

Empathy building through Virtual Reality filmmaking in social innovation: decreasing tensions between socially opposed citizens¹

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ABSTRACT

In our densely-populated cities, living together in harmony between different groups of people becomes an increasingly difficult art, and one in which design can provide positive contributions. This paper describes a design project which aimed to decrease tensions between youth and residents in a city neighbourhood through an empathy-building process. Individuals from both groups were guided through the process of stepping into each others' worlds through Virtual Reality and developing solutions together to address points of tension. Their individual transformative processes were researched through a content analysis procedure in order to make the implicit outcomes of such design processes explicit. Throughout this process new dynamics and connections emerged, revealing grounds for structurally decreasing tensions and promoting participatory approaches for social innovation. This paper describes the project and presents our learnings regarding (1) the transformative impact on the involved individuals from the neighbourhood and (2) reflections on the contributing roles of the designers in social innovation projects.

Keywords: Cocreation, Empathy, Roles of Designers, Social Innovation, Virtual Reality

INTRODUCTION

In social innovation, design is directed towards long term sociocultural change (Norman & Stappers, 2016; Tonkinwise, 2015) and supporting local actors in making change happen (Sangiorgi, 2011 and Manzini, 2015). This implies that designers do not deliver one solution for a given problem, but rather support various actors in pursuing new directions and collaborative ways of working. New collaborative formations are created beyond traditional designer-client relationships (Yu and Sangiorgi, 2018). But what does that mean for the design discipline? How can we design for local transformations? What roles should we take and how should we organize both the process and collaboration? What are the outcomes of such processes?

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1. NEW ROLES OF DESIGNERS IN SOCIAL INNOVATION

Several authors point at new roles and competences of designers in social innovation (Kimbell and Bailey, 2017; Aguirre *et al.*, 2017; Burns *et al.*, 2006). There is consensus that designers need to form new formations and that tackling larger societal issues are complex, dynamic, and involve a variety of perspectives (Tonkinwise, 2015; Hummels *et al.*, 2019; Goodwill *et al.*, 2021). A variety of new roles for designers are suggested, such as *facilitators of change*, *framework makers*, *navigators*, *connectors*, *humanisers*, *power brokers*, *mediators of stakeholders*, *stewards*, *visualisers*, *community agents*, *activists* and many more (Lee, 2007; Hazel and Holmlid 2012; Manzini, 2015; Rygh, 2015; Yee *et al.*, 2017; Østergaard, 2018; Schaminee, 2018; Sleeswijk Visser, 2018). Next to these new roles of designers, new roles for involved actors, both citizens and local government, are also promoted with the aim of realising sustainable social impact (Jaasma *et al.*, 2017; and Smith and Iversen, 2018). What these suggestions about new roles have in common is a strong orientation towards performance in collaborative settings. In such settings, designers orchestrate processes and activities with multiple stakeholders towards desired situations. Recent literature provides some suggestions on how designers can facilitate such transformative processes (roles, responsibilities, agency, organisation, etc), but structural knowledge is lacking on how designers might organise them. The practice is complicated and complex. Moreover, social innovation processes often mention high-level impact ambitions (e.g., system change for more well-being in society) but lack concrete results, such as evaluations and tangible outcomes, with which to explicate them.

This paper describes a social innovation project which aims at decreasing tensions between two socially opposed groups in a city neighbourhood. We reflect on (1) the transformative impact on the individuals involved and (2) on the contributing roles of designers.

2. TACKLING POLARISATION BY DESIGN

Polarisation occurs in social situations when there is a sharp division between contrasting groups: the opposing groups are not open to each other's arguments with the danger that debate will only drive them further apart (Brandsma, 2017). Polarisation can be understood as the alienation of societal or political groups from each other (Duclos *et al.*, 2004). The underlying mechanisms of polarisation are the opposing belief systems of both groups. Each group views the world only through the lens of their own belief system. They seek confirmation of their own beliefs and consequently become unreceptive to the position or arguments of the other. Some people are stuck in the extremes, or 'push' others, known as 'joiners', into further extremes; yet others are in the 'silent middle' (see figure 1). 'Pushers' seek affirmation of their beliefs and worldviews and are thus unreceptive to changing their perspectives and collaborating with an opposing group. The silent middle and some joiners, however, are still open for dialogue.

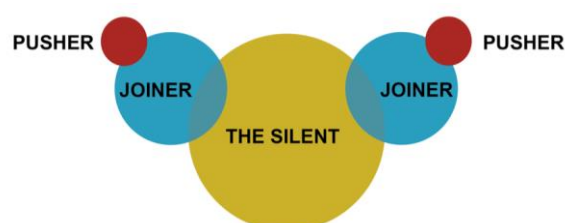


Figure 1. Different roles in polarisation (based on Brandsma, 2017).

Polarisation is a complex societal problem. Designers cannot just ‘solve’ such issues, but what they can do is develop ideas, and facilitate participatory processes, collaborations, and interventions. In this way, through many steps, often small ones, they could contribute to an improvement of the situation. Although many social designers seek to realise long-term impact on a societal level (Goodwill et al., 2021), it is in these smaller steps that their actions can lead to positive changes, such as reducing tensions between groups with opposing worldviews. Yee et al. (2019) suggest that actors involved in social innovation projects aimed at long-term sociocultural change can benefit from transformative learning. On an individual level, transformative learning is characterised as a process of reflection on one’s assumptions and subsequent action (Mezirow, 1997). This reflection is needed to allow one to look at a situation with less bias. Mezirow (1997) speaks of ‘perspective transformation’: changes in our worldview, assumptions and expectations that direct tacit points of view and influence our thinking, beliefs and actions. The process of perspective transformation could be addressed by promoting empathy with members of the other group. Empathy is about understanding another person’s situation through perspective-taking, or imagining the world from another person’s point of view (Davis et al., 1996). Techniques, such as role playing, gamification or other immersive activities can promote active perspective taking.

