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Deanne Spek

Faculty of Industrial Design Engineering, Delft University of Technology, Delft, The Netherlands

Froukje Sleeswijk Visser

Faculty of Industrial Design Engineering, Delft University of Technology, Delft, The Netherlands

Wina Smeenk

Inholland University of Applied Sciences, Diemen, The Netherlands

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It really touches me: How to design empathic journeys with virtual reality in societal challenges

Deanne Spek^{a,*}, Froukje Sleswijk Visser^a, Wina Smeenk^b

^aIndustrial Design Engineering, Delft University of Technology, the Netherlands

^bInholland University of Applied Sciences, Diemen, the Netherlands

*Corresponding e-mail: d.spek@tudelft.nl

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Abstract: Designers are increasingly collaborating with various stakeholders to address complex societal challenges. These challenges often require a codesign approach, where different actors with diverse perspectives and experiences unite to explore innovative avenues for change. Such collaboration requires empathy between the actors to understand each other's perspective better in their interactions. This paper aims to assist social designers in orchestrating such empathic codesign processes by introducing an Empathic Journey framework. This conceptual and practical framework is based on empathic design theory and three design cases which used Virtual Reality for perspective exchange between actors. The framework addresses the importance of integrating an emotional spark through immersion and the necessity of embedding immersive experiences in a larger journey.

Keywords: empathy, societal challenges, emotional spark, Virtual Reality

1. Introduction

Increasingly, designers are working on complex societal challenges, such as social cohesion, safety, public health & wellbeing and energy transitions (e.g., Chen et al., 2016). These societal challenges evolve over time, and involve multiple organizations and actors with different stakes in the problem (e.g., Irwin, 2018; Smeenk, 2021; van der Bijl-Brouwer, 2022). This networked and dynamic character makes it challenging for actors to change, since efforts easily become stranded and orphaned between people, spheres of life, disciplines and domains (Irwin, 2018; Smeenk, 2021). In such cases, social designers do not necessarily design end solutions, but rather develop and facilitate change processes of multiple actors designing and changing their behaviours together (Vink et al., 2021; Yee et al., 2017). For such collaboration, actors need to be able to see the world from the others' perspective: they need to have empathy with each other (e.g., Irwin, 2018; Smeenk, 2021). A variety of researchers have been interested in effective ways in design to immerse oneself into another perspective, for



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example through role playing, storytelling and video games (Fulton Suri, 2003; Herrera et al., 2018; Smeenk et al., 2017; van Rijn et al., 2011). Furthermore, Virtual Reality (VR) technology has been explored as a powerful means to experience the stories and perspectives of others (Bailenson, 2018; De la Peña et al., 2010; Milk, 2015).

Besides perspective change techniques, several theories and models have been put forward on how to deploy empathic processes in design. Kouprie & Sleeswijk Visser (2009) and Smeenk et al. (2019) have specifically proposed models to guide designers in creating empathy with users they design for. These models hold promise to be used with groups of actors as well. Yet, techniques and tools to support social designers and other team members (further referred to as design team) in designing processes which use empathy between actors to achieve systemic transformation in social interactions and collaboration are still limited.

In this paper, the main question is how (social) design teams can design empathic interventions using VR as part of systemic transformation processes in a variety of societal challenges? We review three real life cases that used 360-degrees VR through a head mounted display to change mindsets and behaviours of actors through immersive experiences. In nine interviews, design team members reflect on the designed activities before, during and after immersion and provide recommendations for future design teams. We relate the insights from these case studies to the empathic design models of Kouprie & Sleeswijk Visser (2009) and Smeenk et al. (2019), and integrate these findings into a unified practical Empathic Journey framework for design teams working on societal challenges. Finally, we discuss the implications of this framework for social design and further research desired to explore other means than VR to be used in the journey.

2. Empathy in design

Empathy has received ample attention in design for the past two decades. Designers should be able to “step into the user’s shoes” (Fulton Suri, 2003). Empathy is seen as people’s intuitive ability to identify with others’ lived experiences, such as thoughts, feelings, motivations, emotional and mental models, values, priorities, preferences and inner conflicts (Fulton Suri, 2003). Empathy increases when people consciously alternate between directing their attention to their own perspective and to the perspective of the other, while also alternating between affective experiences and cognitive processes (Hess & Fila, 2016; Kouprie & Sleeswijk Visser, 2009; Sleeswijk Visser & Kouprie, 2008; Smeenk et al., 2019). The whole process of stepping in, immersing and stepping out of other’s perspectives and thereby increasing empathy with other(s) can be referred to as empathic formation (Hess & Fila, 2016). By immersing in those perspectives, people gain affective experiences which they can subsequently translate (cognitive activity) and use to derive new and fresh insights. In this paper, we will call the person stepping in and out of the perspective of the other the empathiser.

In the design context, two notable models stand out for their ability to facilitate empathy in the design process. First, Kouprie & Sleeswijk Visser (2009) introduced the Empathy in De-

sign model based on empathy theories from psychology and sociology. The model is developed to guide individual designers in building empathy with the user(s) they design for and in conveying their empathic understanding of the users. This approach outlines four phases of empathy in design: discovery, immersion, connection, and detachment. In the discovery phase, designers develop willingness to engage with users and to explore their contexts. In the immersion and connection phases, designers immerse themselves in the users' contexts and subsequently connect to the users' feelings, as well as for their own feelings. In the detachment phase, designers step out of the other's perspective and gains insights, see Figure 1a.

