches for reaching this ethical awareness have been developed, rooting in professional values [2] or on the other end personal ethics [3], ranging from teaching abstract ethical theories to analysing practical implications [4]. In an ongoing research collaboration between the Saxion University of Applied sciences and the University of Twente, the approach towards ethics education is from a tool-based, practical perspective [5]. Therefore, insights from design research are combined with philosophical theories [6 , 7] and the focus lies on analysing and exploring the impacts of new technologies as a way toward ethical deliberation [8]. In the initial phase, the study focused on the experimentation with this practical approach in a series of workshops with designers, design educators, and students [9]. From organizing these workshops, we came to the idea that there might be some environment that is especially suited for these kinds of workshops. Think of a dedicated space that stimulates ethical deliberation, just like a design lab [10] or studio environment can stimulate creativity [11].

Although at this point it is not yet clear how such an environment should look like, we started with the first elements that could be part of such an ethics lab. One of this is the envisioning of a 'canon of classic ethical dilemmas' to teach and inspire all people that will be visiting the lab. A small 'museum' to engage and confront users of the lab with ethical theories that they can refer to when reflecting on their own work. From this idea an initial set of two interactive installations has been developed, based on the respective ethical theories of Plato's cave and the Panopticon. The installations were each designed and prototyped by a Creative Technology engineering student in their bachelor graduation assignment.

In this paper we will present the theoretical backgrounds of our concept, the interactive installations itself, as well as the first experiences with exposing users to the installations.

2 ETHICS TEACHING AND DESIGN

In the first phase of the research project, experiences of consulted students and teachers indicated that practical tools for ethical deliberation are most valuable, provided that they are linked to explicit learning goals [5]. In the second phase, efforts are being made to (further) develop and test a suite of activating working methods to achieve these learning goals. The aim is to develop a package of teaching materials, together with the various engineering programs, consisting of concrete ethical exercises and assignments that can be used as a continuous learning line during the entire curriculum [12]. In the project we have identified four important ingredients for such exercises and assignments; 1) an ambivalent (or controversial) technology; 2) an application close-by (or appealing to the interests of the participants); 3) a concrete (design) activity and 4) the 'right' questions to ask. These ingredients should allow for effective learning experiences, especially with lecturers of engineering subjects that are themselves not trained as ethicists.

The next step in facilitating this ethical deliberation among practicing students is creating an environment that is inviting to do so. The idea is to make a dedicated lecture room where student groups and lecturers can come to do the workshops that have been developed within the project. This might also coincide with working on their own design projects. The setup of the room should then be stimulating, confronting, disturbing or at least inviting for discussion about the ethical aspects of the technology at hand. The first ideas for such an inviting environment ranged from "just a creative design studio setting" to a "privacy violating technologies Luna Park". The rationale behind the latter was to let people experience negative consequences themselves in various ways, with the intention to make them more sensitive to potential unwanted side-effects [13]. Think of an entrance where half of the visitors is (randomly) excluded after being scanned with face recognition software, so they can feel how it is to be rejected by technology based on unknown parameters ("computer says no"). Although the effectivity (let alone the ethical practicalities) of this kind of ideas is arguable, it sparked the starting point of using interactive installations in the prospective lab to educate about classic ethical principles. Practically, the installations should introduce students and staff to complex ethical dilemmas and allow them to grapple with issues that arise from understanding ethical issues, and subsequently aid them in considering how their projects might affect the world [14]. Optimistically, they could also present "the individual as an agent of positive social change, capable of affecting both local and global communities" [15, p.86] through ethics education and confrontation [16].

For the design and realisation of the interactive installations we recruited bachelor graduation students from Creative Technology, a programme that educates for developing new and innovative products, applications and services building on Information and Communication Technology. The design material that these students are taught is ranging from new media to smart technology, using videos and sound, internet, all kinds of programmable platforms, sensors and actuators [17]. Which make them fitting for our task [18].

3 CLASSIC ETHICAL THEORIES

For the ethics lab a list was composed of possible classical ethical principles to present. This could be for instance the Chinese Room by John Searle, the Turing Test, the Trolley Dilemma, or the Veil of Ignorance by John Rawls. The students eventually chose to start with the Panopticon by Jeremy Bentham and Plato's Cave as the central themes for their respective installations.