The project described below concerns a design-driven, transformative process with people in a city neighbourhood. A multidisciplinary team sought to decrease tensions in this neighbourhood by engaging ‘the silent middle/joiners’ (figure 1) to develop empathy with their counterparts and subsequently engage in co-creation. Since the project is still ongoing, and various factors beyond its scope will influence the intended long-term transformative change (see also Burns et al., 2006), this paper zooms in on that part that could reliably tracked: the transformative impact on the individuals involved.

The authors of this paper (first author was one of the researchers, and the second author one of the designers, see Table 1) reflected on the project with the aim of investigating how designers in such local transformative projects can contribute. Reflection was done throughout the project, as the starting ambitions, the roles, rules, actors, timeline, events, activities, outcomes, etc. grew organically. The reflections built on field notes produced by the first author during the project, and on interviews with project partners about contributions of designers in this project.

3. CASE: STIMULATING EMPATHY WITH VIRTUAL REALITY FILMMAKING

Meerhoven is a modern concrete residential neighbourhood in Eindhoven, The Netherlands. Built in the 2000s, it is largely paved and built with 6+ levels of apartments. There is social friction between loud young people and senior residents. The situation is urgent; the opposites do not talk to each other and seem to drift only further apart. The young people come from the Meerhoven neighbourhood and surrounding areas, and cause nuisance to residents, primarily through noise and clutter. The senior residents are annoyed and feel unsafe with large groups congregating in public spaces. Similarly, the young people, who crave respect and a space free from negative judgement, feel unhappy with the situation. Local government and institutions, such as police, have actively tried to improve this situation, by supporting residents’ associations and other local initiatives, but have failed to mitigate the conflict thus far. There

is a strong ‘us-them’ thinking present, and although there is no open conflict, the simmering tension continues and grows.

Table 1: The involved actors and their pre-set roles at the start of the project (light grey tasks were not defined at the start but emerged during the project).

	Actors	Who	Activities
Local parties	Participants	Two ‘starting joiners’ from each group	Being filmed in their everyday lives Participate in intervention and cocreation Subjects in research on empathy
	Local Government	Two safety specialists, several youth workers, communication specialist, neighbourhood association members, police members, area coordinators	Provide details of the problem situation Connect project to other local developments Support design and film crew with recruitment Safeguard and close relation with individuals in the opposing groups Take ownership to establish continuation of project results
Facilitators	Designers	Four designers of which one acted as project lead	Initiate project Engage all project members and possible other local parties Design and execute process and intervention Organise regular meetings and information exchange with and between all parties Seek publicity and wider audience Connect research and design Transfer ownership into local government and people’s hands
	VR filmmakers	Film director and three crew members (sound, camera, editor)	Conduct interviews and create 2x VR film (7min) Create case film of entire project in VR (23min)
	Researchers	Two researchers and one research assistant	Provide knowledge on polarisation and empathy Evaluate results

3.1. Formation of team collaboration

The initiative was started by a design firm in the Netherlands. They were inspired by a project entitled “Meet the Soldier”, in which leaders of conflicting parties in a rural Ugandan area stepped into each other’s everyday lives through a VR installation (Meet the Soldier, 2019). The design firm wanted to explore how this empathy-building process could be applied and extended in other cases of conflict with a high risk of polarisation. With funding from the municipal authorities, Dutch Creative Industry and other sponsors, a formal project was created. Table 1 shows the involved actors. Change facilitators (mainly the designers, but also a film crew and empathy and polarisation researchers) worked with local parties involved in the issue (young people, senior residents, and local government).

The team scouted for participants in close collaboration with local organisations. Two young people (18 and 19 years) and two residents (44 and 62 years) who were willing to be filmed and participate in the project were selected. All four participants are situated within the intersection of the silent middle and the joiners (see figure 1).

3.2. The design of the empathy-building process

The interventions aimed to increase mutual sensitivity amongst the participants from both groups. This process was based on techniques to enable designers to empathise with users as practiced in experience design (Kouprie and Sleeswijk Visser, 2009), but now applied to facilitating two groups to achieving mutual empathy. The participants were guided to step into and immerse themselves in the other person’s world (through a seven minute Virtual Reality film), step out of that world with increased understanding, meet each other in reality, and work together on solutions for the neighbourhood.

The designers designed the empathy-building process as a whole, created various artefacts and scripts and acted as facilitators in various parts in this process. They collaborated closely with the film crew, researchers, and local government in designing, producing, executing parts of the process and orchestrated the entire project process. Virtual Reality was chosen as a film technique as it places the viewer inside the other world, as opposed to being an external spectator (Bailenson, 2018).

Figure 2 shows an overview of the project. The process was intentionally designed to encourage empathy with individuals of the other group before acting together in subsequent events. First, the participants were interviewed and filmed. Two months later, they were invited to a venue where they watched the films of the other participants through VR. Immediately after this viewing, they met the other participants in person and were guided through a joint cocreation session.

