

## ***My happiness and the happiness of others - Exploring interactive media pathways to sustainability communication***

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The word Sustainability is increasingly used in a myriad of different contexts. Nevertheless, there is still little knowledge about how lay individuals understand the concept and its broadness, and how they can link it to their own well-being. The aim of this research is to explore the creation of public interactive artistic media experiences based on experts and lay individuals' mental models, in order to captivate, communicate and engage with sustainability as related to well-being.

**CCS CONCEPTS** • Applied computing→Arts and Humanities→Media arts

**Additional Keywords and Phrases:** Sustainability, Interactive Media Experiences, Mental models, Well-being

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## **1 INTRODUCTION**

For decades scientists have been warning us that our unsustainable way of living on the planet is a risk for the well-being of all. [1, 2, 3] At the same time, a growing number of experts relate sustainability to human flourishing and a renewed understanding of well-being where Gross Domestic Product (GDP) is not the main nor the only indicator [4]. When interviewed in the scope of our research, focused on Sustainability, biologist Helena Freitas defined it as “being able to be happy, without threatening the happiness of others”. Attaining a more sustainable way of life depends on the involvement of all – from governors to lay citizens – including public acceptance and engagement.

Sustainability is a complex and open concept, and although it has been increasingly used with numerous interpretations, there is still “little baseline knowledge about how lay individuals conceptualize different aspects of sustainability” [4], which compromises a broader and deeper understanding of the significant commitments needed towards more sustainable practices. Nevertheless, knowing the public's beliefs over a subject is necessary to achieve effective communication [5].

In our research, inspired by Morgan's mental models approach to risk communication [5], we aim to investigate lay citizens' and experts mental models towards sustainability, through participatory film techniques, in order to transform this information and knowledge into public interactive art interventions and thus foster transformative experiences towards

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sustainability and well-being. In this paper, we present some initial explorations and possibilities that are part of a multidisciplinary research in Sustainability Sciences and that we bring to this workshop for discussion and feedback on further developments regarding the creation of public interactive artistic media experiences.

## 2 MENTAL MODELS

Mental models are internal representations of how one apprehends the world and interacts with it [6]. They are personal complex systems of deep beliefs built based on one's life experience, education, values, understandings, perceptions and communication with others [7]. Therefore, eliciting one's mental model on sustainability is finding out how it comprehends the concept and links it to its own life.

Questionnaires and structured tests are usually applied to bring out current beliefs. However, according to the words, set of phrases and ideas that are applied in these methods, there is a risk of engaging respondents in complex inferences [5] that aren't the expression of their mental models. For this reason, Morgan [5] proposes the use of open-ended interviews as a step to elicit mental models.

## 3 OPEN-ENDED SPACES IN PARTICIPATORY DOCUMENTARY FILMS

Open-ended interviews begin with a general question, where no hint or constraint is given, and allow the respondents to further elaborate their own ideas throughout the conversation. [5] The aim of these interviews is to look for the respondent's personal points of view and beliefs, rather than answers that might be expected by the interviewer or answers that the interviewee thinks is expected for it to give.

Participatory documentary films also apply open-ended interviews in its methods. During the shooting, filmmakers build open-ended spaces where participants can act and speak freely. Additionally, as an artistic process and experimentation, in some cases these open-ended spaces are expanded to grant broader participation. This is what happens when, for example, a camera is handed to the film participant, who is invited to shoot what it wants for the film, freely and openly expressing its own representations through image and sound. In "Nheengatu" (Figure 1), shot in the Amazon forest with indigenous communities, director José Barahona [8]. has handed mobile phones so the participants could film what they thought was important for the movie. The shootings made by the participants were edited with the shootings made by the crew in a linear documentary film. "Nine Earths" (Figure 2), a three screen video installation, promotes a media experience that blends images shot by different participants, together with "visual ethnography, imagery, sounds and candid interviews" [9] in its interface to deal with sustainability issues.



Figure 1. Image shot by a participant where he emphasizes the importance of his grandfather to his education. The director

has asked the participants to keep the mobile phone in a vertical position, as usually this is how lay citizens film with a phone, and to make a difference over the shootage from the film crew. Documentary film Nheengatu © Refinaria Filmes

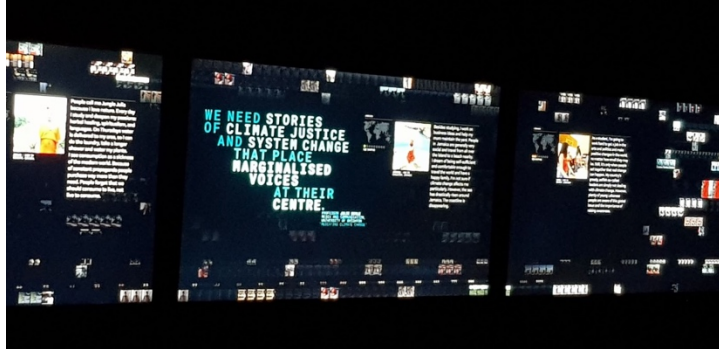


Figure 2. Non-linear content is displayed as fragments in an interface where contents are visually connected. Nine Earths - Video installation exhibited at Sonar Lisboa, 2022 © D-Fuse - Photo by Mónica Mendes.

In our research, we have begun to associate the methodology proposed by Morgan to artistic processes of participation and filmmaking, starting by investigating experts and lay citizens' mental models on sustainability.