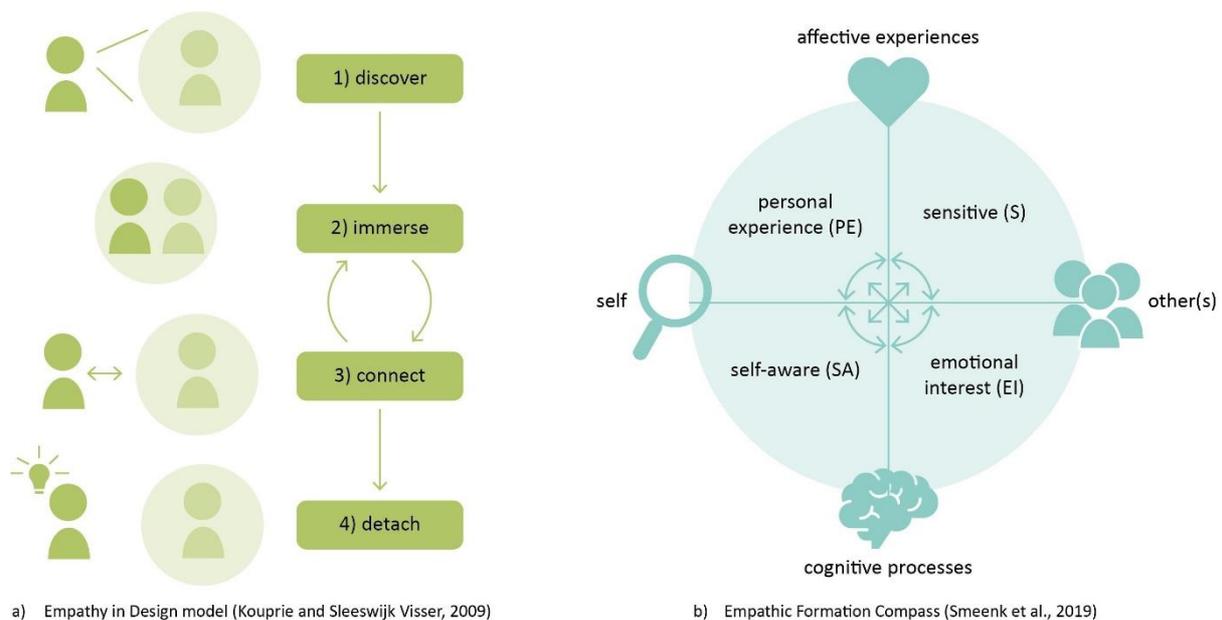


Figure 1 Two notable design models

Building upon this model, and drawing from Hess & Fila (2016) and insights from Baldner & McGinley (2014), Smeenk et al. (2019) developed the Empathic Formation Compass. This model focuses on four dimensions of empathic formation a designer can flexibly move through: emotional interest, sensitivity, personal experiences and self-awareness, see Figure 1b. Emotional interest and curiosity toward others already arise when designers cognitively take a perspective on others through activities like reading theories or viewing documentaries. Sensitivity develops through direct contact and engagement with stakeholders in the real or in a digital world, allowing designers to relate to others and their context. This relating to and sharing of similar personal experiences fosters deeper connection. Moreover, self-awareness grows as designers reflect on potential biases in their personal experiences or stakes in a similar context.

The two models are connected. For example, the discovery phase leads to emotional interest, and depending on the activities to sensitivity. The immersion and connection result in sensitivity and personal experiences. Both models hold value in the broader context of de-

sign addressing societal challenges with various actors, though they were originally developed for more traditional design practices. We use both models as a lens for the interviews with the (social) design team members of the three cases and as a basis for composing the subsequent Empathic Journey framework using VR to evoke empathy among actors in societal challenges.

3. Method

Three cases were selected to distil insights into how to design and organise empathic interventions using VR with the intent to promote mindset, culture and behavioural change within the actors involved to foster collaboration. In each case, VR is used to allow empathisers to develop empathy with other actors. In the first two cases the second and third author were involved in designing and evaluating the interventions (see Table 1). These cases were informed by the models of Kouprie & Sleeswijk Visser (2009) and Smeenk et al. (2019). We included a third case that had no connection to our own work in order to evaluate whether the insights we extracted from the first two cases were more generally applicable and meaningful for similar cases.

For each of the cases, the first independent author reviewed project documentation and interviewed design team members (e.g., initiators, designers and project managers) of each case with the following selection criteria:

- At least one person who was involved in the whole process, from the first idea to implementation
- At least one person who interacts/interacted with participants during implementation
- At least one of the designers involved in the project.

In total nine interviews were held. The goal of the interviews was to better understand what flow of activities were intentionally designed for the empathiser and what the team learned about designing such activities in hindsight.

4. The three cases

The journey and included actors for each of the cases is described below. Table 1 provides practical information about the cases.

Table 1 Overview of cases

	Case 1: Improving dementia care	Case 2: Improving social cohesion	Case 3: Solving crime
Project information	www.intodementia.nl	www.fabrique.com/cases/digital-transformation/bubble-games	www.vrowl.nl/recherche-zet-virtual-reality-training-in-bij-strijd-tegen-personeelstekort

Project coalition	Healthcare organizations, consultancy agency, design agency and universities	Local governmental organisations (municipality, social workers, police), two design agencies, VR film production company, and university	Police department, VR production company, police education foundation
Societal aim	Better quality of life and work practices for (in)formal caregivers and people with dementia	Reducing tensions in a neighbourhood between socially opposed groups	Improving the self-confidence and skills of insecure (often new) detectives
VR experience	VR simulation by interactive experience (16 min)	VR film by 3D viewing (7min)	VR training by interactive experience (60min)
Authors' involvement	3 rd author	2 nd author	External case
Project time span	10 plus years	2 years	2 years
Number of actors who have been empathiser (until July 2023)	Physical simulator: 4000 VR film: 7000 VR interactive experiences: 9000	4 (2 of each group) and ~500 citizens of the neighbourhood	40-650 detectives
Past evaluative research	<p>The actors' empathic formation (among others) was evaluated 15 months after the simulation visit by geriatric researchers.</p> <p>Results show that of the 145 actors, the experience was positively reviewed by 87,1%. Thus resulting in more understanding and ability to understand and support people with dementia (Hattink et al., 2015).</p>	<p>The actors' increase of empathy and motivation to change the situation was measured before, during and after the event by researchers of the project team.</p> <p>Results show that there was a strong increase of empathy within all four actors, even weeks after the events (Sleeswijk Visser & van Erp, 2023).</p>	<p>The added value of the VR training on the actor's understanding, abilities and mindset was evaluated by a consultancy agency.</p> <p>Results show that the understanding of the senior perspective increased, thereby improving the skills and attitude of the junior detectives in doing a crime investigation (TwynstraGudde, 2022).</p>

4.1 Case 1: Improving dementia care

In the dementia case, the empathisers are formal caregivers (those working in the care institution) and informal caregivers (those caring for a loved one) of people with dementia. Via a VR simulator, (in)formal caretakers become a person with dementia (see Figure 2) to trigger reflection on their own behaviour, thereby improving the relationship between informal caregivers, formal caregivers and people with dementia. Figure 2 shows the steps the empathisers go through. In the simulation, which represents a living-kitchen, the empathiser is guided by an inner voice through audio. These inner thoughts and the experiences depend and react on the actions the empathiser takes with the controllers in the VR environment, such as gazing and putting groceries in a fridge. Throughout the experience, several authentic (based on real live) and recognizable (based on theory) situations unfold. By interacting with the (in)formal caregivers in the VR environment, empathisers experience also themselves through the eyes of someone with dementia. After this immersion, personal reflection with a host and a variety of behavioural change interventions follow.