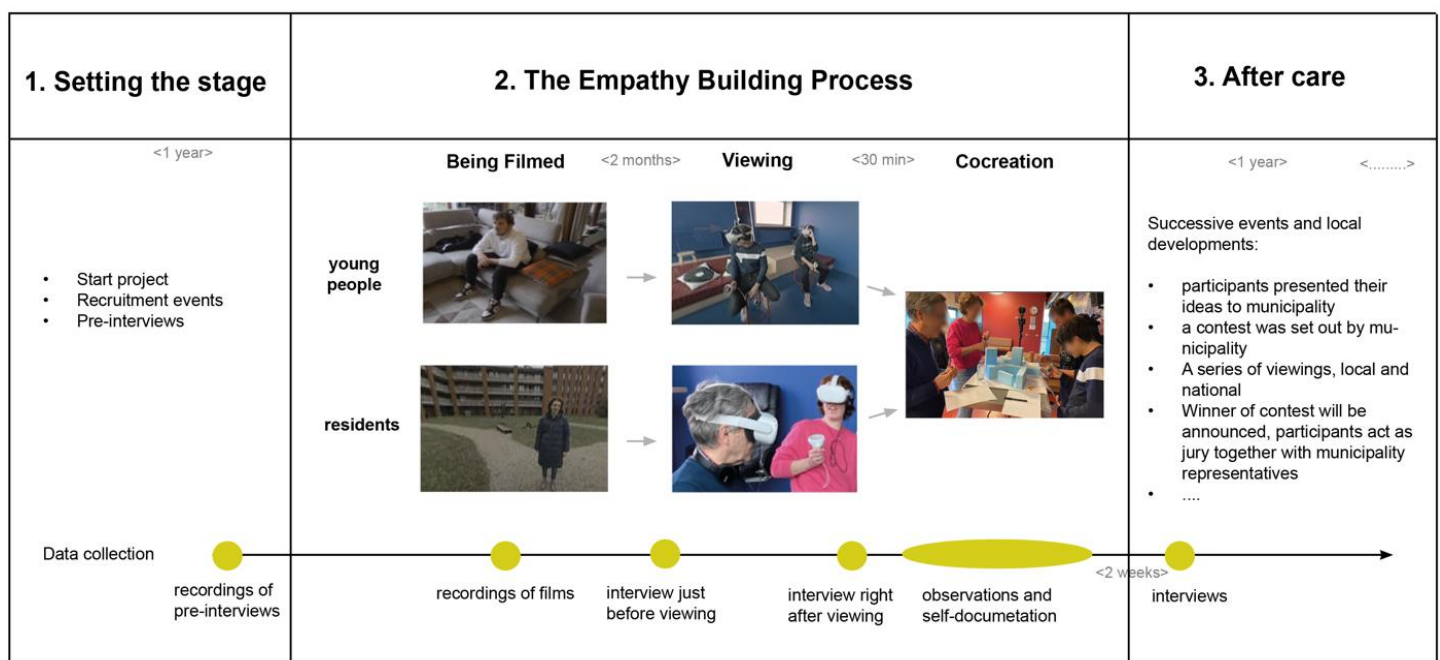


Figure 2. Overview of the project. See BubbleGames for the trailer.

The first phase involved a process of connecting with locals in the neighbourhood. This process took much longer than planned, as the team had to reconsider their approach a number of times. The tone of voice used in communications emerged as a key factor due to several hidden social structures, and thus needed careful consideration. Additionally, some participants who initially showed interest withdrew in a later stage, e.g., because they did not want to be exposed on film. The team's progress was also hindered by several lockdowns due to the COVID-19 pandemic, making it difficult to connect and build trustful relationships with locals.

In the second phase, the design of the empathy-building process resulted in an immersive interpersonal experience, embedded in a larger programme of carefully staged activities. The participants exhibited increased mutual understanding through the exchange of perspectives; their motivation increased, as did their engagement in the next cocreation session toward improving the situation. The participants were engaged in the act of making, in the sense that they became co-authors of the films in which they featured. This provided them active ownership of the project and the ability to meet and connect with actors they otherwise would not easily communicate with.

The third phase of the project is still ongoing, at the moment of publishing this paper. It consists of a series of participatory events, both locally and nationally (viewings and facilitated discussions etc.), that will gradually diffuse in the social fabric of the neighbourhood. The first effects of the overarching process are currently taking hold in the neighbourhood. One tangible result is the organisation of a contest for imagining a new community social space. This was initiated by the participants (young people and residents together), who proactively approached the municipality to suggest it as a potential solution to the aforementioned social conflict. The municipality embraced the idea and subsequently organised the contest.

4. TRACKING TRANSFORMATIVE EFFECTS OF THE INDIVIDUALS INVOLVED

4.1. Data collection

The participants' empathic level was measured at key moments throughout the process. Their empathic levels were documented through a mixed methods approach (interviews, observations and self-documentation), see figure 2.

Existing measurement techniques (Davis, 1980; Baron-Cohen-Wheelwright, 2004, Spreng *et al.*, 2009) were deemed too disruptive for the empathy-building process. Instead, we built on full recordings of the film makers when pre-interviewing and filming participants, on field observations and on self-documentation. While acting as a host for the participants at the VR viewing, one of the researchers briefly interviewed each of them about their expectations immediately prior to, and reflections immediately after, the VR viewing. During the cocreation session, the researchers kept field notes, and at the end asked the participants explicitly to draw and describe their 'line of empathy', see figure 3.

