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**Xiaoou (Olivia) Ji** is a PhD researcher at LUCA School of Arts, KU Leuven (BE). Her research focuses on the creation of embodied and multisensory installation games, creating a circular dialogue between artistic creation, philosophical theory, societal reflection and player experience. ORCID: <https://orcid.org/0009-0003-5695-7741>  
[xiaoou.ji@kuleuven.be](mailto:xiaoou.ji@kuleuven.be)

**Steven Malliet** is a lecturer and researcher at LUCA School of Arts, and an Associate Professor at the University of Antwerp. He is active in several research projects that involve the creation of game and interaction rules within artistic and applied contexts, in addition to investigating the relationship between music and visuals in audiovisual media production.  
ORCID: <https://orcid.org/0000-0003-2513-7970>

**Ekaterina Muravevskaia** is an Assistant Professor in Human-Centered Computing at Indiana University (Indianapolis, USA). Her research focuses on innovation and gamification in various technologies to bring more empathy, connection, and meaning to human lives. Before joining Indiana University, she was an Assistant Professor at Amrita University (India). Her PhD in Human-Centered Computing is from the University of Florida, USA. ORCID: <https://orcid.org/0000-0001-5899-9492>

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# EXPLORING EMPATHY THROUGH THE DESIGN OF AN EMBODIED INSTALLATION GAME

XIAOOU (OLIVIA) JI

LUCA School of Arts, KU Leuven, Belgium

STEVEN MALLIET

LUCA School of Arts, Belgium

University of Antwerp, Belgium

EKATERINA MURAVEVSKAIA

Indiana University, USA

## Abstract

Installation games are a relatively new art form that explores the intersection between game design, critical design and social commentary, and that carries a strong potential to showcase how games can reflect on social and psychological topics. The current study adopts an artistic research approach to explore the multisensory characteristics of installation games, in combination with a minimalist and radical approach to game choice. We discuss the design choices of the embodied installation game *Sisyphus: Endless Dilemma*, which aims to help examine and resolve the inequalities faced by patients with mood disorders. This case study demonstrates the value of artistic research in exploring the boundaries between different media forms, and in creating innovative mechanics that open new avenues for future work in game and critical design.

**Keywords:** *Embodied installation game, Game design, Empathy game, Artistic research, Critical design, Interactive art installation*

## Introduction

Although the inclusion of game elements in installation and performance art has been explored for several decades, this practice has recently gained increasing recognition. Noted examples such as *Rain Room* (RANDOM INTERNATIONAL, 2012) or *The Night Journey* (Viola & Game Innovation Lab, 2018) have paved the way for a new genre of games that is now commonly referred to as installation games (Dixon, 2007, pp. 1–8). These hybrid art forms question the boundaries between art disciplines and encourage players to reflect upon their relationship with technology, or with the world that surrounds them (Sharp, 2015, pp. 19–48). The notion of embodied experience is an essential aspect of the interactions provided by installation games: players are immersed in a multi-sensorial and context-specific relationship with a work, as a result of which they can be provided with a rich or deep understanding of a certain topic or message (Dixon, 2007, pp. 1–8). For instance, in the proto-installation game *Pain Station* (Reiff & Morawe, 2001), players receive pain jolts while interacting with a game system, which raises the question of how we are becoming increasingly intertwined with the technologies that define our daily lives. In order to achieve such a reflective experience, installation games often implement one specific, embodied, interaction, which symbolises or enlarges a wider subject or concern.

In their use of minimalistic mechanics, embodied installation games can also be described as experimental games: games that push the boundaries of what can be considered a game, to explore ‘meaning-making’ of the artistic, political, intervention and social critique (Flanagan, 2009, pp. 8–10). In

particular, the recent emergence of critical design has attributed them with a strong critical or even radical quality (Grace, 2019, pp. 138–139). By addressing a social, psychological or political subject in a non-conventional way, they confront the player with controversial topics that are not always easy to discuss in a linear or narrative fashion (Flanagan, 2009, pp. 6–15). One noted example, the (non- or idle) game *Cow Clicker* (Bogost, 2010), places the player in a dystopian context dominated by operant conditioning, which in turn can be connected to early behaviourist psychological concepts (Bogost, 2016, pp. 31–45). The example of *Cow Clicker* also demonstrates an interesting connection between academic scholarship and experimental game design: many experimental games are the outcomes of research projects that use game design to tackle a theoretical line of thought. For instance, Jenova Chen’s (2006) game *Flow*, and its relationship to Mihály Csíkszentmihályi’s theory of positive psychology (Chen, 2007, pp. 31–34) has been widely analysed in terms of the potential of the game medium to simulate complicated issues (McGonigal, 2011, pp. 20–31). Similarly, Stefano Gualeni’s experimental philosophical games use absurdist and nonsensical elements to deal with questions of taxonomisation and the human tendency to exercise control over reality (Gualeni, 2015).