4.2 Case 2: Improving social cohesion between citizens

In this case, tensions grow between young people and residents about the use of public space such as noise disturbance, after a series of troubled events in their neighbourhood. To promote mutual understanding of each other's perspective on and experience of the tensions between the two groups, two young people and two residents view a VR film about the other group (see Figure 3). To make the films, a film crew joins each of them to document a day in their everyday lives and their thoughts and feelings about the tensions in the neighbourhood. Watching the VR film of the other group allows the empathisers to be immersed into the context of the others: they can literally look around in their homes, their families and their daily rituals. The intention of the case team is to support empathisers to get to know the other as an individual person instead of a member of the other (opposing) group. The film-viewing is followed by a facilitated co-creative session to collectively come up with solutions for the neighbourhood.

4.3 Case 3: Solving crime scenes

Previously, junior detectives learned about doing a crime scene investigation on the field, feeling unprepared and insecure about their own skills. The VR training allows them to take their time for experiencing how a senior detective would address a crime scene investigation, thereby gaining skills and knowledge applicable to their first real cases. The junior detective is thus the empathiser, see Figure 4. The training is designed for the empathiser to go through while being guided in person by a senior detective in and in VR by a senior detective. In VR, the empathiser can interact with objects and people to retrieve information about the possible crime. The collected information can be clustered in a separate 'thought room' inside the VR, resembling the whiteboard normally used in the office. Both in interacting with the objects and clustering in the thought room, empathisers can compare their view with the perspective of the senior VR-detective. As in case one and two, the VR immersion is followed by several reflection activities, see Figure 4.