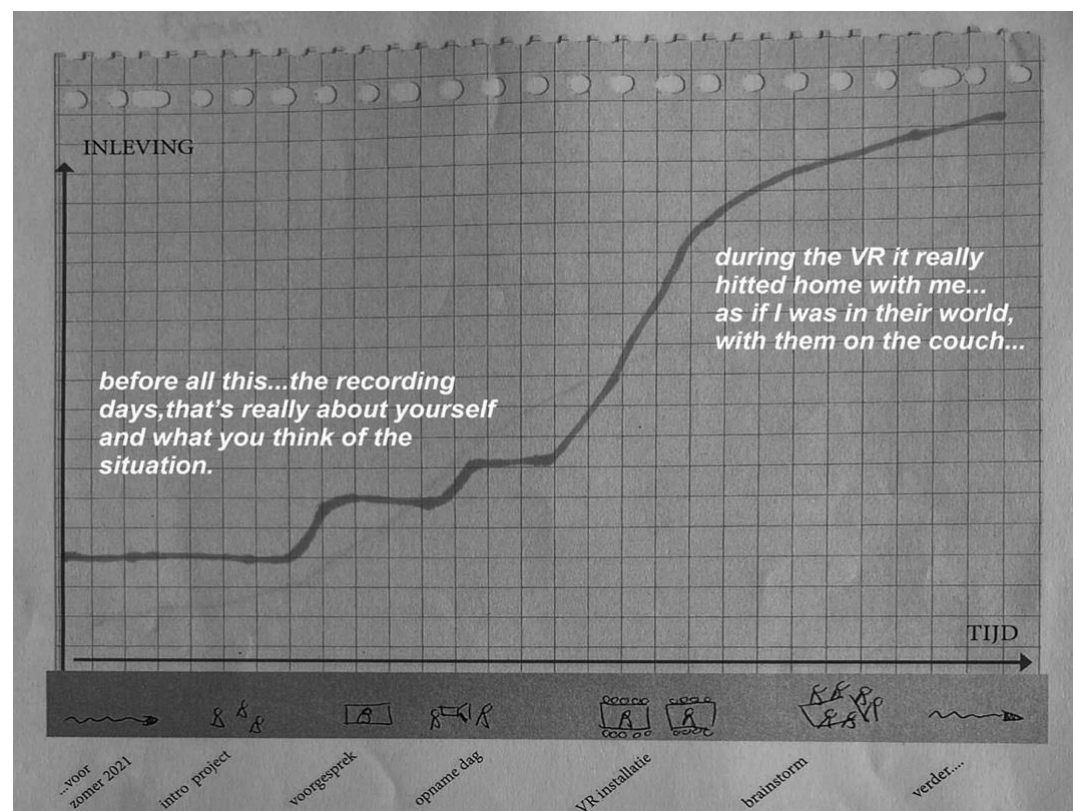


Figure 3. Self-documented graph of one participant along the process from first introduction to the project, to filming and viewing, to two weeks after the cocreation session.

Two weeks after the viewing and cocreation session, the participants were interviewed in a video call about their experience of the events in this process and whether they discussed this with others in their communities. The collection of data discussed in this paper concluded two months after the cocreation session. However, we continue to collect observations in the neighbourhood to evaluate transformative changes beyond the scale of individual participants, which will be used for analysis in future research.

4.2. Analysis

To gain insight into changes in participants' empathy during the process, a content analysis procedure was followed (Bryman, 2012). The following indicators were defined: (1) participants' motivation to participate; (2) their curiosity towards the members of the other group; (3) the amount and nature of perspective changes, and (4) their use of soothing terms. These indicators were chosen as they illustrate aspects of how the participants related to each other over the course of the project. Transcripts of all interviews were coded (e.g. for the indicator of perspective changes, we documented the number and nature of references to others; e.g., a name or 'those guys'). From each participant a pre-, during-, and post- analysis was made, followed by insights gathered from all four participants together. The indicators provided useful insights in how their empathy evolved (see Table 2 for a brief discussion of each indicator). The last indicator, soothing terms, appeared less relevant for analysis.

5. RESULTS

5.1. Motivation led to activation

The participants demonstrated a strong willingness to act, which is in line with principles of transformative practices in design described by Sangiorgi (2011). This motivation empowered them to take active roles in the later events. The very fact that they wanted to take part in the project was already indicative of their openness to alternative perspectives. Theory on empathy elaborates on the resulting social behaviour where others argue that the activation of that social behaviour is included in the empathy process (Cuff *et al.*, 2016). In this project, the participants gained increased understanding of the others, and demonstrated a clear activation response (e.g., going to the municipality to present the contest idea).

5.2. Triggering curiosity by reflecting on own beliefs

Through being interviewed about the topic and filmed, the participants became more aware of their own assumptions and beliefs, which consequently made them more open to learn from the others. This finding was important to the team, as they did not anticipate or orchestrate such effect at the start of the project, but realised that this self-reflection step was necessary to start each participant's empathy-building process.

