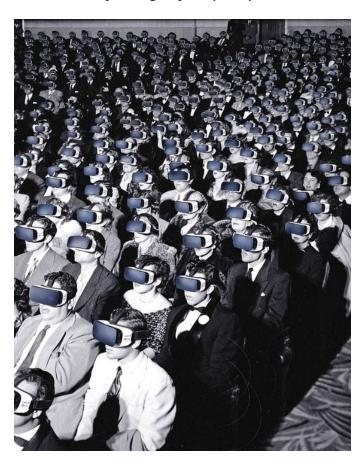# Virtual Reality as the Ultimate Empathy Machine

A qualitative research about how virtual reality can invite for the viewer's feelings of empathy

BA Thesis
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Abstract

Virtual reality is often praised for its power to go beyond the traditional frame of cinema and thereby virtually immersing viewers inside a different world or environment. This power is not limited to virtual reality gaming, but is becoming increasingly interesting to a variety of fields, such as journalism, politics and the healthcare industry, who can use it to give users a better understanding of certain people, situations and environments. In 2015, artist and filmmaker Chris Milk even goes as far as describing VR as the *"ultimate empathy machine"*, stating that it has the power to connect individuals through virtual experiences (Chris Milk in TED, 2015)*.*

This thesis focuses on the role of empathy in virtual reality, by focusing on its claimed power of the *"ultimate empathy machine".* Through studying virtual reality, empathy and experts' opinions about the term empathy machine, as well as researching three 360-degree film case studies on a theoretical and individual level, this research aims to answer the research question: *'how does virtual reality encourage immersion in the other's experience and thereby invite for the viewer's feelings of empathy?'*

Keywords: Virtual reality, 360-degree film, empathy, empathy machine

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Introduction

Human curiosity and innovation are changing and shaping the media landscape. Virtual reality (VR) and 360-degree film are often thought to be relatively new to this landscape, though these specific technologies have been around and developing for quite some years now (Van Gisbergen, 2016). Its possibilities and boundaries are getting more widely explored and known in not only the field of technology, but across a range of fields, from philosophy to journalism, for both research and consumer usage and from societal to individual level.

The first VR head mounted display system (VRHMD) is often considered to be Sutherland's *The Sword of Damocles* (Figure 1), which was created in 1968 (Bevan et al., 2019). Though this was quite a primitive start to the rocky future of VR, it allowed participants to immerse into a different environment by viewing 3D, computer-generated graphics, and it prepared the media industry for a time of technological innovations.

Figure 1: The Sword of Damocles

Virtual reality is known for its ability to go beyond the traditional 2D framing of cinema and is thereby able to immerse viewers into any environment. Various scientists realised that this ability should not just be restricted to VR gaming, but could be expanded to other fields. In his 2015 TED Talk, influential artist, storyteller and filmmaker Chris Milk discusses VR's capability to generate feelings of empathy in users and even goes as far as describing VR as the *"ultimate empathy machine"* (Chris Milk in TED, 2015). Milk first discusses the boundaries of traditional film and TV, by explaining their nature as frames: they offer a window into another world. By using virtual reality, Milk explores how these boundaries can be crossed:

> *I don't want you in a frame, I don't want you in a window. I want you through the window, on the other side of the world, inhabiting the world* (Chris Milk in TED, 2015).

The technology of VR and its ability to go beyond the framing of traditional film and TV creates an immersive, personal and embodied experience for the user or viewer, where one

can feel what it is like to be in a completely different world and can experience stronger feelings of empathy for those inside that environment (Chris Milk in TED, 2015). An example of this is the VR film *Clouds over Sidra*, which was created by Gabo Arora and Chris Milk himself. The 360-degree film tells the story of a young Syrian girl, Sidra, and her life in the Za'atari Refugee Camp in Jordan. Milk believes that showing this 360-degree experience to viewers, from members of the United Nations to different individuals, can start a positive social change for the refugee crisis, as well as for other critical issues. By spending that time in the refugee camp with Sidra, VR can encourage its users to go beyond their empathetic feelings and can inspire them to start a change for the better.

> *That's where I think we just start to scratch the surface of the true power of virtual reality. It's not a video game peripheral. It connects humans to other humans in a profound way that I've never seen before in any other form of media, and it can change people's perception of each other. And that's how I think virtual reality has the potential to actually change the world. So, it's a machine, but through this machine we become more compassionate, we become more empathetic and we become more connected. And ultimately, we become more human* (Chris Milk in TED, 2015).

VR seems to have a promising future ahead, as the technology can help numerous fields with training and education and can possibly even help in changing global issues. However, Milk's TED Talk also marked the starting point for a great discussion on the role of empathy in VR, in which there are numerous disagreements on not only the definition of empathy, but also on whether VR can actually generate empathy and is therefore, as Milk describes it, an 'empathy machine', or if it is rather a tool that can make individuals hastily absorb other's environments.