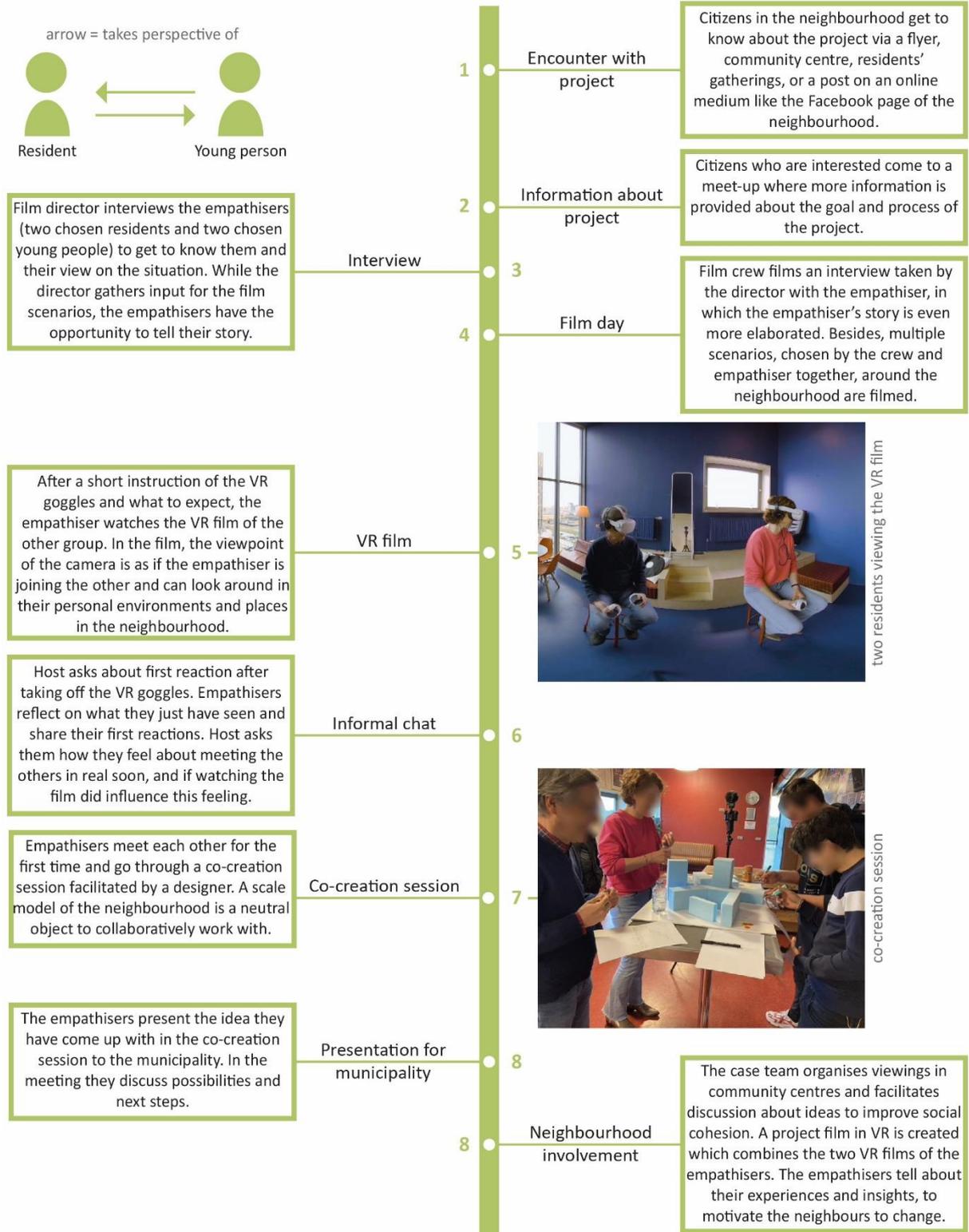


Figure 3 Activities formulated by interviewees of the social cohesion case

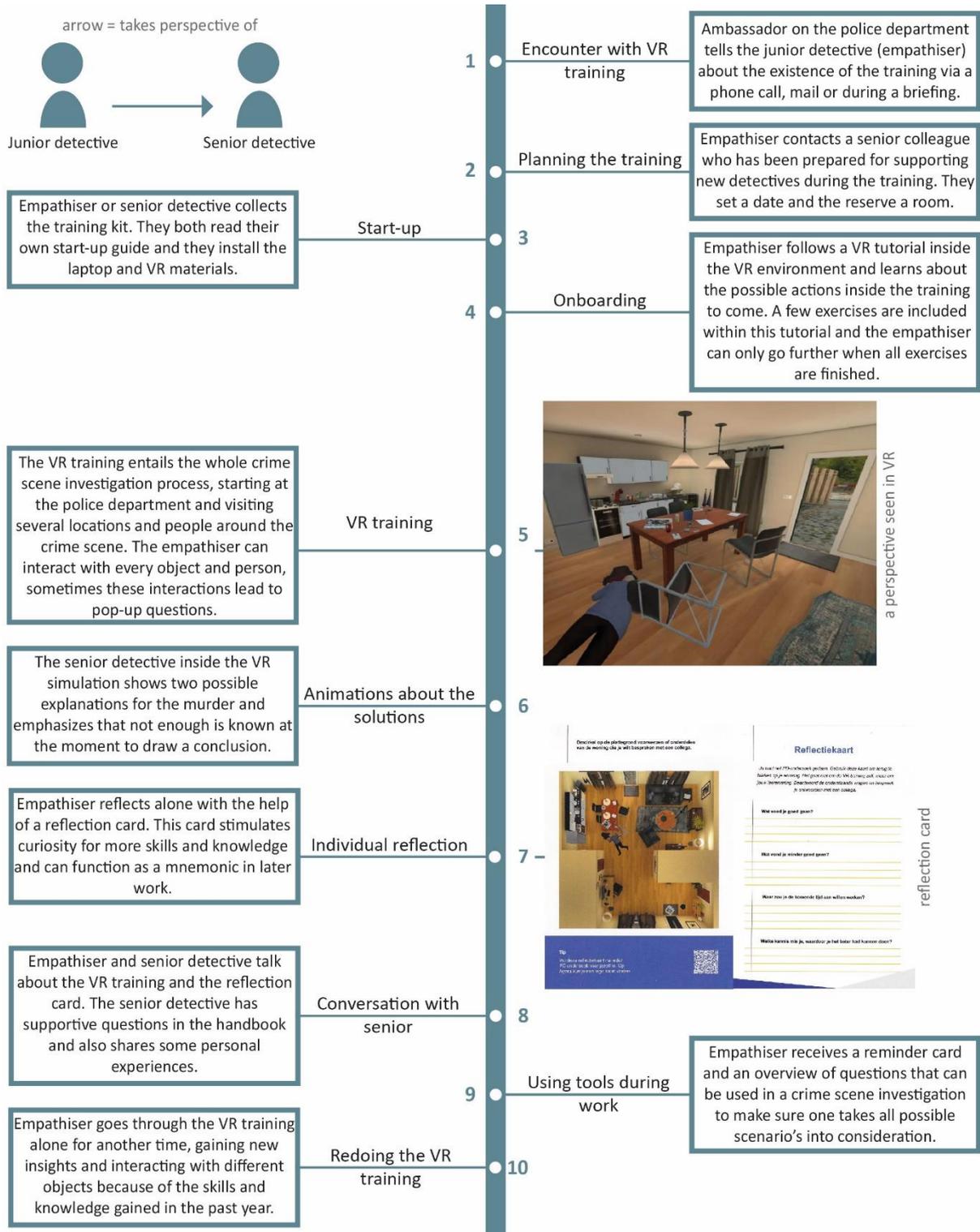


Figure 4 Activities formulated by interviewees of the crime scene case

5. Findings

In two analysis on-the wall sessions (Sanders & Stappers, 2012), case study activities with similar goals or similar envisioned effects on the empathiser were grouped together, resulting in seven fruitful elements for designing empathic journeys (see Figure 5). The elements

were clustered in phases according to the two theoretical empathic design models, resulting in an initial Empathic Journey framework. Each element is described in more detail below with a summary and a description of i) the aspects intentionally designed and ii) those deemed relevant in hindsight by the interviewees. The framework was validated by evaluating the insights with the interviewees.



Figure 5 Analysis on the wall session example

5.1 Elements to be designed in empathic journeys for societal change

A. Acknowledge the challenging situation

Interviewees emphasised the importance of acknowledging empathisers' challenging situation: for the difficulty of taking care of a person with dementia (case 1), the subtleness of avoiding prejudice during recruitment (case 2) or the insecurity around a first crime scene (case 3). All cases invested time in understanding the challenging situation of the empathisers and making them feel welcome and seen. Table 2 shows that design teams should design with emotional interest and sensitivity, which is for example expressed in the design of the atmosphere, the tone of voice and the time given to the empathiser.

Table 2 Acknowledge the challenging situation

Acknowledge the challenging situation		
	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> Host addresses the difficulty of taking care of someone with dementia, focussing on the (in)formal caretaker in the intake conversation. 	<ul style="list-style-type: none"> Recognition for the difficulty of taking care for people with dementia is demonstrated by care institutions and other organisations in purchasing the VR simulator; The dementia simulator as a product is in itself an acknowledgement of the problematic situation of dementia.
Case 2	<ul style="list-style-type: none"> Citizens are asked to share their perspectives during information sessions in the neighbourhood. 	<ul style="list-style-type: none"> Being sensitive and using the right tone of voice during recruitment are essential; Taking time for listening and creating a safe space are needed for empathisers to open up and tell their story; The visit of the film crew, where the empathisers are interviewed, followed for a day and filmed, is itself an acknowledgement of their situation.
Case 3	<ul style="list-style-type: none"> In each police department an ambassador is assigned with the task to acknowledge the insecurity of junior detectives and propose the VR training as a solution. 	

B. Guide in opening up

Empathisers need to open up for the other, cognitively and affectively, increasing their emotional interest and sensitivity for the other(s). An explicit activity for creating a comfortable safe space and stimulating curiosity for the other(s) will enhance the effect of the immersive experience and thereby support in starting the empathising process. Table 3 shows that seemingly unimportant contextual elements, such as the ease of planning the experience or the recommendation by a colleague/friend, can influence receptiveness.