#### 4 EXPERT MODEL

Creating an expert model is part of Morgan's methodology to approach mental models. This expert model is then proposed as a review of "the current scientific knowledge about the processes that determine the nature and magnitude of the risk." [5]. Morgan understands that this model is based on the individual's beliefs of each "expert", which are not perfect nor superior to lay's beliefs [5].

As the scope of our research is sustainability, which is a wide-ranging concept that refers to environmental, social, economic, political, cultural, technological and ethical aspects, we have decided to conduct open-ended interviews with experts from different disciplinary backgrounds to build our expert model based on their mental models on this subject. So far, we have conducted interviews with the economist Amélia Branco and the biologist Helena Freitas.

Economist Amélia Branco agrees with the definition of sustainability by the UN's Brundtland Commission as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" [4]. Branco recognizes that the concept is commonly associated with the environment and emphasizes that justice is the main value that she relates to sustainability.

In her interview, biologist Helena Freitas has linked sustainability to happiness and well-being, rather than to environmental issues. Freitas states that "sustainability will inevitably guide us to a happiness agenda (...) that relates to human satisfaction, to well-being. These are the societal progress indicators that we look for and they'll guide us to the commitment to other life ways. I'm convinced that those who have time and space in their lives to contemplate a butterfly, surely have the intelligence to protect humanity."

These two interviews have led us to question if, according to the experts, sustainability is mainly a metaphorical, philosophical and political concept rather than a scientific one.

#### 5 PARTICIPATORY EXPERIENCE

Along with building the expert model, we have begun exploring filmmaking participatory processes and its open-ended possibilities to elicit lay citizen's mental models on sustainability. We have decided to work with young adults, as they are the working generation that will have to deal with climate change from now on.

We have proposed students from a science class in the Master in Design for Sustainability and with a background on arts, to create videos answering to the following question: "Please create a video (it can be with your mobile phone) of about 1 minute about something beautiful or ugly that relates to Sustainability in your house, your neighborhood or your city. If you don't want to make a video, you can take one or two photos."

Eight students replied to our request, five of them shot videos and three of them took photos. Video 1 was the shooting of a bee eating from an empty dish. Videos 2, 3, 4 and 5, as well as Photos 7a and 7b expressed their concern on waste. Videos 2, 3 and 4 and Photos 7 referred to the importance of waste separation for recycling, while Video 5 criticized the lack of street garbage, and filmed a chirurgical mask on the floor. Photos 6a and 6b featured consumption on a photo of bottled water and another of a label on clothing, while Photos 8a, 8b, 8c and 8d are pictures of flowers in a balcony and a street named "Flower Lane". Video 4 highlighted a park due to its important environmental and social impact on sustainability.



Figure 3. Images from the works produced by the students. In order: Video 3 by Mirella da Rosa , Photo 6b by Estefania Ribeiro, Photo 7a by Marta Amador , Video 4 by Maria Fernanda Ceballos and Video 5 by Veronica de Moraes.

## 6 DISCUSSION

While most lay participants have highlighted objective examples linked with environmental issues, such as waste and recycling, and the relationship with the natural world (parks, flowers and bees), the experts presented broader and rather subjective and conceptual definitions, such as justice and happiness. These differences – objective x subjective and environmental x broader approaches – might correspond to the different mental models towards sustainability that experts and lay citizens have. However, the contrast between lay citizens and experts' views might also have been influenced by the distinct methods we have used to elicit their mental models. Further investigation has to be done repeating these methods and also inverting them – doing open-ended interviews with lay citizens and asking experts to do videos on sustainability. Anyhow, even within these differences, both groups have pointed out well-being aspects linked to sustainability such as the proximity to nature and the idea of happiness.

The different approaches explored at this phase have allowed us to start designing an interactive art intervention that could expose lays and experts' different perceptions towards sustainability to the public as a means to promote transformative experiences. The "Sustainability booth" (Figure 4) is to be installed at a public place (such as a park). Inside, interactive walls with screens present different short videos that the visitor can choose to watch. These videos display LIQUE 2022, ACM

excerpts of the interviews with experts and lay citizens about sustainability, and the videos made by the participants in our investigation.



Figure 4: Mock-up of the interactive “Sustainability booth”. The interactive walls presented here as inspiration are the walls from the Multi-Screen Interactive wall of The National Archives of Australia (<https://www.collider.com.au/studio/naa-interactive-wall>). We have also introduced some of the images of the videos done by the students that participated in our participatory experience. Although the screens are repeated here, the aim is that, in the booth, each screen will feature different excerpts and videos.

Our aim with this booth is to provide and expose the myriad of different perspectives over sustainability, revealed by the mental models of experts and lay citizens, granting visitors the possibility to discover new points of view, unveiling the complexity of sustainability and its connections to well-being. According to the film experiments we have collected during this development stage (interviews and participatory videos), we expect that the following videos produced by experts and lay participants will feature objective and subjective approaches that can lead to reflection and action, and a renewed and critical understanding of sustainability and well-being.

An additional concern to develop this interactive art intervention includes the challenge in designing an intervention that has a low environmental impact in its production and distribution.

## 7 CONCLUDING REMARKS

The data collected as well as the first thoughts raised at this phase have encouraged us to continue the development of an expert-model and the establishment of open-ended spaces for participation to attain and elicit experts and lays’ mental models towards sustainability. This stage has also allowed us to discuss and design possible interactive and transformative experiences connecting participation, sustainability and well-being, as a pathway to happiness.

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