This discussion leads to the research question of this thesis: *'how does virtual reality encourage immersion in the other's experience and thereby invite for the viewer's feelings of empathy?'* To answer this research question, I will first provide a brief history on virtual reality and 360-degree film, explain the concept of empathy and look into academics' opinions on the 'empathy machine'. I will then analyse three case studies, each of which is a 360-degree film about a different matter in our world, such as refugees (*Clouds over Sidra*), autism (*Autism TMI*) and climate change (*This is Climate Change*), and focus on the question *'how does this work invite empathic responses?'* Finally, I will conduct a short research, in

which nine participants will view one of the case studies, *Clouds over Sidra*, to then be interviewed about their experience to answer the question *'how do individuals experience Clouds over Sidra?'* The results of these sections combined will lead to my final conclusion.

Literature review

Virtual reality and 360-degree film

<u>Technological history</u>

The 1968 original VRHMD, *The Sword of Damocles* (Figure 1), proves that the basis for VR technology has been around for quite some time, though it was not until the 1990s that the 'first wave' of VR excitement would start (Bolter and Grusin, 1999: 245). This first wave was characterised by a focus on cinematic use of VR, rather than game use (Jones & Dawkins, 2018b). Filmmakers began to use VR to go beyond the traditional notions of the cinematic frame by immersing viewers in a 360-degree world (2018b).

In the following years, the technology behind VR started progressing, and creators became able to design increasingly credible 360-degree worlds in which users could be placed by wearing ever-evolving VRHMDs (Figure 2), which allow the user to look around the environment in 360 degrees. This technological progression has led to VR as we know it now, which can be defined as:

Figure 2: a VRHMD

> *a communication technology that relies on images of space and place within which and with which its users interact* (Hillis, 1999: 65).

We are currently on the second wave of VR enthusiasm, which can be identified by a focus on VR gaming and VR Nonfiction (VRNF), as seen by the increase in VR games and 360-degree documentary films (Bevan et al., 2019).

VR corporations try to make the public excited about VR, by releasing multiple distribution platforms and creating more affordable consumer HMDs and available apps. The Google Cardboard, which was launched in 2014, was one of the first low-budget VRHMDs, because of its cardboard frame (Jones, 2017). Apps such as NYT:VR and Within allow viewers to download and view 360-degree films for free. Therefore, anyone who has five euros to spend on a Google Cardboard and a smartphone with an app that provides 360-degree films can now watch these films (Bevan et al., 2019). Improvement in production tools also enables producers to increase the realism and technological features of VR, thereby

improving the user experience (UX) (2019). The increasing accessibility and quality of VR technology seems to promise a bright future for VR.

<u>Virtual reality as an umbrella-term</u>

To further understand VR, it is important to realise the difference between VR and 360-degree film. Research often mentions the two interchangeably and describes VR experiences and 360-degree film experiences both under the umbrella of virtual reality.

A VR experience is generally defined as *"a computer-generated experience that can simulate physical presence in real or imagined environments"* (Kerrebrock, Brengman & Willems, 2017 in Shin, 2017). Because this experience is a simulation in which users can look around and often physically interact with the virtual environment, by for example moving around, users experience high levels of interactivity (Bevan et al., 2019). Users often have a 'virtual self' in VR games, which is a so-called avatar. This is a virtual representation of the user that can be controlled and moved around the virtual world with the use of wearables, such as the Oculus Touch Controllers (Figure 3).

***Figure 3:** Oculus Touch Controllers*

360-degree film is shot with the use of a 360-degree camera, or multiple cameras mounted together to create a 360-degree view, and is therefore not (necessarily) computer-generated, as it consists of real-life footage. This footage is edited together in a way to create a panoramic film that can be viewed in 360-degrees. It immerses viewers into a real-life scene that they can explore with their smartphones, or preferably, a VRHMD, as it removes distractions from the physical real life scenes around them. Interactivity in 360-degree film is limited compared to VR, as viewers cannot move around or change the storyline. However, it is still considered an interactive medium, because it has much more interactivity compared to traditional filmmaking, as the viewer has a 360-degree frame in which they not only decide where to look, but therefore also decide which parts of the story they see.

For this research, there will be a focus on 360-degree film, but the term VR will serve as an umbrella-term for both 360-degree film and other VR experiences (such as VR games). Where it is deemed necessary, it will be specified what exact technology is being discussed.

Besides interactivity, VR is often defined by its other key characteristics, such as immersion, embodiment and presence (Shin, 2017; Bevan et al., 2019; Jones & Dawkins, 2018b). These elements are all closely connected and can therefore form a sort of chain reaction.

The concept of immersion often goes undefined in VR research. The Cambridge Dictionary defines immersion as *"seeming to surround the audience, player, etc. so that they feel completely involved in something"* (immersive, n.d.). A general description used for immersion in VR is the feeling of being physically present in the virtual environment. Shin (2017) argues that immersion depends on a user's personal traits and is therefore very subjective, making it impossible to create a fixed definition. Each user experience is therefore different, because how strongly you feel as though you are physically present in a VR environment depends on your personality (Shin, 2017).

Immersion can be differentiated into three main types: *"spatial immersion, the response to setting; temporal, the response to story and emotional immersion, the response to characters"* (Ryan, 2015: 85). The combination of these three types of immersion merged together with high quality content can increase the possibility for a user to feel a heightened sense of simulated physical presence, or embodiment, in a VR environment (Shin, 2017). It is often claimed that through this chain of immersion, presence and embodiment, VR can invite feelings of empathy from users.