Table 3 Guide in opening up

Guide in opening up		
	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> Host explicitly asks the empathiser to open up for what is to come in the intake, to let go of rational thoughts and to just experience. 	<ul style="list-style-type: none"> Word-of-mouth, having colleagues or friends recommend the experience increases people to be curious and willing for a visit; With younger empathisers (15-25 years) a young host who speaks their language is needed to engage them compared to an older host.
Case 2		<ul style="list-style-type: none"> Becoming self-aware about their own perspective and values regarding the neighbourhood issues through dedicated attention of film making days, helps in being more receptive to discover about the other.
Case 3		<ul style="list-style-type: none"> Making sure the process of finding a senior detective, planning the training and collecting the materials is easy and happens smoothly, result in the empathiser being more open and curious for the VR training.

C. Prepare for (technological) means

Interviewees explained that while most empathisers are attracted to the technological means of experiencing VR, the insecurities about this technology can be a barrier to fully immerse: empathisers can become cognitively distracted instead of immersing in the VR experiences. In case 1 and 3, the empathisers have to interact with objects and other persons in the VR environment, which requires practicing with the technology beforehand. Table 4 shows how the preparation for the VR was designed in different cases.

Table 4 Prepare for (technological) means

Prepare for (technological) means



	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> • Host explains how the technology (headset, headphones and controllers) works; • Short training inside the VR environment. 	<ul style="list-style-type: none"> • Older people need more time and encouragement before they want or dare to use VR technology; • Younger people need explanation that the VR simulation is not a fast game experience.
Case 2	<ul style="list-style-type: none"> • Host provides a short technical instruction and makes sure empathisers feel comfortable. 	
Case 3	<ul style="list-style-type: none"> • Empathiser goes through an elaborate tutorial to practice, with test questions which have to be answered correctly before moving on. 	

D. Evoke an emotional spark

Interviewees of all cases observed that empathisers were impacted emotionally by immersing in the experiences of other(s) and connected to the accompanying feelings of other(s). Herewith, not only their sensitivity towards the other was activated, but they also created first- or second-hand experiences which made them personally touched and sometimes even hurt. This emotional spark appeared a crucial element to evoke empathic formation in all cases according to the interviewees. Table 5 shows that the attention of detail of the design enhances the depth, sense of presence and impact of the experience. The interactive tasks enhance the connection to others. The personalised and customised settings, and props make the individual experience relatable and familiar. Moreover, this adds a layer of emotional connection to the experience, maximizing the immersive effect.

Table 5 Evoke an emotional spark

Evoke an emotional spark



	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> • A first-person perspective experience makes empathisers feel belittled and misunderstood; • Personal and recognizable details (storing the fridge, clock ticking); • Doing tasks improves immersion and emotional affect; 	<ul style="list-style-type: none"> • Emotional spark is personal and is noticed by empathisers at different moments/scenes in the immersive experience

	<ul style="list-style-type: none"> • Tuning the experience to the empathiser (male voice and hands for male etc.) supports immersion; • Hearing and visualizing inner thoughts. 	
Case 2	<ul style="list-style-type: none"> • A second-person perspective experience makes empathisers literally feel close to the other(s); • The films provide peaks into the personal lives of others full with details and narratives which contained emotional elements. 	<ul style="list-style-type: none"> • Personal details of the home (stuff in the bin, on the kitchen table, other family members, view from their window etc.) provide a strong sense of intimacy which struck empathisers.
Case 3	<ul style="list-style-type: none"> • A first-person perspective experience supports the empathiser in internalizing the perspective; • Recognizable objects from the workplace (e.g., waste bin); • Being able to interact with all objects and people; • Integrating several unexpected and slightly emotional events (a disturbing and shouting neighbour entering the garden). 	<ul style="list-style-type: none"> • Difficulty with technology is a barrier for achieving an emotional spark.

E. Facilitate personal reflection

The experienced emotional spark prompts a desire for debriefing and a motivation to share experiences. According to the interviewees, this momentum should directly be grasped, emotionally supported and used for internalising and reflecting on the experience from iteratively first- and second-person perspectives. Discussing the experience and its impact can help the empathiser process their emotions and insights gained during immersion, and to connect them to their own experiences in daily life. Table 6 shows that such a reflection can best be facilitated by another person and should be adapted to fit the empathisers: their emotional state, and the capabilities.

Table 6 Facilitate personal reflection

Facilitate personal reflection		
	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> • Host supports the empathiser to reflect on those scenes that had the most impact, as these point towards important lessons, during offboarding; 	<ul style="list-style-type: none"> • Find a balance between helping the empathiser to let go of the heavy emotions experienced and supporting the empathiser in sustaining the feelings and insights to build upon later.

	<ul style="list-style-type: none"> • Host explains the idea behind some of the scenes, why the themes are essential for a person with dementia. 	
Case 2	<ul style="list-style-type: none"> • Informally: while taking off the VR goggles, host asks empathisers what the immersive experience did to them. 	<ul style="list-style-type: none"> • Join first informal moments of reflection, such as a small cigarette break of the empathisers after watching the VR film.
Case 3	<ul style="list-style-type: none"> • Reflection is facilitated by providing a template with questions to fill individually. 	<ul style="list-style-type: none"> • Tools and questions to support reflection are needed as self-reflection is not a common practice in police departments.

F. Generate and support actionable insights

According to the interviewees, defining actionable insights and practicing new mindsets and behaviours to prolong the momentum of the emotional spark and first reflections requires a more cognitive approach than the immediate reflection of element E. Interviewees report that these new mindsets and behaviours should not be imposed, but formulated in exchange with peers or experts in order to develop ownership and intrinsic motivation for this change. Such processes require helping the empathisers recognize that the way they act does not align with how they would like to act (based on the experienced perspective changes), increasing self-awareness, and formulating new possibilities. The importance of doing this collectively is shown in all three cases (see Table 7): peer group meeting (case 1), co-creation session (case 2) and discussion (case 3). Furthermore, the cases show that making the new insights tangible via personal stories (in case 1 from peers and in case 3 from the senior detective) or objects (the maquette in case 2) supports both the creation of actionable insights and motivation for change.