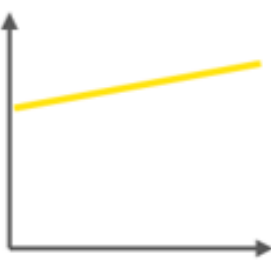
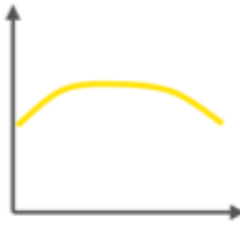
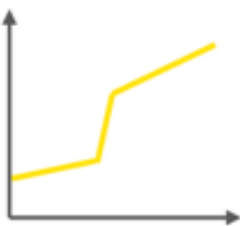
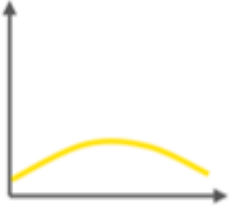
5.3. Perspective changes

The greatest increase in perspective changes took place while being immersed in the other's world through the Virtual Reality film. The participants made many references to imagining being with the other in that space. The most often identified category of perspective taking was 'imagine-other perspective taking' (Batson, 2009). The participants expressed

experiences as ‘feeling like being next to the other’, not ‘becoming the other’. In other words, the immersive Virtual Reality experience prompted the participants to try to understand the other’s feelings without losing awareness of the distinction between the other and themselves as an observer. As the observations in Table 2 indicate, participants’ understanding of the other’s perspective and sensitivity towards the other increased. The following quote from one of the residents summarizes this well:

‘This provides so much insight for me; in what they do and why, how they move through these spaces.’ (resident, immediately after cocreation).

Table 2. Measured levels of the four indicators during the stages of being filmed, viewing and co-creation session.

Results over time of indicators of empathy	Observations
<p>Motivation to participate</p> 	<p>The motivation of all four participants was already high at the start (they were willing to join the project and appear in the film). This motivation only increased during phase 2, and in phase 3, where they took pro-active roles.</p> <p><i>‘If something really happens now with these ideas, if this will change things and it works, this installation should not only be in Meerhoven, but at other places as well.’</i> (young person, after-interview)</p> <p><i>‘I hope the municipality will now involve with youth and residents in their activities, and not continue by themselves alone. They should make use of the fact that these boys are active in this project and have a network!’</i> (resident, after-interview)</p>
<p>Curiosity toward the other</p> 	<p>The filming stage appeared to be important in triggering their curiosity. Curiosity towards the other increased around the viewing and cocreation, but in the post-interviews few references were made to their counterparts (little use of e.g., ‘name’, or ‘he/she’).</p> <p><i>‘At the filming days, that was where I was being interviewed, and that was really about myself. It helped a lot to think about my own thoughts on the situation. ...So, then you don’t really have that other perspective yet, that came later [VR Viewing].’</i> (resident, post-interview)</p> <p><i>‘I’m curious in how they see things...what would they miss, what is it what they need...?’</i> (resident, during being filmed)</p> <p><i>‘It’s quite interesting to literally look into their houses’.</i> (young person, right after VR viewing)</p>
<p>Perspective changes</p> 	<p>After the moment of viewing, the number of signs of perspective changes grew rapidly with all participants. All self-documentation graphs show an impressive upwards trend during the viewing.</p> <p><i>‘I can imagine that there are other youngsters like you that have similar issues’</i> (resident, during cocreation)</p> <p><i>‘I have never realised that this [gathering of groups] could cause feelings of fear for you.’</i> (young person, during cocreation)</p> <p><i>‘That you live in the same place, see the same things, but experience it so differently.’</i> (young person, after interview)</p>
Results over time of indicators of empathy	Observations
<p>Soothing terms</p> 	<p>Participants used fewer soothing terms than expected, with only a little increase during the joint cocreation session:</p> <p><i>‘I am actually surprised that we agree with each other so much. I didn’t really expect that!’</i> (young person, during cocreation session).</p>

One side observation that merits discussion is the effect of using Virtual Reality technology. The specific viewing conditions (the goggles on one's face, feelings of dizziness) and the immersive feeling of 'actively being somewhere' promoted a strong sense of presence for the participants. Participants experienced this as very intimate, almost to an uncomfortable level of closeness. It made them feel closer, which was expressed in quotes as:

- *'As if I know you already'* (resident, cocreation)
- *'As if I am sitting at your table!'* (young person, cocreation)
- *'Seeing, the feeling of knowing someone already, while I am meeting that person for the first time in my life, is very intense and weird! That feeling can only happen once, in that moment'* (young person, after interview)

To conclude, the participants exhibited increased sensitivity toward the others through a demonstrated increase in perspective taking and a strong willingness to act in collaboration during successive activities.

6. DISCUSSION

The detailed description above elaborated on how this empathy-building process impacted the involved participants: They gained more empathy with each other and expressed an urge to actively change things in the neighbourhood. In the following discussion we reflect on our learnings from this project with regards to the design community. The way in which this project was initiated and organised is not necessarily representative of social innovation projects; nonetheless, we believe it is relevant to share our learnings on (1) tracking tangible outcomes of transformative change, and (2) the contributing roles of designers in social innovation projects.

6.1. Reflections on the tracking transformative changes

Tracking transformative changes is often overlooked as an important demonstrator of social impact in the context of open-ended design processes. In this project, the designers initiated the collaboration with researchers from the start. Originally, their motivation was to see if such intervention can lead to increased empathy. However, as the project unfolded, the empirical understanding of the individual transformative changes supported the team in several ways:

First, during meetings of the multi-disciplinary project team, this information helped to maintain focus on the primary aim of the project (reducing social tensions in the neighbourhood). This helped to strike a balance between consideration of operational issues and engaging in more abstract discussions about polarisation, drifting away from this particular local context.

Second, the empirical information we gathered provides evidence of phenomena that would otherwise go unnoticed. We learned, for example, that the use of Virtual Reality helped in a particular form of stimulating empathy (perspective other taking), which can be helpful for further design and research developments.