The concept of empathy

To research the role of empathy in 360-degree film, the word empathy first needs to be critically defined. This is not an easy task, as empathy is connected to a wide variation of definitions. Academic fields, disciplines, or even individual people will each provide you with a different definition of empathy (Zahavi & Overgaard, 2012).

The predecessor of the concept was brought to life by philosopher and aesthetician Theodore Lipps in the 1880s, who used the German word *Einfühlung* (which literally translates to 'in-feeling') to describe an inner emotional appreciation of an artwork by experiencing the artwork in relation to yourself (Ioannidou & Konstantikaki, 2008: 75; Bollmer, 2017). After the word empathy was first used as a translation for *Einfühlung* by Titchener in 1909, the stage for a long time of debates on the exact definition of empathy was set (Bollmer, 2017). Expressions like 'placing yourself in someone else's shoes' and

'seeing the world through someone else's eyes' are often used to try and grasp the concept of empathy, though it is argued to be much more complex.

The difficulty in defining empathy lies in its origination and mechanisms. Scholars disagree on how empathy works, thereby creating various definitions. Lipps' theory about *Einfühlung* and his following theory about the instinct of empathy states that empathy is evoked by understanding and feeling the affective state of another through processes of imitation, expression and projection (Lipps, 1907: 713). It is human nature to (sub)consciously imitate another person's affective state, by for example mimicking their facial expressions or behaviour. This automatically evokes the feeling associated with that expression in a split second, which leads to the understanding and sharing of the affective state (Lipps, 1907). Though this process does not accurately transfer one emotion perfectly to the other person, it does establish a link between self and other, and therefore, according to Lipps and agreeing scholars, a sense of empathy (Gallese, 2001; Lipps, 1907).

Lipps' theory has been supported by various studies (Riess, 2017; Decety & Jackson, 2006; Levenson & Rueff, 1992), but there are numerous scholars who object to Lipps' theory as a definition for empathy (Scheler, 1954: 11; Husserl, 1973: 188; Coplan, 2011).

Scholars like Scheler (1954) and Coplan (2011) argue that what Lipps describes fits the concept of emotional contagion, where someone else's emotion is transferred to you and 'becomes' your own emotion, rather than that of empathy.

In more recent years, many scholars have seemed to agree on defining empathy as *"an understanding or connection to the feelings of others that serves as basis for further relief action towards them"* (Sánchez Laws, 2017: 6). One of these contemporary scholars, Amy Coplan (2011), distinguishes between three descriptions of empathy: emotional contagion, pseudo-empathy and empathy proper.

Emotional contagion follows Lipps' theory of imitation, expression and projection (Coplan, 2011; Scheler, 1954). Pseudo-empathy uses a self-oriented perspective taking, as one places themselves in the position of another to imagine how they would think and feel being in that position (Coplan, 2011: 54).

Coplan (2011: 53) argues that these first two categories should be excluded from the category of empathy, because the third description, empathy proper, defines the 'true'

empathy. To avoid confusion, the definition for empathy proper that Coplan provides will be used for this research, in which she describes empathy as:

> *a process through which an observer simulates another's situated psychological states, while maintaining clear self-other differentiation* (2011: 58).

The main difference with the other descriptions of empathy is that empathy proper is based on other-oriented perspective taking, rather than self-oriented perspective taking and that there is a sense of emotional regulation, where one is able to distinguish their own emotions from those of the other (Coplan, 2011). One is therefore aware that the simulated psychological state is not fully identical to that of the other person.

Though it does not seem like there will ever be a singular definition for empathy that is agreed on by everyone; what is agreed on is that empathy plays a key role on both a personal and societal level (Riess, 2017; Zahavi & Overgaard, 2012). It can enable understanding and sharing of emotions, experiences and needs between individuals, thereby upping prosocial behaviour, connecting individuals as well as *"providing the affective and motivational bases for moral development"* (Riess, 2017: 74). Empathic ability is not equal for each individual. However, our history and recent neuroscientific research both suggest that the human brain is hardwired to feel and use the mechanism of empathy to act in the world (Sánchez Laws, 2017).

Critique on the empathy machine

As mentioned in the introduction, many researchers and influential creators, such as Milk, share a hopeful opinion of VR as the *"ultimate empathy machine"* and its ability to instigate social change by generating empathy (Constine, 2015; Pavlik & Bridges, 2013; Shin, 2017; Gillath et al., 2008; Jones, 2017; Sánchez Laws, 2017). Film has for many years tried to take on the position of an empathy machine, by sharing stories and helping people understand and relate to parts of other's lives. With the immersive practices and a heightened sense of embodiment, VR can finally step closer to reaching that goal (Jones & Dawkins, 2018b).

Numerous scholars do agree that VR can increase understanding and possibly even generate empathy, depending on how you define it, through its key elements of immersion,

embodiment and interactivity. However, there are some factors that need to be taken into account. Firstly, personal factors play a role:

> *While immersion influences presence and flow to a certain level, embodiment and empathy are more dependent on the disposition of particular users* (Shin, 2017: 69).