The Panopticon refers to the design of a circular prison, originating from the 18th century. The design presents prison cells with glass walls arranged in a circular manner around a central guard tower. This design allowed prison staff to individually observe each cell at all times, without the prisoners being able to tell if and when they were being watched. This concept of continuous surveillance would through Bentham's theory lead to imprisoned individuals practising self-discipline, as they might be observed at any time [16]. This principle, labelled 'Panopticism' by Foucault is strongly connected to the loss of privacy in today's communication society. On the other side of the spectrum, it is also used in the entertainment industry in television formats like Big Brother or the 1998 movie The Truman Show.

Even more classic than the Panopticon is the most famous theory by Plato, written around 380 Before Christ: The Allegory of the Cave. This theory is about prisoners chained down in a cave. They have been in that cave for their whole life, and they have been tied down and their heads are stuck in one direction, so they are unable to look around. Behind them is a fire and puppeteers that hold objects over a screen so that their shadows from the fire are cast on the cave's wall. Because the prisoners have never been in the outside world but have only seen the shadows on the wall, they preserve these shadows as

the "reality". They believe the shadows of objects cast by the moving figures are real things - and the only things. If a prisoner would escape from the cave, their eyes would hurt from the daylight and therefore, they would want to look back at the shadows on the wall again. Only after some time, they would be able to see anything from the outside world, let alone accept it as real. The allegory is about the perception of reality and Plato's idea is that the world we perceive as humans is only a dim representation of the real world [19]. Students that in this project were interviewed about ethics education and the allegory by Plato made the connection to social media. Some of them were aware that not all information is true, and one mostly sees the "shadows on the wall" and not the actual reality. One participant made the connection with the corona pandemic, where a lot of (conspiracy) theories about the coronavirus came to light. She said that there were people who thought that they had seen the 'real world' and found out that the vaccination was not good for humans. "Maybe they escaped from the cave and we are just seeing the shadows" [20, p.25].

4 INTERACTIVE INSTALLATIONS

The principle of the Panopticon and Plato's cave were translated into physical installations, where for both principles a contemporary element was added to appeal to the target group and emphasise the relevance of the principles for todays practice [16 , 20].

4.1 The Panopticon

For the Panopticon installation the chosen contemporary element was CCTV camera's, Social Media, and surveillance technology. To emphasise the link with the original prison design by Bentham, the installation was designed to fully immerse the head of the user in a box-like shape, supported by a foundation styled as prison bars. Inside the box the user is entirely surrounded by displays, showing a large number of different video clips that should represent CCTV footage (figure 1).
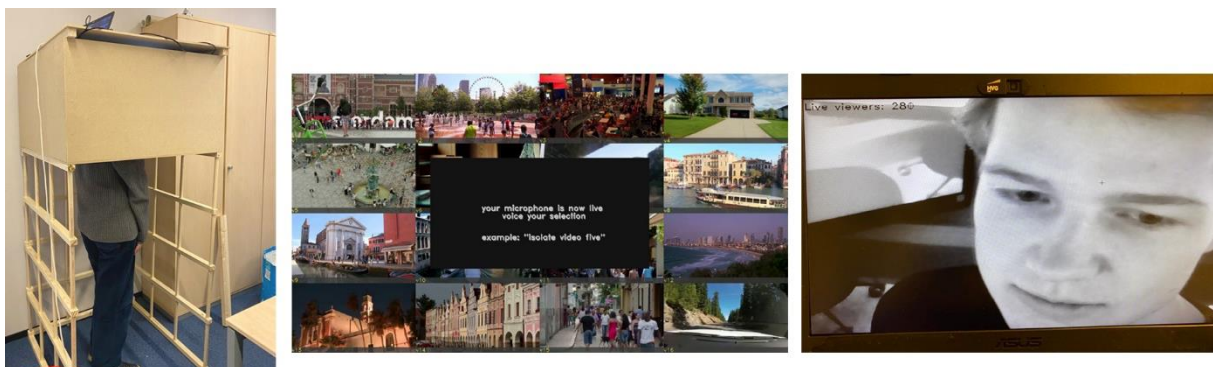
Figure 1. Interactive installation based on Panopticism, developed by Tale Nap. From left to right: the physical installation, the imagery displayed on the screens inside, and a screen capture of the confrontation phase [16]

The user can interact with the installation by requesting to zoom in onto a specific video clip. After several rounds the user is shown a video of themselves instead of the requested video clip. This unexpected confrontation with the effect of being watched should evoke reflection on the concepts of privacy and surveillance, and of course also one's own role in this when watching others on social media.