Along the same line as the above-mentioned examples, the current article will discuss design choices that have resulted in the game *Sisyphus: Endless Dilemma*, created in the context of a research project at the Faculty of Art, Music and Design, University of Bergen (NO), during the first author’s master’s studies. It aims to investigate the potential of installation games exploring empathy, deepening understandings of

complex social issues, and establishing new paradigms at the intersection of art, game design, and social science through an artistic research approach. Artistic research is a rapidly growing methodology in academia, which involves artists as main researchers, and the practice of artistic creation as the main research activity (Henke et al., 2020, pp. 17–19). Artist-researchers investigate the deeper connections between thought and creation by experimenting with the language of the medium rather than merely showcasing a concept (Coessens et al., 2009, pp. 37–43). This typically results in knowledge that, although rooted in subjective experience, is highly suitable to interact with, or even be integrated in, a social reality or context, and thus to tackle complicated societal issues. The knowledge emanating from artistic research is often described as ‘tacit knowledge’ (Coessens et al., 2009, pp. 78–79): medium-specific knowledge about the process and language of creation, that can be recognised as such (and later applied) by peers and other artists. In the context of installation game design, recently the artistic research approach has proven fruitful, for instance in the project that resulted in the acoustic installation game *Trigger Place* (Meireles & Alvim, 2014) and *See Me Play* (Heljakka, 2023), a self-documenting game in the museum context, both of which highlight the value of this new methodology in a dialogue with a design research perspective (Lankoski & Björk, 2015, pp. 341–353).

The article is structured as follows. First, we begin by discussing the relationship between the critical design framework, game design and social issues. As one of the theoretical foundations of *Sisyphus: Endless Dilemma*, it provides a framework for game design to trigger thinking, reflection and dialogue, allowing players to think deeply about the social

and psychological complexities surrounding a topic such as mood disorder. Second, we introduce and discuss the characteristics of play and embodiment in interactive art installations, exploring their commonalities with games and their inspiration for game design. Then, the design of the embodied installation game *Sisyphus: Endless Dilemma* is presented and discussed, to explore how installation game design can encourage players to empathise with patients with mood disorders. Specifically, we will describe the game’s interactive mechanisms, sensory experiences, bodily movements, and the surrounding physical environment. The study concludes with a discussion of the current potential and possible pitfalls of designing embodied installation games in the context of artistic practice.

## Critical Design in Play

Critical design, as a design attitude, aims to evoke reflection on the assumptions, values, ideologies, and behavioural norms embedded in everyday life (Bardzell & Bardzell, 2013, pp. 3297–3306). It is about engaging people by “thinking through design rather than through words and using the language and structure of design” (Dunne & Raby, 2013, p. 35). As Matt Malpass (2017) describes in *Critical Design in Context*, critical design practices often “depict fictive scenarios but are at times also used to directly intervene in areas of oppression and inequality and used as a disruptive mechanism applied to challenge hegemony” (p.102), and this works through narrative forms of “allegory, exaggeration, antithesis, obscenity and violence to attack perceived errors in people’s logic or thinking, trying to evoke contempt, shock and righteous indignation in the mind of the user audience, thereby exposing

assumptions, triggering action, and arousing debate” (p. 107). For instance, in *Designs for an Overpopulated Planet: Foragers* (2009), Dunne and Raby imagine a possible future in which people have to develop outsourcing of gastrointestinal mechanisms to solve the problem of food shortage. Furthermore, in the *Technological Dreams Series: No.1 Robots* (2007), they imagine robots as individuals with unique personalities, aiming to stimulate reflection on how we live with robots in the future. As such, the critical design practice often uses fictional narratives to attack unperceived errors in people’s logic or thinking to provoke reflections upon our ideologies, and behavioural norms in everyday life or the future.