Not everyone has the same levels of empathy. Therefore, a user's personal level of empathy as well as their willingness to be immersed into a VR environment play a relevant role (Shin, 2017: 69). A study on prosocial tendencies by Gillath et al. (2008: 275) agrees by suggesting that *"prosocial tendencies assessed using IVET* [Immersive Virtual Environment Technologies] *are sensibly related to prosocial dispositions"*.

Secondly, the relatability of the content can also play a role, as feeling connected to or being able to relate to the characters or the content can increase empathy levels, for it is easier to imagine yourself in a similar situation (Shin, 2017).

Besides this, there is also the ethical stance that needs to be taken into account, which is often neglected in research. VR creators have to be careful to not follow 'us-versus-them' dichotomies and to tell the story from the perspective of the subjects, rather than their own (Jones & Dawkins, 2018b). After all, the promise of the empathy machine is to see through someone else's eyes, and that is in most cases not meant to be those of the filmmaker. Then there is the other side of the ethical stance, which regards the ethical concerns of placing a person in a dangerous or traumatising situation in VR and the consequences for the mental well-being of the participants (Sánchez Laws, 2017).

Though VR is getting more widely accessible, there also is the general notion of accessibility of technology, often described as the 'digital divide', which can be problematic, as access is often a first step to ownership and power (Gillespie, 2019).

Not only do scholars disagree on the definition of empathy, the use of the term 'empathy machine' to describe VR is also a significant point of disagreement, as it can be deemed inappropriate and problematic. Bollmer (2017) is one of the key scholars who critiques the title of empathy machine for VR. He defines empathy machines as:

> *any attempt to make sensible to oneself the emotional experience of another via technology, often with the goal of inhabiting another body* (Bollmer, 2017: 63).

One cannot just 'understand' another by embodying their presence for a small portion of time. Rather than understanding the other, one will *"hastily absorb the other's experience*

into their own experience" (Bollmer, 2017: 64). Situated knowledge and experiences will always prohibit our ability to fully understand others. Describing VR as an empathy machine is therefore troublesome, as it allows for objectification, absorption and consumption of others and their environments (Bollmer, 2017).

Virtual embodiment or exposure to environment of the other does, according to Bollmer, not generate empathy, as it does not allow for an understanding of the other, but rather for what Bollmer terms as 'radical compassion', which he describes as:

> *an ethical stance that refuses any attempt to experience, or even completely understand, the experience of another, but instead embraces an openness to understanding and refuses assimilation into one's own self* (Bollmer, 2017: 71).

Agreeing with Bollmer's arguments that the empathy machine itself is problematic and inappropriate, Robert Hassan (2019) adds another layer to the 'anti empathy machine argument', by using the analogue-digital debate. The analogue represents the actual, or the 'real' world, and the digital represents the virtual and digital world. Hassan (2019) asks the question of how true virtual reality can be to the analogue reality. He argues that:

> *the rendering of analogue reality into digital has, inevitably, a loss of information in the fidelity that the technology is incapable of reproducing* (Hassan, 2019: 12).

An atmosphere can never be replicated perfectly. There is always information that is left out, whether that is smells, storytelling gaps, temperature, low levels of interaction or other (sensory) factors. Though, as the technology behind VR is getting increasingly sophisticated and able to create realistic situations for all the senses, this argument will grow less relevant over time.

Hassan (2019) also states that the feelings of actual participants of the analogue reality cannot be replicated for the VR user, they will still feel their own emotions or an inaccurate imitation of what those in the analogue reality are feeling. Therefore, Hassan (2019: 1) concludes that empathy cannot be generated from a digital source like VR.

VR's key elements are also often up for debate. It is known to be immersive and interactive, though immersion can be disturbed by realisation of or contact with physical reality. Besides this, interactivity is a one-way street, in which the user experiences the virtual world, but the virtual world often cannot experience the user (Hassan, 2019). Therefore, rather than an

empathic tool that can establish social change, Hassan describes VR as a digital spectacle (Hassan, 2019).

Both of these arguments are understandable, as VR can in our current time never accurately replicate a situation and one can never fully understand another's emotions. So, when you define empathy as completely and accurately knowing and understanding another person's emotions, VR can never be an empathy machine.

However, though these arguments are understandable, they are quite trivial. As mentioned above, our situated knowledge and experiences prohibit us from entirely understanding someone and their emotions, which also means that situations cannot be replicated. This does not mean that empathy machine is an inappropriate terminology for VR, because as long as the appropriate definition of empathy is being used, which in this case is Coplan's definition (2011: 58), and as long as you realise that the purpose of empathy in VR is not to accurately understand another, but rather to observe another's situated affective states and to recognise that this state is different to the personal affective states.

We might not fully understand the other and everything they have been through in their lives, but through VR it can be possible for us to relate to or understand others a bit more, even if that is just through being immersed into a small part of the other's experiences, within the frame of our own minds:

> *The intersectionality of 'our' experience is always going to be different to the intersectionality of 'theirs' and so there is the distinct possibility that experiencer is put in a position imagining what it might be like, not what it is like* (Jones & Dawkins, 2018b: 309-310).

Even just observing and imagining a part of another's environment can provide new knowledge and insights. And as Chris Milk has stated: by allowing the right people to experience these VR environments, it may even help in starting a positive social change.