Lastly, tracking transformative changes on a small scale (increased empathy level of the four participants) will aid in reviewing the transformative changes at community scale in the near future. A new question was, for example, if the increased empathy of the four participants can

influence a larger group. In the post-interviews participants made few references to the other participants as individuals, but referred to larger groups, using terms as *'they'* and *'those people'*. This is quite remarkable, as we usually think of empathy as something that occurs in a one-on-one relationship. It could be that the fact that each film presented the lives of two individuals encouraged such plurality in the viewers' thinking. Though the experience of closeness was based on being virtually with only two other participants, the feeling of improved understanding for a larger group was expressed. This might suggest that the individuals' transformative process works as a catalyst to that of the larger group. This could in turn imply that more silent and joiners might move to the middle (see Figure 1) through such intervention. Further research will investigate this possibility.

In terms of transformative changes at community scale, we are not yet able to be as explicit regarding outcomes (see Table 3, principle 2).

Table 3: Outcomes mapped on the Transformational principles by Sangiorgi (2011).

	Transformational Principles:	Participants exhibited:
1	Active Citizens	More perspective changes Activation responses
2	Intervention at community scale	-
3	Building capacities and research partnerships	Making new connections with people they would otherwise not contact Both participants and local government practicing new roles and new ways of interacting
4	Re-distributing power	Feeling empowered Acting on equal level in follow-up steps Feelings of ownership
5	Enhancing imagination and hope	Becoming more reflective regarding their own assumptions Feeling closer Strong willingness to act
6	Building infrastructures and enabling platforms	-
7	Evaluating success and impact	Evidence of individual's empathic increase

The participants shared their stories with direct relatives, and visitors of the first viewings were invited to share their opinions and engage in discussions about issues and collaborative solution-finding. We did notice, however, that the project enabled local actors (both the participants and local government) to practice new roles and experiment with new ways of interacting. It is worth noting that a majority of these observations are in line with Sangiorgi's (2011) seven transformational principles, though not all principles have been addressed at this stage yet.

6.2. Reflection on contributing roles of designers

The design discipline is lacking knowledge and methodologies concerning how to organise, structure and run social innovation projects. We believe that such practices need to be explicated and reviewed in order to develop design methodologies that aim to transform social structures. Though many details have been omitted (the exact structure of collaboration, timelines, setbacks, etc), this paper shares our main learnings about the designers' contributions in the form of role descriptions. In Table 1, the activities assigned to the designers' role at the start of the project were to initiate the project, to engage various actors, to design the process, intervention and props, to organize the project as a whole, and to seek publicity. Reflecting on the collaboration and the project's structure and evolution, the

following contributing roles of the designers were identified as particularly fruitful: facilitator of change, connector, and initiator.

First, in the role of facilitator of change, the designers designed the overarching process, the intervention of the empathy-building process, props (films, model of neighbourhood, scripts, flyers, etc.) and incorporated feedback loops of reinforcing the intangible change process with empirical understanding. The designers structured and facilitated the process and sessions, and had to be adaptive at many points throughout. For example, the contest idea, which evolved from the cocreation session needed some orchestration from the designers. They helped the local actors to organise meetings with the local government. At the project start the team did not explicitly think about building infrastructures and enabling platforms after the intervention (see Table 3, principle 6). In the role of facilitators of change, the designers took responsibility for the agenda of the project, which included explicit decisions in defining results, outcomes and deliverables. Early on in the project, the designers decided on which tangible deliverables were important and organised the project accordingly. They aimed at producing tangible evidence of the transformative process (the demonstrated empathy increase), but also decided to deliver an overall project film in VR documenting the project as a whole. Though costly, the designers intentionally factored these deliverables into the budget and anticipated on the power of such tangible carrier as a deliverable. An otherwise rather intangible process of transformation was thus made explicit and shareable. Besides facilitating several local events with viewing and discussions, the designers actively reached out to public media, and organised Virtual Reality viewings for them with the aim to stimulate discussion on tackling tensions in neighbourhoods. One of the follow-up projects with additional project partners is currently developing a pocket-size prototype for larger audiences.

In the role of *connector*, the designers acted as a metaphorical glue between all (including new) actors. The designers led the project, defined the project plan, organised all project meetings, and attracted a variety of project actors with both the project structure and their enthusiasm. One of the designers took a project lead role. This role, especially in such collaborative projects, should not be underestimated and can be particularly time-consuming (Sleeswijk Visser, 2018). In such an intangible process, a constant connector was essential to keep actors included—also in periods where progress was not apparent—and to manage the organic nature of a project in a local context. Arriving in phase three, the design team started working on activities and deliverables to transfer ownership to local government and parties.

In the role of *initiator*, the designers were able to work in provocative and novel ways. Luckily, the policy of the Dutch Creative Industry supported this through partial funding for the project. For the designers, the project started as an experiment to explore the possibility of solving tensions with such an empathy-building process. They were convinced that designers can play a role in improving issues of social tension, despite the lack of a traditional commissioning structure. In general, social problems do not have an owner or a budget. Here, the designers' strongest asset was their conviction in the potential of the transformative process and the power of knowledge. This optimistic, driven and visionary attitude of some designers is also emphasized in literature. Vernooi, for example, writes about 'a certain aggressiveness of creative leaders' (Yee *et al.*, 2017, p.219) and Tonkinwise writes about 'bold leadership' (Tonkinwise, 2015). In contrast to many other professions, designers are particularly skilled in envisioning possible futures, unencumbered by existing social structures. As a prime example, this project would not have occurred if designers did not actively pushed this idea forward.