Table 7 Generate and support actionable insights

Generate and support actionable insights		
	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> • Informal caregivers receive a book and movie which contain information, tips and tricks. • Formal caregivers receive a book and an E-learning which provides explanations about the scenes and a theoretical foundation for formal caregivers to build upon in their work; 	<ul style="list-style-type: none"> • In person support and exchanging experiences is effective and supports intrinsic motivation for change; • Exchanging personal experiences with peers is useful because recognizing other's stories, and providing and receiving tips (reciprocal) inspires change and keeps the momentum alive;

	<ul style="list-style-type: none"> Both groups of empathisers join group sessions to discuss their experiences and connect these to their daily life or work. 	<ul style="list-style-type: none"> Tips seem better accepted when coming from peers in a similar situation than from a professional or expert.
Case 2	<ul style="list-style-type: none"> Empathisers are guided through a co-creation session in which they exchange ideas to improve the issues in the neighbourhood, a 3D maquette of the neighbourhood is used as a neutral object to discuss ideas; Coming up with the solution themselves, results in motivation to of empathisers bring the idea further. 	<ul style="list-style-type: none"> Directly dividing tasks and making agreements ensures that the energy and momentum of empathisers being highly motivated to change the situation is prolonged.
Case 3	<ul style="list-style-type: none"> Empathiser discusses with a senior detective what the implications of the training are for future behaviour on the crime scene; Empathiser receives a card summarizing the main learning points, and a sheet with self-check questions for the crime investigations to come. 	<ul style="list-style-type: none"> Personal stories and tips from the senior detective help the empathiser to make sense of the materials and to be better prepared for the crime investigations to come.

G. Internalize and sustain new behaviour by repetition

Interviewees mentioned that the motivation for changing toward prosocial behaviour can quickly diminish and therefore sustained activation should be included to support empathisers in creating habitual routines of their new behaviours (i.e., long-term activation). Recurring emotional sparks addressing the emotional interest of empathisers will probably be necessary to keep this intrinsic motivation and personal drive up, since behavioural change is hard work. As Table 8 shows, in all three cases the importance of this repetition and long-term support is emphasised.

Table 8 Internalize and sustain new behaviour by repetition

Internalize and sustain new behaviour by repetition		
	Designed intentionally	Relevant in hindsight
Case 1	<ul style="list-style-type: none"> Peer sessions are created to last until new habits are internalized. 	<ul style="list-style-type: none"> Positioning the journey -including peer sessions afterwards- as a whole package empowers to change behaviour. Results will be disappointing and short-term if new

		habits are not continuously inflamed.
Case 2	<ul style="list-style-type: none"> • A 'project movie' in VR, combining the VR experiences of the younger people and residents allows for organizing local viewings with the aim to engage at community level, beyond the four empathisers. 	<ul style="list-style-type: none"> • Early involvement of actors with implementation power (in this case the municipality) and creating actionable deliverables is needed to transfer ownership and empower other actors to proceed with the changes.
Case 3	<ul style="list-style-type: none"> • The tools support internalization of the new knowledge and skills, as they can be brought to every crime scene case; • Empathisers repeat the VR after six months to learn about their progress and to support further behaviour change as empathisers often find new tips and tricks. 	<ul style="list-style-type: none"> • Redoing the training after six months, not only ensures habituation of the behaviours and insights developed during the first session, but also sparks motivation for new knowledge to develop and new behaviours to form.

5.2 Empathic Journey framework

The seven elements above were clustered and plotted into four phases. Moreover, we mapped these elements and phases onto the two earlier empathic design models. The result is an emerging Empathic Journey framework to design for empathy in societal challenges, see Figure 6. As part of the broader context and higher aim of social design, we visualise the framework embedded in a prior development phase and later system change process. Below we discuss the four phases labelled as onboarding, immersion, offboarding and activation.

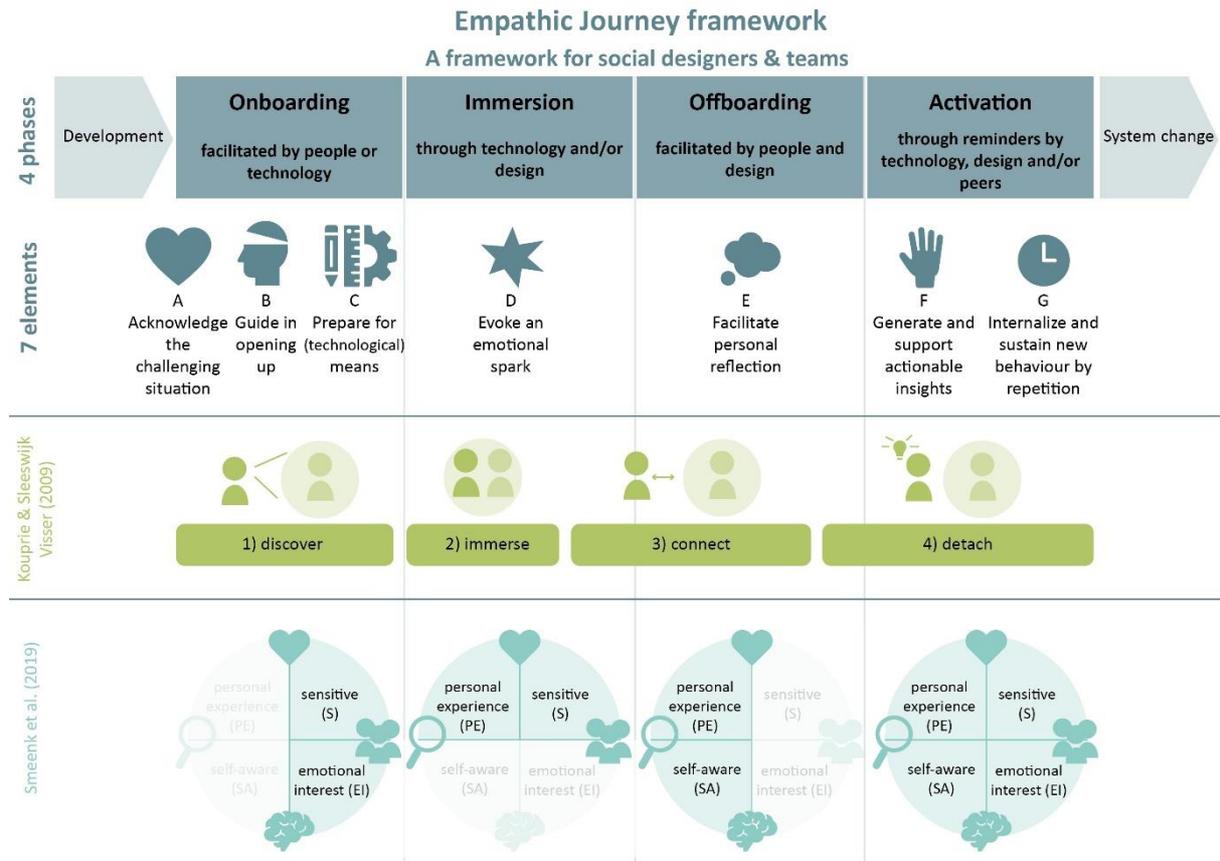


Figure 6 The framework for designing Empathic Journeys with VR in societal challenges

The first phase, onboarding, is about guiding empathisers in developing curiosity, emotional interest and sensitivity with other(s) (Kouprrie & Sleswijk Visser, 2009; Smeenk et al., 2019). The first three elements (A-C) gradually involve and prepare empathisers for the peak part of the Empathic Journey: the emotional spark. Onboarding starts off by arousing the empathiser's emotional interest through acknowledging their challenging situations (element A) and by guiding them in opening up both affectively (element A and B) and practically (element C).