Methodology

Design

This thesis applies a qualitative approach to answer the research question *'how does virtual reality encourage immersion in the other's experience and thereby invite for the viewer's feelings of empathy?'* A qualitative approach was deemed most appropriate, because it is most useful in researching subjective feelings such as empathy, its dynamics, and its relation to VR. The design of this thesis is based on two different sections, consisting of an analysis and eight additional interviews that are based on an experiment. This thesis thereby provides both a personal and theoretical perspective on the research question.

In the first section, the analysis, three case studies are thoroughly analysed, each of which is a 360-degree film that focuses on a different matter in our world. This section aims to answer the question: *'how does this work invite empathic responses?'* for each case study, by looking at factors such as immersion, filming strategies, storyline and characters as well as its critiques and successes. The case studies consist of *Clouds over Sidra*, which focuses on refugees, *Autism TMI*, which shows the experience of a young boy with autism and finally, *This is Climate Change*, which is a four-part documentary that presents the different ways in which climate change is currently changing the world and interfering with people's lives.

The second section focuses on the question *'how do individuals experience Clouds over Sidra?'* and consists of a short experiment and additional interview about *Clouds over Sidra*, one of the three 360-degree film case studies. In the experiment, nine participants viewed *Clouds over Sidra* with a VRHMD and headphones. They were then interviewed about the experience and their thoughts on the video. Seven of these interviews were individual and one of the interviews was with two of the participants. The interviews were semi-structured, meaning that besides the previously set questions there was room for unplanned talk, allowing participants to feel at ease and free in saying what they want to create a conversational space (Van Peer, Hakemulder & Zyngier, 2012: 82).

Materials

For the experiment I used the Samsung Gear
VRHMD (Figure 4), in combination with Samsung
Level On headphones. The Samsung Gear is a
VRHMD that was released in 2015 as a collaboration
of Samsung and Oculus VR, in which you place a
compatible Samsung Galaxy phone in front of the VR
lenses, which then serves as the VR screen. The
headset itself has a touchpad controller, a focus
device for the lenses and sensors that detect when
the headset is switched on.

Participants

The participant group for the interview consisted of
three men and six women from different age
categories, ranging from 18 to 85. All of the

Figure 4: Samsung Gear VRHMD (with and without black front cover)

participants were Dutch, therefore all of the interviews were conducted in Dutch. Five of the
participants did not have any previous experience with VR. Out of the four other
participants, two had previously experienced VR and the other two had a strong affiliation
with VR, meaning that VR has or has had a primary role in their study or work. The
participants were recruited through personal connections and selected based on gender, age
and affiliation with VR, with the intention to have a wide age range, a mix of genders and
differences in affiliation with VR among participants. Because of these differences among
participants, they would provide a wide range of perspectives and views on the experience.
Participants who suffer from claustrophobia, epilepsy or brain damage were excluded.
Because it is possible that people experience motion sickness or VR sickness during VR
experiences, it was made clear to the participants that they could stop the experience at any
moment.

Procedure

Before the experiment and interview started, the participants were explained the purpose and goal of this research and their participation, after which they signed an informed consent form (Appendixes 1 and 2). They consented to anonymously participate in the experiment and interview for the use of this research and to the audio-visual recording of the procedure. To prevent 'unnatural VR behaviour', each of the participants was first given a short tutorial about the VRHMD, after which they viewed another unrelated 360-degree film, *My Africa*, so that they could experience a virtual 360-degree world and get familiar with it. This helped to shift the focus during the actual experiment to be more on the specific *Clouds over Sidra* experience, rather than a general VR experience. After viewing *My Africa*, the participants were first explained the topic of *Clouds over Sidra.* The participants could decide for themselves whether they wanted to sit or stand during the experience, though all participants chose to sit. The experiments took place in a quiet room, so that participants would not be distracted whilst watching the video. During the experience, the participants' reactions were analysed. The overall experiment took about 15 to 20 minutes.

After the experiment, each of the participants was interviewed about their experience. This interview focused on their thoughts on the story, characters, perspective, interactivity, empathy, VR and the correlation of these factors. The interviews took 20 to 45 minutes and had a conversational nature. Finally, the interviews were transcribed (Appendixes 3 to 10). The data of the analysis, experiment and interview were then further analysed.

Analysis

In this section, I will analyse three case studies, which are all 360-degree films. Each one is focused on a different matter of our world, such as refugees, disabilities (autism in specific) and climate change. Because these specific groups and matters often deal with a lot of misunderstanding and ignorance, the creators of these films wanted to immerse viewers into these environments, to spread understanding and empathy for these groups and matters.

The first case study is *Clouds over Sidra*, which focuses on the refugee crisis by following Sidra, who has fled Syria and now lives in the Za'atari Refugee Camp of Jordan together with her family. The second case study is called *Autism TMI Virtual Reality Experience*, which was created by the UK organisation the National Autistic Society in order to create awareness and understanding for autism itself and those who are living with it. The final case study is *This is Climate Change*, which is a four-part documentary series about how climate change affects our world in different ways. Each of these case studies tries to establish empathy, which Coplan defines as *"a process through which an observer simulates another's situated psychological states, while maintaining clear self-other differentiation"* (2011: 58).