7. CONCLUSION

This paper presents a design intervention in a social innovation project aimed at decreasing tensions in a city neighbourhood. Social innovation is complex and involves a variety of practices, of which design is only one. We hope this paper provides an illustration of how to encourage and capture transformative effects of design interventions through demonstrable, tangible outcomes (in this case tracking the increase of individuals' empathy with the others). The measurement approach of participants' empathy towards the other(s) is new, and could be of benefit of other design projects where actors are helped by understanding each other perspectives.

The new roles of designers identified and illustrated in this paper are as of yet seldom articulated, or even recognised. A common pitfall of designers and public institutions is that design processes over-emphasise explicit design deliverables (props; posters, participatory sessions, etc.), while the outcomes of transformative social innovation projects—such as processes for empowering individuals to improve their own social contexts—go beyond those tangible deliverables. To organise such processes, designers need to take upon new roles and responsibilities, and make explicit what their contribution is (and is not). To conclude, we propose the following research agenda:

1. This case study is a starting point for better understanding and development of the empathy building process and measuring the transformative impact of this process on the individuals. What mechanisms are needed to support people in mutual understanding of each other's perspectives, and how can this be evaluated without disrupting the transformative process of individuals?
2. Research is needed to better understand the roles, agency and delivery of designers in social innovation projects. This case revealed the importance of roles such as facilitator of change, connector and initiator and defining results, outcomes and deliverables to communicate their contributions explicitly. We advocate for a more reflective practice of designers regarding their own roles and contributions when engaging in social innovation in conjunction with other actors and practices.
3. A limitation of this research is a lack of concrete evaluation of transformative change beyond the scale of individual participants. Fostering empathy, sense of ownership and sense of empowerment can potentially trigger a catalytic influence on larger groups of people. Further research is needed on how transformative change can be evaluated at community scale and how to organise that.

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REFERENCES

- Aguirre, M., Agudelo, N., & Romm, J. (2017). Design facilitation as emerging practice: Analysing how designers support multi-stakeholder co-creation. *She Ji: The Journal of Design, Economics, and Innovation*, 3(3): 198–209. DOI: [10.1016/j.sheji.2017.11.003](https://doi.org/10.1016/j.sheji.2017.11.003).
- Bailenson, J. (2018). *Experience on Demand: What Virtual Reality Is, How It Works, and What It Can Do*. USA: W. W. Norton & Company.
- Batson, C. D. (2009). These things called empathy: Eight related but distinct phenomena. In: J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 3–15). USA: MIT Press.
- Baron-Cohen, S., Wheelwright, S. (2004). The Empathy Quotient: An Investigation of Adults with Asperger Syndrome or High Functioning Autism, and Normal Sex Differences. *Journal of Autism and Development Disorders*, 34(2): 163–175. DOI: [10.1023/B:JADD.0000022607.19833.00](https://doi.org/10.1023/B:JADD.0000022607.19833.00).
- Bason, C. (2014). *Design for Policy*. London, UK: Routledge.
- Brandsma, B. (2017). *Polarisation: Understanding the Dynamics of Us Versus Them*. BB in Media.
- Bryman, A. (2016). *Social research methods*. USA: Oxford university press.
- Burns, C., Cottam, H., Vanstone, C., & Winhall, J. (2006). Red paper 02: Transformation design. London, England: Design Council. Retrieved February 28, 2024, from <https://www.designcouncil.org.uk/fileadmin/uploads/dc/Documents/red-paper-transformation-design.pdf>
- Cuff, B.M.P., Brown, S.J., Taylor, L., & Howat, D.J. (2016). Empathy: A Review of the Concept. *Emotion Review*, 8(2): 144–153. DOI: [10.1177/1754073914558466](https://doi.org/10.1177/1754073914558466).
- Davis, M. H. (1980). A Multidimensional Approach to Individual Differences in Empathy. *Journal of Personality and Social Psychology*. *Catalog of Selected Documents in Psychology*, 10, 85. Retrieved February 28, 2024, from <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=e4d6854c6842336a51e071f2e187c9e6b002b81a>
- Davis, M. H., Conklin, L., Smith, A., & Luce, C. (1996). Effect of perspective-taking on the cognitive representation of persons: A merging of self and other. *Journal of Personality and Social Psychology*, 70: 713–726. DOI: [10.1037/0022-3514.70.4.713](https://doi.org/10.1037/0022-3514.70.4.713).
- Duclos, J.Y., Esteban, J. & Ray, D. (2004). Polarization: Concepts, Measurement, Estimation. *Econometrica*, 72(6): 1737–1772. Retrieved February 28, 2024, from <http://www.jstor.org/stable/3598766>
- Goodwill, M., Bendor, R., & van der Bijl-Brouwer, M. (2021). Beyond Good Intentions: Towards a Power Literacy Framework for Service Designers. *International Journal of Design*, 15(3): 45–59. Retrieved February 28, 2024, from <https://www.ijdesign.org/index.php/IJDesign/article/viewFile/4120/954>
- Hazel, W., Holmlid, S., Wetter Edman, K., Pacenti, E., & Mager, B. (2012). What do tomorrow's service designers need to know. *Workshop at ServDes 2012*. Espoo, Finland. Retrieved February 28, 2024, from <https://ep.liu.se/ecp/067/ecp12067.pdf>
- Hummels, C. C. M., Trotto, A., Peeters, J. P. A., Levy, P., Alves Lino, J., & Klooster, S. (2019). Design research and innovation framework for transformative practices. In *Strategy for change Handbook* (52–76). Glasgow: Glasgow Caledonian University.
- Jaasma, P. G., Wolters, E. J. M., Frens, J. W., & Hummels, C. C. M. (2017). Shifting roles in public issues: exploring a cross-disciplinary design approach to multi-stakeholder participation. In *7th Nordic Design Research Conference* (Nordes 2017), June 15–17, 2017, Oslo, Norway. DOI: [10.21606/nordes.2017.027](https://doi.org/10.21606/nordes.2017.027).
- Kimbell, L., Bailey, J. (2017). Prototyping and the New Spirit of Policy-Making. *CoDesign Journal of CoCreation in Design and the Arts*, 13(3): 214–226. DOI: [10.1080/15710882.2017.1355003](https://doi.org/10.1080/15710882.2017.1355003).
- Koupric, M., Sleeswijk 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. DOI: [10.1080/09544820902875033](https://doi.org/10.1080/09544820902875033).
- Lee, Y. (2007, November) What are the social responsibilities of designers? Investigating new perspectives for design participation. In *Proceedings of International Association of Societies of Design Research: Hong Kong*, (pp.1–17). Retrieved February 28, 2024, from <https://www.sd.polyu.edu.hk/iasdr/proceeding/papers/What%20are%20designers%20social%20responsibility.pdf>
- Manzini, E. (2015) *Design, When Everybody Designs: An Introduction to Design for Social Innovation*. Cambridge Massachusetts: MIT Press.
- Mezirow, J. (1997). Transformative Learning: Theory to Practice. In: *New Directions for Adult and Continuing Education* 74: 5–12. DOI: [10.1002/ace.7401](https://doi.org/10.1002/ace.7401)
- Norman, D., Stappers, P. J. (2016). DesignX: Design and complex sociotechnical systems. *She Ji: The Journal of Design, Economics, and Innovation*, 1(2): 83–106. DOI: [10.1016/j.sheji.2016.01.002](https://doi.org/10.1016/j.sheji.2016.01.002)