4.2 Plato's Cave

The allegory of Plato's cave was chosen to be explained with the contemporary issue of propaganda and 'fake news'. To make the concept more relatable with the original theory by Plato, the installation was shaped like a cave. Projections, representing the shadows of the original theory were provided by a beamer from the outside. The cave itself was realized as a small tent, made from white cloth. Ultrasonic distance sensors and a small camera register the interactions with the user (figure 2).
The interaction flow of the cave-experience is based on social media posts and propaganda. Egypt was chosen as the central topic as it is well-known for its tourist attractions. However, at the moment it is also an unstable country with a repressive regime. To achieve this, the design creates an Egyptian feeling for the user, while still representing a cave. This is done by using some stereotypical characteristics of Egypt such as the desert, Pyramids, and Egyptian-style music.

*Figure 2. Interactive installation based on Plato's cave, developed by Madee Schreurs.
From left to right; two images of the cave-tent with projected footage and the sensors and
camera on the inside [20]*

The installation will start with a projected cave entrance which the user has to enter. An instruction text is displayed with explanation to the user on how to interact with the experience. The user will then be placed in a desert surrounding with all objects black, so that only the silhouettes of the objects are visible representing the shadows of the original allegory (Figure 3). Then the user should answer questions about Egypt, which will be displayed on the left side of the cave. During this process the user is framed with sunny social media posts and positive news articles from the Egyptian government. While the user is working on the question on the left, news articles with a less positive perspective on Egypt will be displayed on the right, unnoticed by the user. After answering all the questions, the user is asked whether they would recommend Egypt as a holiday destination. In the confrontation phase the installation will then reveal the one-sidedness of the news that was presented [20].
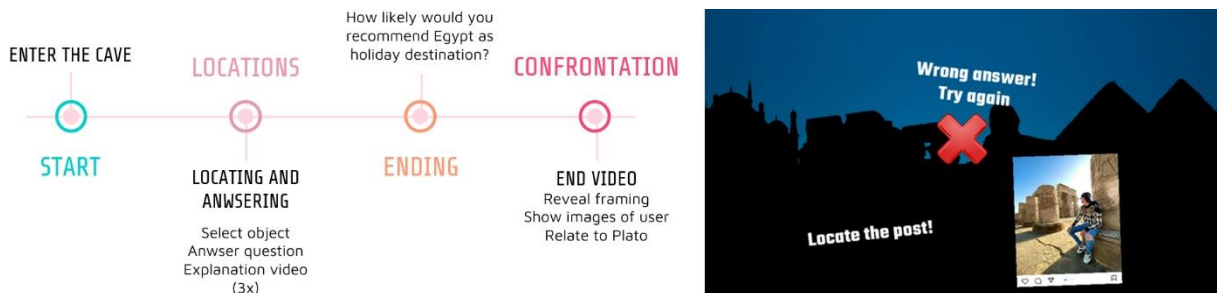

*Figure 3. Interaction flow of the cave installation and an image of the projected footage, with
social media post and silhouette of Egypt representing the shadows from the allegory [20]*

The user is confronted with their own image taken by the camera, looking to the left while all the negative news was openly projected behind them (Figure 4). After some preliminary user testing the interaction flow with questions and answers was set to a duration of approximately five minutes.
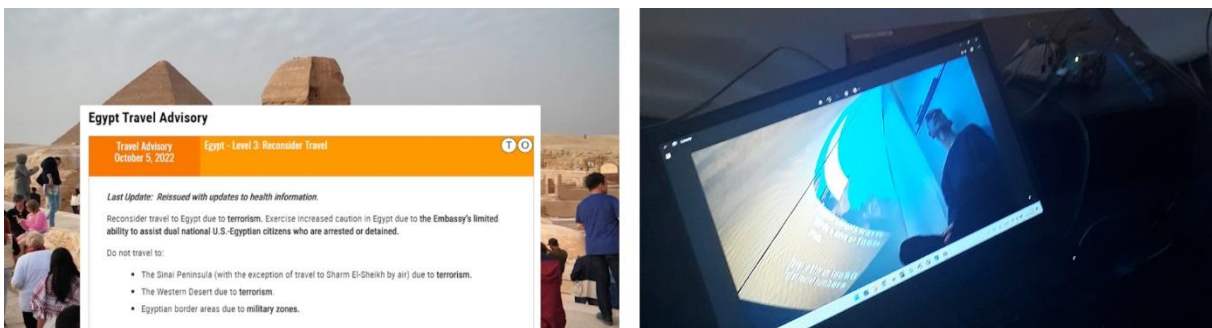