With this definition in mind, the goal of this analysis is to answer the question: *'how does this work invite empathic responses?'* I will answer this question for each separate case study, by analysing various factors, such as media, film strategies, immersion and context. Besides this, I will look at criticism on the work and the achieved successes.

The refugee crisis: *Clouds over Sidra*

The story: placement and characters

You are in an empty desert that Sidra, a 12-year-old refugee, and her family had to cross to arrive at the Za'atari Refugee Camp in Jordan. Then, you are suddenly in a room together with Sidra, who is now directly talking to you. Her schoolbag is next to her and the room definitely does not look like a part of a home. She begins to speak to you, and the English dubbed voice says:

> *My name is Sidra. I'm twelve years old. I'm in the fifth grade. I am from Syria, in the Daraa Province, Inkhil City* (Within, 2016).

She explains how she has lived in the Za'atari Camp in Jordan for the last year and a half, because her and her family had to flee Syria. In the next shot, she introduces you to her family, consisting of Sidra, her three brothers and her parents, who are now all in the same room. You can watch over them and listen to the crying of her baby brother.

You are then on the school grounds, surrounded by fences and barbed wire. Sidra is not around anymore. Instead you see many children on their way to enter the school. In the next shot you are immersed in the classroom, joined with a group of students who are all enthusiastically raising their hands.

Other interesting places are introduced to you, such as the computer room, the gym and the bakery. You can almost smell the bread. Since most of these places are only for boys, Sidra is extra excited to show you the football field, as girls are allowed to play football. You stand in the middle of the field and watch as the football game starts.

Figure 5: Clouds over Sidra (Within, 2016)

Life in the camp is not easy and Sidra misses her home. A short scene shows her crying in her room. Eventually, an overview of the camp shows how the clouds pass. Sidra's voice says:

> *I think being here for a year and a half has been long enough. I will not be twelve forever. And I will not be in Za'atari forever. My teacher says the clouds moving over us also came here from Syria. Someday, the clouds and me are going to turn around, and go back home* (Within, 2016).

This final sentence explains the title *Clouds over Sidra* and metaphorically describes Sidra's wishes to return back to her home country, just like the clouds that are currently above her will do. This sentimental statement ends with a call to action with a link to the website where you can donate for refugees just like Sidra.

Origin and context

The TED Talk of Chris Milk, one of the creators of *Clouds over Sidra,* about VR's role as the *"ultimate empathy machine"* marked the starting point for a great number of studies on the influence that VR can have on empathy (Chris Milk in TED, 2015). *Clouds Over Sidra* is the work that he used in this TED Talk to exemplify why VR is the ultimate empathy machine, as it goes beyond traditional framing, creating immersive environments that can introduce people to new environments and communities, such as the refugee community, thereby giving them a sense of humanity that some might not have recognised before and inspiring viewers to stand up for the refugee community (Chris Milk in TED, 2015). As Chris Milk was one of the first to use the term empathy machine in this relation, it is highly relevant to analyse *Clouds Over Sidra* as a case study for this research.

The film was created with a specific purpose, which was to educate, raise awareness, generate empathy and get people to (want to) do something about the refugee crisis, by donating or providing aid in other ways. Right from the start, the goal was to support the call for partnership of the United Nations Secretary-General's MDG Advocacy Group*,* whose goal is to aid vulnerable communities, such as refugees, by building resilience and political will as well as starting a mobilization of global action (UNVR, n.d.). The 360-degree film was created in collaboration with (but also for) the United Nations and Samsung, by using their Samsung Gear VR 360-degree platform (Butcher, 2015).

Clouds Over Sidra takes place in the Za'atari Refugee Camp in Jordan, which currently houses about 78.000 refugees, all fleeing the Syrian war. Half of these refugees are children and one fifth is under five years old (UNVR, n.d.; UNHCR, 2018). It was filmed on location in December of 2014, to be released a month later at the World Economic Forum in Davos (UNVR, n.d.). Various partners worked together, such as Chis Milk's company called Within (formerly called Vrse), the United Nations, Samsung and UNICEF Jordan to create a gripping VR experience.

Immersion and perspective

As mentioned in the literature review, there are three types of immersion as theorised by Marie-Laure Ryan (2015: 85): spatial immersion, *"the response to setting";* temporal immersion, "*the response to story*"; and emotional immersion, *"the response to characters".* Each of these types of immersion can be used to further analyse immersion in this and other case studies.

Spatial immersion occurs when you are placed in the dessert, where the viewers are able to look around at the desolate space and feel as though they are physically there. The viewer can start to imagine the lengths Sidra, her family and so many others had to go to in order to arrive at the camp. It is a great introduction to the story, as it sets the scene and gives the viewer an introduction of what is to come. These levels of spatial immersion are also reached in scenes like the one with the overview of the camp, where Sidra talks about the clouds passing over. The viewer can see what she is talking about, understands the origin of the title and can follow Sidra's hope for a better future.

Though there is strong spatial immersion, the viewer does not have a body or an avatar in the experience and is subject to what Burdette describes as the Swayze Effect, which is *"the sensation of having no tangible relationship with your surroundings despite feeling present in the world"* (Burdette, 2015). This term is derived from Patrick Wayne Swayze's role in the film *Ghost* (1990), in which Swayze plays a ghost who is present, but cannot physically or tangibly interact with the environment. This is not just an inherent characteristic of *Clouds Over Sidra*, but of 360-degree film in general, as you feel present, but your interactivity is limited to looking around in 360-degrees. You cannot decide your position, move (things) around, interact with the characters or influence the storyline.