The integration of digital games into the daily experience of individuals has promoted the development of critical design in games (Grace, 2014, pp. 1–2). Through a critical design attitude, designers are not only criticising the current state of digital games but also exploring social issues, ethical dilemmas and cultural challenges and encouraging players to reflect upon these (Coulton & Hook, 2017, pp. 169–202). For instance, in *Papers, Please* (2013) by Lucas Pope, players take on the role of a border immigration officer in the fictional dystopian communist state of Arstotzka, tasked with checking travellers’ passports and other supporting documents according to strict rules. As the game progresses, players will face moral dilemmas, such as deciding whether to allow an immigrant’s supposed spouse to pass despite incomplete paperwork or inspecting immigrants’ naked bodies to search for illegal weapons. Likewise, Molleindustria’s *Phone Story* (2011) places players in the Democratic Republic of the Congo, where they control guards whose job it is to ensure that workers don’t take a break during the mining process. *Phone*

*Story* consists of four such mini games requiring the player to complete a number of related actions before a timer runs out; if they don’t, the narrator admonishes them: ‘Don’t pretend you’re not an accomplice’ (Rose, 2011). As presented by Mary Flanagan (2009) in her book *Critical Play: Radical Game Design* “Criticality can provide an essential viewpoint or an analytical framework. Those using critical play as an approach might create a platform of rules by which to examine a specific issue – rules that would be somehow relevant to the issue itself” (p. 6). In this sense, critical games can be considered a way of understanding the world (Grace, 2014, pp. 1–2).

## Play in the Interactive Art Installation

Interactive art installations are a relatively young art form, where new perceptions and participation modes are experienced, through interaction between the audience and the exhibited work. These installations are not just passive displays but rely on audience participation and feedback to create a dynamic, embodied, and multi-layered art space (Uddin Ahmed, 2018, pp. 241–257). Interactive art installations often utilise sensors, computer programs, and other advanced technologies to respond to the audiences’ movements, sounds, smells, or other input, creating an embodied experience that is distinct from traditional art forms (Soler-Adillon, 2015).

As stated by Katja Kwastek (2013) in her book *Aesthetics of Interaction in Digital Art*, interactive art installations are in many ways closely related to games, both in terms of artistic strategy and sense of embodiment. She presented the insights from the researcher Hans Scheuerl (1994) about

similarities in the processual nature of art and play, that they both follow “comparable structural laws in the purely formal interrelations between form and process [...] the fact that a play is ‘only completed at a specific moment’ does not distinguish it from a work of art; rather, it is what both have in common” (Kwastek, 2013, p. 73). At the same time, Mark B.N. Hansen (2006) draws on Henri Bergson’s theory of perception to explain the experience of interactive art installations as a form of interaction that is mediated by the body and changes body awareness (Hansen, 2006, pp. 21–46), which is coincidentally consistent with the sense of the avatar as part of the player’s body pursued in games (Lankoski, 2016, pp. 358–365). The increasing exclusion of object orientation in art, the dematerialisation of artworks, and the emphasis on the participants’ embodiment in the concept of art have recently continued to enforce these similarities between art and play (Kwastek, 2013, p. 61).

Specifically, we can find commonalities between interactive art installations and games in terms of participation, embodiment, and interaction. First, both interactive art installations and games emphasise participation: the behaviour of the audience directly affects the presentation and evolution of the artwork, just like the meaning of a game depends on the actions of a player. For instance, Lynn Hershman’s *Lorna* (1984), invites participants to find the continuation of the main story, which by extension relates to the logic of existence, in a maze-like scene. The process of participation in this installation not only determines the ending of the story character as an interactive mission but also determines the meaning of *Lorna* as an interactive artwork. Second, both interactive art installations and games are increasingly concerned