- Østergaard, T. (2018, June) The designer as agent of community. In *Service Design Proof of Concept, ServDes. 2018 Conference*, 18-20 June, Milano, Italy. 150:7 (pp. 76-91). Retrieved February 28, 2024, from <https://ep.liu.se/ecp/150/007/ecp18150007.pdf>
- Rygh, K. (Ed) (2015). *Super-Maker*. Eindhoven: The Design Academy.
- Sangiorgi, D. (2011). Transformative services and transformation design. *International Journal of Design*, 5(2):29-40. Retrieved February 28, 2024, from <https://www.ijdesign.org/index.php/IJDesign/article/view/940/344>
- Schaminée, A. (2018). *Designing With-in Public Organizations. Building bridges between public sector innovators and designers*. Amsterdam, The Netherlands: BIS Publisher.
- Sleeswijk Visser, F. (2018, June) Structuring Roles in Research Through Design Collaboration, in Storni, C., Leahy, K., McMahon, M., Lloyd, P. and Bohemia, E. (Eds.), *Design as a catalyst for change – Proceedings of DRS*, Limerick, Ireland, (pp. 268-280). DOI: [10.21606/drs.2018.297](https://doi.org/10.21606/drs.2018.297).
- Smith, R. C., & Iversen, O. S. (2018). Participatory design for sustainable social change. *Design Studies*, 59:9-36. DOI: [10.1016/j.destud.2018.05.005](https://doi.org/10.1016/j.destud.2018.05.005)
- Spreng, R.N., McKinnon, M. C., Mar, R.A., & Levine, B. (2009). The Toronto Empathy Questionnaire: Scale Development and Initial Validation of a Factor-Analytic Solution to Multiple Empathy Measures. *Journal of Personality Assessment*, (91)1: 62-71. DOI: [10.1080/00223890802484381](https://doi.org/10.1080/00223890802484381)
- Tonkinwise, C. (2015). Design for Transitions- From and To What? Critical Design / *Critical Futures Articles*. Paper 5. Retrieved October 12, 2018, from: https://digitalcommons.risd.edu/critical_futures_symposium_articles/5.
- Yee, J. Jefferies, E. & Michlewski, K. (2017). *Transformations: 7 roles to drive change by design*. Amsterdam. The Netherlands: BIS Publishers.
- Yee, J. Raijmakers, B., & Ichikawa, F. (2019). Transformative Learning as Impact in Social Innovation. *Journal of the Design Studies Forum* (11)1: 109–132. DOI: [10.1080/17547075.2019.1567984](https://doi.org/10.1080/17547075.2019.1567984)
- Yu, E., Sangiorgi, D. (2018). Exploring the transformative impacts of service design: The role of designer-client relationships in the service development process. *Design Studies* (55): 79-111. DOI:[10.1016/j.destud.2017.09.001](https://doi.org/10.1016/j.destud.2017.09.001)
- Meet the Soldier. *Hack the Planet*. Retrieved September 1, 2023, from <https://www.hack-the-planet.io/project/meet-the-soldier>
- BubbleGames. Retrieved September 1, 2023, from <https://www.fabrique.com/cases/digital-transformation/bubble-games/>