Temporal immersion is reached throughout the whole experience, as you watch the story unfold. *Clouds over Sidra* is based on Sidra's general life rather than on one specific plot. There are no plot twists or techniques used to surprise the viewer, it is focused on Sidra's life and what she has gone through and is experiencing right now. Therefore, one could argue that temporal immersion is, in this case, the least strong of the three types of immersion. However, that does not mean it is non-existent, as you respond still respond to the story by hearing about Sidra's history and where she is now. It seems temporal immersion is intensely intertwined with spatial immersion; as spatial immersion helps you imagine the settings in which the story takes place, thereby upping temporal immersion. For example, when you see the desert she had to pass to reach the camp and see the different spaces in the camp, such as the bakery and football field, you can actually start to imagine her in these different spaces. The visualisation of the spaces helps you see the story in front of you and increases your response to the story of Sidra.

Emotional immersion occurs throughout the whole film, as you constantly see new characters and are sometimes introduced to them, such as Sidra's family (Ryan, 2015: 85). However, emotional immersion is the strongest when you are in the room with Sidra and she is directly talking to you, crying and sharing her emotions and feelings of homesickness. This makes you no longer the quiet and unnoticed observer, or the so-called 'fly on the wall', because you are directly addressed as a person, as if you are right there with Sidra in the environment. Being directly addressed by a character allows for a more open storyline that acknowledges its viewers' existence and can lessen the exclusion and objectivity that viewers might experience through the Swayze Effect, upping feelings of immersion (Wang, 2017). You are both sitting in the same room and she maintains eye contact with you as she is speaking to you, which makes you feel as though you are her friend and are having a conversation with her. You find out that Sidra is just a regular twelve-year-old girl, who wants to and deserves to have a normal life, without worrying about war or safety. Through this intense emotional immersion, a bond with Sidra is rapidly established. Therefore, when you are find yourself sitting in that same room again, though this time with Sidra crying, you feel for her and wish you could help her.

Critique

Though viewers do spend some time together with Sidra and her environment, it still can be argued that you cannot interact with Sidra or know what she is feeling for most of the experience. Besides this, it is often argued that you only know a part of her backstory and can only imagine what this might have been like. Therefore, it can also be argued that this experience evokes what Bollmer describes as 'radical compassion' rather than empathy, as users might tend to 'hastily absorb' the environment and experience rather than truly understanding and experiencing it themselves (Bollmer, 2017; Jones & Dawkins, 2018b). In their analysis of *Clouds over Sidra,* media academics Jones & Dawkins, have therefore argued that this hastiness and evoking of radical compassion rather than empathy can make it feel as more of a general VR experience rather than a VR experience of a refugee camp (Jones & Dawkins, 2018b).

Influence and success

Though facing some critique, *Clouds Over Sidra* turned out to be a great success. The film received great amounts of views from various important people, such as politicians like Norwegian Prime Minister Erna Solberg and UN-members like Secretary General Ban Ki-moon (Figure 6), it has been translated into 15 languages and screened in
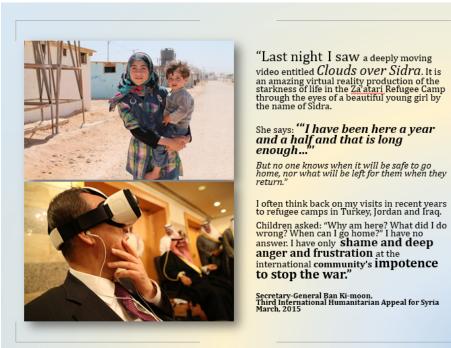
"Last night I saw a deeply moving video entitled *Clouds over Sidra*. It is an amazing virtual reality production of the starkness of life in the Za'atari Refugee Camp through the eyes of a beautiful young girl by the name of Sidra.

She says: *"I have been here a year and a half and that is long enough…"*

But no one knows when it will be safe to go home, nor what will be left for them when they return."

I often think back on my visits in recent years to refugee camps in Turkey, Jordan and Iraq.

Children asked: "Why am here? What did I do wrong? When can I go home?" I have no answer. I have only **shame and deep anger and frustration** at the international **community's impotence to stop the war."**

Secretary-General Ban Ki-moon,
Third International Humanitarian Appeal for Syria
March, 2015

Figure 6: Secretary-General Ban Ki-moon about Clouds over Sidra (UNVR, n.d.)

40 different countries across the world. Besides this, it also started a change (UNVR, n.d.). The fundraising campaign was highly successful, as one in six people donated towards the refugees after watching the film, which is twice as effective as other fundraisings (Badsa, 2017). Eventually, the project raised 3.8 billion dollars, which was 70 percent more than expected (Badsa, 2017; Robertson, 2016; UNVR, n.d.). Not only did it raise a lot of money, it

is now also used as an educational tool in various countries, as well as a political tool, which numerous civil societies have used to influence public opinion (UNVR, n.d.).