with exploring the embodiment of perception and cognition. Games often create virtual embodied perceptual and cognitive experiences through digital environments and fictional plots. For instance, *Inside*, a puzzle-platform game designed by Playdead (2016), creates a dystopian, surreal digital environment through immersive sound effects (such as breathing, footsteps, and death sounds) and a gloomy visual style, allowing players to experience specific perceptions and cognitive reflections in a virtual space and narrative. Interactive art installations immerse participants’ bodies by combining physical elements of the real world with interactive interfaces, such as *The Artwork as a Living System* by Christa Sommerer and Laurent Mignonneau (2022), which combines real-world physical elements and interactive interfaces to allow participants to physically interact with the artwork through body movement in an environment that blends the simulated visual world and the natural sensory world. When discussing the commonalities between interactive art installations and games, we can additionally focus on another aspect that they jointly explore, which is rule-based game interaction. For instance, Agnes Hegedüs’ *Televirtual Fruit Machine* (1991) invites participants to control 3D images on the screen, by moving the physical joystick, and requires them to cooperate, in order to join together three parts, like pieces of a puzzle. It adopts the operating mode of video games as its mode of interactivity (Kwastek, 2013, pp. 220–225). By playing together, participants can form close communities and develop a sense of group identity and belonging (Flanagan, 2009, p. 5). These commonalities not only help us better understand the connections between interactive art installations and games, but also provide rich information for game design, expanding the possibilities for innovation.

## Embodied Installation Game: *Sisyphus: Endless Dilemma*

By exploring the relationship between critical, social and game design implications, and the commonalities between interactive art installations and games, we will demonstrate the potential of critical design games to convey a shared understanding of complex social phenomena (Swain, 2007) and the innovative potential of embodied installation game forms. In the remainder of this article, we focus on one specific case, *Sisyphus: Endless Dilemma*, to explore how its design choices and processes can stimulate players' empathic feelings for mood disorders and social acceptance concerns. Current games that aim to promote empathy with a certain topic mainly focus on virtual environments (such as virtual reality games and video games). For example, *Passage Home VR* (Harrell & Olson, 2019), *AS IF* (Tong, 2020) and *Life Is Strange: True Colors* (Nine & Square Enix, 2021) allow users to experience others through virtual avatars to shift perspectives and empathise with others. At the same time, virtual reality (VR) and game design researchers argue for the potential of VR technologies as tools that can promote empathy via immersion and embodiment (Schrier & Farber, 2021, pp. 195–214; Muravevskaia & Gardner-McCune, 2023). However, such experiences lack full sensory elements, such as smell or touch, and separate the player from reality, making it difficult for players to connect the meaning of the game with real-world experiences (Moroz & Krol, 2018, pp. 1–4). To expand the way empathic feelings can be triggered and reveal the interaction of art, games and social engagement, we discuss the current social bias towards people with mood disorders and how game design can assist in breaking down these cognitive

barriers and triggering players' empathic feelings towards such people. As a result, this case provides a new pathway bringing empathy games into a deeper discussion of social issues and exploring the unique intersection between art and the social sciences.

## Game Background

Although current medical treatments for patients with mood disorders have improved, a lack of awareness and understanding of patients with mood disorders in society indirectly affects their equal rights in social and work contexts, and interpersonal relationships (Cohen et al., 2004, pp. 143–147).

## Game Narrative

To help more people to understand the symptoms of mood disorders and the painful experiences people experiencing them go through, thus helping them build a more inclusive living environment, the first author created the game *Sisyphus: Endless Dilemma* by using metaphors to critically connect the experience of mood disorders with the endless suffering of Sisyphus in Greek mythology. (Sisyphus, the founder and king of Ephyra, was punished for killing people by being forced to roll a massive boulder up a hill. However, each time it neared the summit, the boulder would roll back down, forcing him to roll it endlessly until the end of the world). This approach adopts a critical design framework, by symbolising the symptoms of mood disorders and constructing moral dilemmas and choices to help players understand the real experience of mood disorders while engaging with the storyline of Sisyphus, which raises questions such as 'Why did I undertake this action? Why would I think this or that is true?'; it connects these



questions to players' familiar emotions to expand their effect, triggering empathic feelings (Grace, 2020, pp. 147–152).