The second phase is immersion. Through the intervention of technology and design, the empathisers are fully immersed in the world of other(s), enrol in affective experiences and enliven an emotional spark (element D). Empathisers allow connection with the perspective of the other through attending their own experiences and feelings during the intervention. The immersion phase makes the empathiser sensitive and receptive to the other and their own perspectives simultaneously (Smeenk et al., 2019). It is a rather passive state, in which empathisers do not interpret and judge, but just experience and connect (Kouprrie & Sleswijk Visser, 2009; Stephan, 2023). Ideally the experience touches on tacit knowledge such as values and norms (Sanders & Stappers, 2012).

The third phase is offboarding. This phase further emphasizes the connection between the affective experiences of the other and the self by discussing them with another person,

thereby connecting and detaching (Kouprie & Sleeswijk Visser, 2009) from the other's perspective and becoming self-aware (Smeenk et al., 2019). While elements A-D gradually involve the empathiser, element E ensures empathisers can let go of their first emotions and go back to their daily life with new insights. The immersive experience and connection triggers motivation in empathisers to change mindsets, interactions and behaviours and to align them with their (under the iceberg) values and norms (Smeenk, 2022).

The last phase, activation, addresses the underlying aim of integrating Empathic Journeys in multi-actor social design challenges: changing mindsets and behaviour which can improve collaboration and affect positive societal change (e.g., Chen et al., 2016; Vink et al., 2021). The experiences and reflections of the previous phases are used to generate actionable insights and formulate new possible behaviour on the short-term (element F), and to internalize and sustain those behaviours on the long-term by repeated affective experiences and reflection (element G) to enhance the ability to act (Sangiorgi, 2011). While the emotional spark and reflection result in willingness to act (Kouprie & Sleeswijk Visser, 2009) and maybe lead to short-term behavioural change, a more cognitive endeavour and support in repetition of new interactions are needed for habitual change. This also means iterations of such journeys over time.

6. Discussion

Our review of the three cases demonstrates that a strong and valuable synthesis can be made between the two empathic design models and the practical insights from the cases. The Empathy in Design model (Kouprie & Sleeswijk Visser, 2009) provides for the Empathic Journey phases to be designed, whereas the Empathic Formation Compass (Smeenk et al., 2019) complements this by describing the deliberate cultivation of a specific state of mind in these phases. This is achieved by stimulating and promoting a methodological orientation towards first-person, second-person, and third-person perspectives (Smeenk et al., 2016). The Empathic Journey framework builds forth on these models, adapting and expanding its steps to better suit the needs of social design teams working on complex societal challenges with the support of VR. This adaptation includes a more comprehensive engagement with other actors in the same challenge and the incorporation of multiple perspectives, ultimately aiming to create more effective opportunities and idea directions for our grand, multifaceted societal challenges. This results in a conceptual and practical framework highlighting how to address the unique context and goals of (social) design teams working on complex societal issues, as opposed to traditional design work.

In summary, the framework addresses the necessity of embedding immersive experiences in a larger journey. The immersion phase, featuring the emotional spark activity, stands as an indispensable component in the formulation of an Empathic Journey, but without onboarding and herewith purposely facilitating an 'opening up' process, this emotional spark is not likely to happen. After the immersive experience, reflection in the offboarding phase needs to be supported for actors to change. Without reflection after immersion, such change is less

likely to happen. Lastly, to sustain actors' mindset change and motivation for positive behavioural change, short- and long-term activation and repetition of empathic sparks are needed. However, further research is needed to develop our conceptual framework in more detail, and to investigate for which societal problems it proves beneficial. Besides, since the framework is based on two empathic design models with no specific connection to VR, we foresee applicability of this framework in non-VR cases as well. For example, in the onboarding phase the specific manner of preparing empathisers for (technological) means is contingent upon the specific context and means, VR in this case. Still, empathisers may not only become cognitively distracted by VR technology (instead of immersing in the VR experiences). The same distraction by the means can happen in for example role play, where empathisers could feel insecure about their abilities. Preparing and supporting the actor in this is then necessary in non-VR cases as well. Furthermore, also in VR the onboarding should not solely focus on technological preparation, but also on emotional preparation for the perspective change to come. Empathising in real life also requires emotional interest (Smeenk, 2018).

The restriction to VR cases is a first limitation of this study. Though much research is currently oriented towards technology development, such as exploring possibilities of VR to create new immersive experiences, we emphasize the accompanying need for research on design methodologies to embed empathic formation in social design processes. The second limitation is the limited number of cases which vary greatly in context, set up, how the intervention was developed and evaluated, but do not necessarily cover a generalisable set of societal challenges. Furthermore, the three cases do not use similar evaluation techniques (Table 1).

We are therefore planning further research in different contexts with different (technological) means and focus on the sequencing and significance of the four phases, the specific role of the actors' personal perspective and experience, and integration of the Empathic Journey in the larger systemic change. As we aim to do several case studies as part of one research project, set-up and evaluation will be comparable (while still context dependent). Altogether, we expect the Empathic Journey framework to provide designers insight in how to design immersive experiences that support and utilize empathic formation of actors as part of systemic transformation processes toward societal change.