*Figure 4. Objective information (left) is presented openly, however unnoticed by the user
whose attention is effectively attracted to the other side (right)*

5   EVALUATION AND DISCUSSION

The two installations were prototyped and put together on location in an office of the University of Applied Sciences. Then several students from the intended target group were invited to experience the interactive installations. With the Panopticon installation, the participants were interviewed before and after the experience in order to investigate the effect of being exposed to the installation [16]. With the Cave, the participants had no information about the goal and usage of the installation beforehand, so the participant would not be biased. This was also done to test whether the installation could be used independently, without the need for a supervisor in the lab [20].

Four students evaluated the Panopticon installation. They answered the interview questions, engaged in the installation and were interviewed again separately. After that they were invited to react on each other's answer and discuss the topics that were elicited by the experience together. In the starting interviews the participants noted the importance of ethics when pertaining to stakeholders and when approving research procedures. They also identified that ethics and technology were closely related, however noted few positive experiences with ethics education. The participants expressed interest in ethics education, however reported a lack of practical application of the methods and concepts discussed. All participants noted that the interactive phase of the experience felt quite normal. They generally understood that they were essentially unobstructed observing personal data from varying places around the world, however they equated this with scrolling on social media. Each participant also noted that being exposed to your own image during the confrontation phase harboured uncomfortable emotions. In the following discussion, the participants agreed that such an experience would give an individual additional insights on ethical concepts and topics. As one participant put it: "through this installation, the awareness comes very easily because all of the sudden it applies to you specifically. And that's very different from just reading about it or finding a case study" [16, p.61].

The five people experiencing the Cave installation were successfully framed into believing that Egypt was a pretty nice country [20, p.47]. In the end, when each participant was confronted with many more negative facts about Egypt, this created a realization that they had fallen for the one-sided news that was presented to them as "shadows of reality". People had experienced that by only seeing the shadows on the wall, the reality that they created for themselves might not be the actual truth. However, they also stated that they would not change their behaviour afterwards. Which is actually what Plato predicted. If people have never seen something else in their whole life, it is hard to accept a different reality [20].

The realized installations were thus able to deliver what they were supposed to do; engage the audience in ethical deliberation and connecting classic ethical theory to contemporary (design) practice. Although the initial evaluation only consisted of very few participants, it showed the potential of this type of interactive experiences for the initial idea of a dedicated educational space for ethics; that a specific physical environment can stimulate ethical deliberation in the target group. The next step will be to incorporate the installations in an actual educational setting with more students and staff. For now, the question remains how the installations will perform when teaching a complete class of students, or how they will be influencing a dedicated workshop. And how can it support group work within a technology oriented design project? In the current setting, each user has to individually engage with the installations. Especially with the Cave experience, which lasts for at least five minutes, it is not practical to teach large classes. Moreover, in the evaluation the participants even indicated that they would prefer an even longer duration of the specific experience. On the other hand, the experience with the evaluation of the Panopticon installation showed that it really sparked discussion about ethical issues such as privacy, surveillance, the internet and advertising, which relate closely to the themes presented in the installation. This strengthens the conviction to continue on the path taken. Both developing more interactive ethics installations and researching how they can be best integrated in a stimulating environment for ethical deliberation.

6   CONCLUSIONS

Interactive ethics installations which engage their target audience through physicality, meaningful interaction and impactful confrontation can stimulate ethical deliberation. The next step is to make them part of a dedicated educational space for practicing ethics in education. Most interesting contribution at this point is that the exposure to the interactive installations as a practical pedagogical method sparks interest and intrigue in the target group, potentially making them more likely to engage with ethical subject matter in their own engineering practice.

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