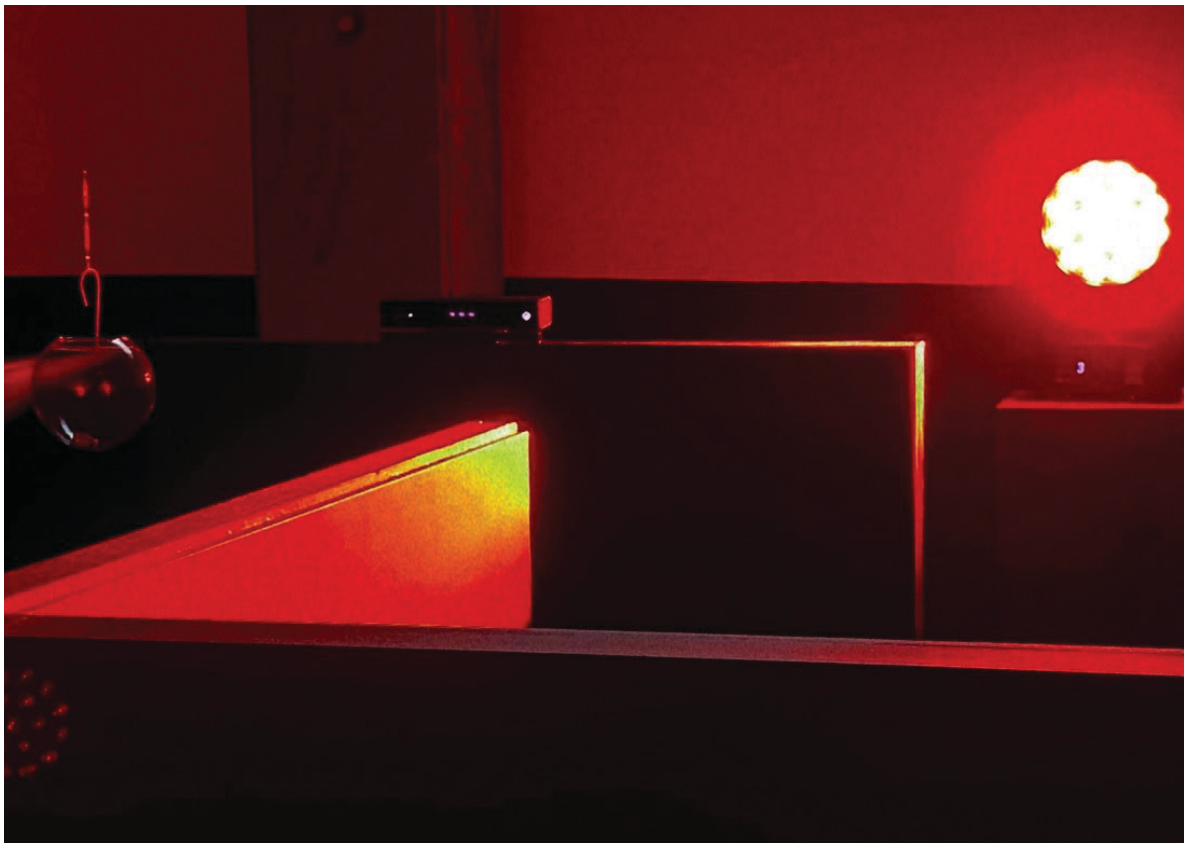
### Target Group

*Sisyphus: Endless Dilemma* does not recommend participation to people who identify themselves as having diagnoses of

mood disorders, nyctophobia or respiratory problems, based on a principle of minimising risk.

### Game Mechanics

Interaction facilities: An interactive system composed of TouchDesigner software, Kinect, a DMX wash K10 lighting



**Fig. 1** Ji, X. (2022). *Sisyphus: Endless Dilemma* [Game Prototype]. Faculty of Art, Music and Design, University of Bergen, Norway.

system, a button interface that writes the word 'Death' and a camera (Figure 1).

**Physical environment:** A dark indoor space, a black maze with no exit, a timer that continuously cycles within one minute, a device with the smell of cigarettes hanging in the air, four speakers playing the sound of the same station name in a loop, and paper game instructions.

### Gameplay

Only one participant can join the game. The player enters a black maze with the smell of burned cigarettes and the sound of repeating train station announcements, through which the player will understand the process and tasks of the game. The player's tasks are to avoid being 'hit' by a red spotlight and to find an exit from the maze. The player has a total of one minute to accomplish this. However, the game is designed in such a way that one minute will never end, as the time will automatically jump back to another minute, counting down tens of seconds cyclically. After an alarm sound occurs, the game starts. Though the player is instructed to find an exit, there is effectively no exit, and a red spotlight will constantly chase the player, while a camera captures the player's facial expressions. The player is trapped in this maze, breathing the pungent smell of smoke, listening to the repeated station announcements, and enduring the dazzling illumination of spotlights, but unable to find the exit. The player eventually realises that there is no other choice but to press the 'Death' button. Everything will stop working after pressing the button, and only then the game ends. After finishing the game, the player will receive a photo of her/his facial expressions (Figure 2).