7. Conclusion

This paper unveils a framework for designing Empathic Journeys to be used in multi-actor societal challenges, based on empathic design theory and a review of three real life VR-cases, tailored to catalyse behavioural transformations. It explains which seven elements need to be designed to create empathy among actors as a means for igniting behavioural change and collaboration. The framework provides designers with recommendations on how to design and organise activities to support empathic formation, which is described in four phases: onboarding to open up and prepare actors for the immersion to come, immersion to understand other actors' perspectives, offboarding to reflect on the immersive experiences and to connect one's own experiences with the challenging situation at stake, and activation

to generate and sustain new actionable insights, regarding mindset and behavioural change on the long-term. The Empathic Journey framework holds potential for contributing to the broader aims of societal and systemic transformation.

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8. References

- Bailenson, J. (2018). *Experience on demand: What virtual reality is, how it works, and what it can do*. WW Norton & Company.
- Baldner, C., & McGinley, J. J. (2014). Correlational and exploratory factor analyses (EFA) of commonly used empathy questionnaires: New insights. *Motivation and Emotion*, 38, 727-744.
- Chen, D.-S., Cheng, L.-L., Hummels, C., & Koskinen, I. (2016). Social design: An introduction. *International Journal of Design*, 10(1), 1-5.
- De la Peña, N., Weil, P., Llobera, J., Spanlang, B., Friedman, D., Sanchez-Vives, M. V., & Slater, M. (2010). Immersive journalism: Immersive virtual reality for the first-person experience of news. *Presence*, 19(4), 291-301.
- Fulton Suri, J. (2003). Empathic design: Informed and inspired by other people's experience. *Empathic design: User experience in product design*, 51-58.
- Hattink, B. J., Meiland, F. J., Campman, C. A., Rietsema, J., Sitskoorn, M., & Dröes, R.-M. (2015). Zelf dementie ervaren: Ontwikkeling en evaluatie van de Into D'ementia simulator. *Tijdschrift voor gerontologie en geriatricie*, 5(46), 262-281.
- Herrera, F., Bailenson, J., Weisz, E., Ogle, E., & Zaki, J. (2018). Building long-term empathy: A largescale comparison of traditional and virtual reality perspective-taking. *PLOS ONE*, 13(10), e0204494.
- Hess, J. L., & Fila, N. D. (2016). The manifestation of empathy within design: findings from a servicelearning course. *CoDesign*, 12(1-2), 93-111.
- Irwin, T. (2018). The emerging transition design approach. *Cuadernos del Centro de Estudios en Diseño y Comunicación. Ensayos*(73), 147-179.
- Kouprie, M., & Sleswijk Visser, F. (2009). A framework for empathy in design: stepping into and out of the user's life. *Journal of Engineering Design*, 20(5), 437-448.
- Milk, C. (2015). *How Virtual Reality can create the ultimate empathy machine*. https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine Retrieved July first 2023.
- Sanders, E. B.-N., & Stappers, P. J. (2012). *Convivial toolbox: Generative research for the front end of design*. Bis.
- Sangiorgi, D. (2011). Transformative services and transformation design. *International Journal of Design*, 5(2), 29-40.
- Sleswijk Visser, F. & Kouprie, M. (2008) Stimulating empathy in ideation workshops. Proceedings of Participatory Design Conference, Indianapolis, p. 174-177.
- Sleswijk Visser, F., & van Erp, J. (2023). Empathy building through Virtual Reality filmmaking in social innovation: decreasing tensions between socially opposed citizens. *Strategic Design Research Journal* 16(1).

- Smeenk, W. (2021). *De wereld gekanteld: de maatschappelijke impact van de evoluerende ontwerppraktijk* [Lectorale rede, Hogeschool Inholland]. HBO Kennisbank. https://hbokennisbank.nl/details/sharekit_inholland:oai:surfsharekit.nl:46c86c81-cdab-4e35-84b6-2e0779ea19af
- Smeenk, W. (2022). Societal impact design: Empathic and systemic co-design as a driver for change. In P. Joore, G. Stompff, J. van den Eijnde (Eds.), *Applied Design Research* (pp. 147-156). CRC Press.
- Smeenk, W., Sturm, J., & Eggen, B. (2019). A comparison of existing frameworks leading to an empathic formation compass for co-design. *International Journal of Design*, 13(3), 53-68.
- Smeenk, W., Sturm, J., & Eggen, B. (2017). Empathic Handover: How would you feel? Handing over dementia experiences and feelings in empathic co-design. *CoDesign: International Journal of CoCreation in Design and the Arts*, 1-16. Taylor & Francis.
- Smeenk, W., Sturm, J., Terken, J., & Eggen, B. (2018). A systematic validation of the empathic handover approach guided by five factors that foster empathy in design. *CoDesign: International Journal of CoCreation in Design and the Arts*, 15(4), 308-328. Taylor & Francis
- Smeenk, W., Tomico, O., & van Turnhout, K. (2016). A systematic analysis of mixed perspectives in empathic design: Not one perspective encompasses all. *International Journal of Design*, 10(2), 31-48
- Stephan, C. (2023). The passive dimension of empathy and its relevance for design. *Design studies*, 86, 101179.
- TwynstraGudde. (2022). *Grenzeloos leren: Evaluatierapport Virtual Reality Plaats Delict Training*.
- van der Bijl-Brouwer, M. (2022). Service designing for human relationships to positively enable social systemic change. *International Journal of Design*, 16(1), 23.
- van Rijn, H., Sleeswijk Visser, F., Stappers, P. J., & Özakar, A. D. (2011). Achieving empathy with users: the effects of different sources of information. *CoDesign*, 7(2), 65-77.
- Vink, J., Wetter-Edman, K., & Koskela-Huotari, K. (2021). Designerly approaches for catalyzing change in social systems: A social structures approach. *She Ji: The Journal of Design, Economics, and Innovation*, 7(2), 242-261.
- Yee, J., Jefferies, E., & Michlewski, K. (2017). *Transformations: 7 roles to drive change by design*. BIS Publishers.

About the Authors:

Ir. Deanne Spek is a junior researcher working on social design (research) projects in the healthcare domain. Her work combines codesign and psychology in multidisciplinary healthcare settings, focussing on self-reflection, resilience and collaborative change.

Dr. ir. Froukje Sleeswijk Visser is associate professor social design and independent design researcher. Her research focusses on integration of the human perspective in designing for societal challenges.

Dr. Ir. Wina Smeenk is Professor in Societal Impact Design, chair of the Expertisenetwerk Systemic Codesign and self-employed empathic codesigner. Wina focusses on research about empathic formation in codesign processes in practice as well as education.