Fig. 2 Ji, X. (2022). *Sisyphus: Endless Dilemma* [Game Prototype]. Faculty of Art, Music and Design, University of Bergen, Norway.

### Key Features

In order to achieve the goal of recreating the experience which people with mood disorders might have, we included in the game the following features:

1. A maze with no exit, time loops and repeated station announcements: The physical environment of the maze with no exit, the time loop and the sound of repeated station announcements in *Sisyphus: Endless Dilemma* are the key

elements in creating a dystopian narrative, which immerses players in a sense of perpetual entrapment and futility. This design choice reinforces themes of existential despair and the cyclical nature of struggle, as players navigate a world where their efforts seem meaningless and escape is elusive. This design breaks with the concepts of linear time and the digital environment in traditional games, trapping players in time and space. Here, the installation serves as a carrier for satire through allegorical methods, but also as a metaphor describing the inescapable situation in which patients with mood disorders are compared to Sisyphus in Greek mythology, individuals who cannot escape from endless suffering.

2. Red spotlight: The red spotlight is one of the game mechanics to promote interaction, managing and guiding player behaviour. The red spotlight can not only track the player's movements but also emit an extremely uncomfortable red glare, making the player's vision blurred, forcing the player to move and take avoiding action through violent and critical means, just like patients with mood disorders who cannot escape emotional distress. The aggressive pursuit and difficulty of evading the spotlight amplify feelings of irritability and fear, mirroring the heightened anxiety faced by those dealing with such challenges. Additionally, according to Wilson (2002), by connecting our bodies, associated sensorimotor systems, and contextualised cognition, we can help counter irrational ideologies, particularly by building mental models of reasoning and problem solving. Thus, the design of the spotlight helps players build mental models of understanding associated with mood disorders, creating an embodied experience that resonates

with the emotional turmoil represented in the narrative of Sisyphus (Wilson, 2002, pp. 625–636).

3. The 'Death' button: The 'Death' button serves as the only option to end the game, evoking in the player's mind the indignation of mood disorder groups' situations by challenging the player's logic and perceptions about life and death. As a metaphor for the suicidal thoughts often experienced by those struggling with mood disorders, the 'Death' button integrates the symptoms of these conditions into the game mechanics. It immerses players in the experience of 'forced death', simulating the profound sense of hopelessness that can accompany such mental health challenges. This design choice compels players to confront the heavy emotional weight of these issues, highlighting the desperate situations faced by those in the grip of mood disorders.
4. Facial expression capture: According to *Emotion Attribution Theory* (Adolphs & Anderson, 2018, p. 275), visual cues of emotion help people detect and understand behaviour. After completing the game, players receive photos of their facial expressions, a design element aimed at facilitating self-reflection on their gaming experience. By observing their own facial expressions, players can gain insights into their emotional responses and actions throughout the game. This feedback not only enhances their understanding of their own emotions but also fosters a deeper connection to the themes of the game, encouraging players to reflect on the emotional complexities associated with mood disorders.
5. The smell of cigarettes: *Sisyphus: Endless Dilemma* uses the smell of burned cigarettes as one of the elements to create a dystopian narrative. This particular scent was chosen be-

cause it is widely disliked, intensifying players' aversion to the environment and heightening their feelings of irritability and despair during gameplay. Additionally, drawing on *The Proust Effect* (van Campen, 2014, pp. 9–36) which suggests that smells can evoke past memories and emotions, the game aims to create a lasting connection between players and the experiences of individuals with mood disorders. The design choice of this key feature is to create a possibility that, if players smell the odour of burned cigarettes in the future, it will trigger their memories and emotions during the game, ideally leading, again, to continuous critical reflection.

Through the comprehensive use of multiple elements such as perception, embodied interaction and environment, this installation game creates a unique real world, allowing players to become first-hand experiencers of problems. This immersive interaction deepens the connection between players and social issues, inspiring deeper cognitive and emotional resonance. By stimulating empathy between players and patients with mood disorders, we can help people understand patients with emotional disorders, give them more social support, and solve situations where mood disorder groups have lost their original rights and equal views.

## Conclusion

This article discusses the design of the embodied installation game *Sisyphus: Endless Dilemma*, investigates and demonstrates the potential of installation games exploring empathy by focusing on making, imagining, experiencing and producing 'tacit knowledge' through interaction with social reality or

the environment. It contributes to the ongoing discussion of contemporary game design and the exploration of its potential as a catalyst for solving social problems, which shows the potential for creating new paradigms at the intersection of art, game design, and social science through an artistic research approach.

## Discussion

However, we might also face some pitfalls and challenges during the design process. First, in terms of the critical narrative of the game, ideally, the use of narrative techniques such as allegory, absurdity, opposition, and violence is believed to help stimulate players' deep reflections on social issues. However, players' understanding of critical narratives is subjective. If the narrative is too radical or contains interpretative biases, it may trigger players' resistance, or even lead them to disengage from the game, which will have a negative impact on the game experience. For example, in *Sisyphus: Endless Dilemma*, we integrated the allegory of Sisyphus's story into a critical narrative as a metaphor for the experiences of patients with mood disorders. The intention is to immerse players in the dilemma of Sisyphus, allowing them to deeply understand and experience the suffering of those with mood disorders, thereby enhancing the empathy between players and patients with mood disorders. However, we cannot rule out that people might rather understand the Sisyphus story from a different perspective, which considers Sisyphus as an absurd hero leading a fulfilling yet arduous life, detesting death, and being fated to engage in a seemingly meaningless task and enjoy it (Camus, 1955). Different interpretations of critical narratives may influence

players' gaming experiences. Therefore, when employing a critical design framework, it is crucial to carefully and accurately construct critical narratives and gameplay to guide players in their precise understanding. Consequently, in the interaction mechanics of *Sisyphus: Endless Dilemma*, we designed a button called 'Death', combining Sisyphus' fate with death as a means of release. This encourages players to perceive Sisyphus' experience as one of endless suffering, where only death offers liberation.

Second, it is important to provide subsequent critical reflection for players in the design of embodied installation games. For instance, in the design of *Sisyphus: Endless Dilemma*, we incorporated the sense of smell into the game environment, enhancing players' psychological resistance by creating an uncomfortable olfactory environment. At the same time, by leveraging *The Proust effect*, we used the sense of smell as a key element to continue the player's empathic experience, providing a way to critically reflect after the game concludes. By combining the concepts of smell and time, we implanted players' in-game experiences in the form of scent into their real-world emotional perceptions and memories. We hope that if players encounter the smell of burned cigarettes in the future, it will trigger the emotional perceptions and memories they experienced in participating in *Sisyphus: Endless Dilemma*, thus continuing the empathetic experiences gained in the game into their future lives. However, this might have technical as well as ethical challenges. From the technical perspective, the smell must be applied as authentically as possible and not mixed with the perfumes of the game players. At the same time it must not affect the visitor's smell after the experience is over. From an ethical perspective, the smell

must be chosen in such a way that it does not endanger the player's health, for instance in the case of players who suffer from asthma or other breathing problems. In particular, if one chooses a controversial type of smell, such as one of cigarettes, these challenges must be addressed in a carefully considered way.

## Future Work

The design intention of the embodied installation game is to help examine or solve social problems through critique and embodiment. But how to concretise social issues and successfully integrate them into the social context is a question that deserves further investigation. For instance, in the design of *Sisyphus: Endless Dilemma*, the goal is to encourage players to empathise with patients with mood disorders and increase social acceptance of them. The game mechanics we created can have implications within a healthcare context, and further collaborations with healthcare professionals or family members of patients could aid in enforcing the message and experience of this game. Integrating this game into a social context would not only require the game's design to be finetuned but would also increase its collaborative dimension. Therefore, after completing the game design, we aim to set up collaborations with health research institutions, schools, local community organisations, and NGOs to further explore its reflective and empathic qualities. By additionally adopting participatory design and collaborative workshop methods, more active efforts can be made to encourage people to interact with the game, thereby effectively integrating it into the health context.

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