The creation of *Clouds over Sidra* had a major necessity, as explained at the end of the film:

> *The world is facing the most devastating refugee crisis since WWII. As of September 2015, the Za'atari camp in Jordan harbors 80.000 Syrians escaping war and famine. No one knows when it will be safe to go home, nor what will be left for them when they return. To help please visit vrse.com/sidra* (Within, 2016).

Clouds Over Sidra and its creators have helped start a change and are still doing that, by spreading the word and experience across different platforms and to more and more users.

<u>Empathy</u>

When asking the question 'does *Clouds over Sidra* evoke empathy?', you are really asking 'does *Clouds over Sidra* allow the viewer to take the perspective of the other (a refugee) and thereby allow the viewer to simulate the other's situated psychological state?'.

To many people, the refugee crisis is a distant problem that only gets close once the refugees arrive to these people's countries to find safety. The news objectively portrays the seemingly distant situations, often showing the horrors of war that are behind the crisis. Various media platforms and its users can spread negative messages about refugees, such as that they are out to 'take our jobs'.

However, immersing yourself in Sidra's environment shows a very different experience than often displayed on the news and in the media. Sidra is the living example that refugees are regular people, whose main wish is to go back to their homes in safety, but simply cannot, because of situations that they have been subjected to against their will. Viewing Sidra's life in 360-degrees and hearing what she has to say about her daily life gives not just her, but refugees in general, a sense of humanity that many people have (previously) failed to acknowledge. It takes a distant story to you and places you inside of it, showing you a different perspective and allowing you to simulate some of Sidra's thoughts. For example, when you are in Sidra's room together and see her crying and talking about how she wants to return home, you feel her sadness and a need to help her.

Important in Coplan's definition of empathy is her mentioning of a self-other differentiation (2011). The observer recognises and simulates another's situated psychological states, but is

aware that this simulated psychological state is not fully identical to that of the other person (in this case, Sidra). Therefore, watching *Clouds over Sidra* does not give the viewer full understanding of what it is like to be a refugee or to be Sidra, as external factors such as differences in situated knowledge make that impossible, but by sharing an environment and simulating emotions one can start to recognise and understand parts of what Sidra is going through, thereby creating a sense of empathy.

Autism: *Autism TMI Virtual Reality Experience*

The story: placement and characters

You are in a big shopping centre and you are waiting for your mother, who is trying to quickly get a parking ticket. When you look down, you see that you are embodying a young boy, who is holding a stuffed dinosaur. You see the world from his perspective and as the experience continues, you see the shopping centre transform into an increasingly overwhelming and overloaded space. It starts with mildly flashing lights and hearing every sound around you about ten times louder than they actually are. Every step of every person walking by is a trigger. Colours look a lot more intense. You start playing with the dinosaur more nervously by moving it around in your hands and pinching it. Your breathing starts to intensify. You can hear your mother's muffled voice in the distance telling you to calm down. Then, the alarm of the shopping centre goes off, as heard by a loud beeping noise. All the lights start flashing irregularly and even faster than before. Your vision starts to go fuzzy and blur. You see black flashes and start hyperventilating as the black starts taking over your entire vision.
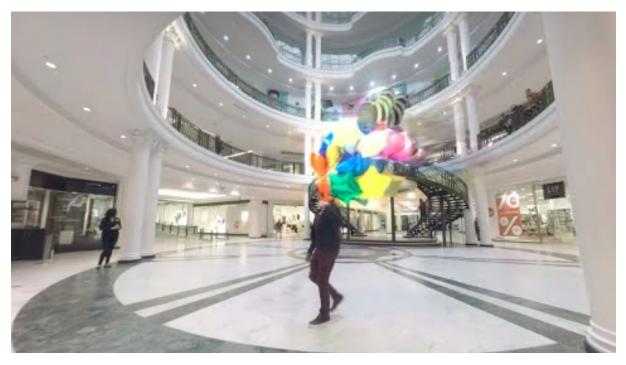

Figure 7: Autism TMI (The National Autistic Society, 2016a)

Then, you are suddenly outside, in the car park. Your breathing slows down, your vision goes back to normal and you can hear your mother again. The experience ends with your mother telling you that you two are going back home. The end screen of the video shows a link to where people can learn more about autism and what they can do.

<u>Origin and context</u>

In 2016, the National Autistic Society (NAS), an organisation from the United Kingdom, created this 360-degree experience focused on autism spectrum disorder (The National Autistic Society, 2016a). The National Autistic Society is *"the UK's largest provider of specialist autism services"* and created the *Autism TMI Virtual Experience* in order to spread awareness, understanding and education on autism and the people who live with it (National Autistic Society, n.d.-b; The National Autistic Society, 2016a). Autism is *"a lifelong, developmental disability that affects how a person communicates with and relates to other people, and how they experience the world around them"* (National Autistic Society, n.d.-c). It is a spectrum, meaning that everyone that has autism experiences it differently. This can also make it hard for the people around those with autism to understand the influence of autism the daily lives of those who are living with it.

In this 360-degree video, one can experience what it is like to receive information and sensory overload, as people on the spectrum can experience. The user views the film from the perspective of a young boy who has autism and shows how intense and stressful a trip to the shopping centre can be.

> *That's why we've created a virtual reality experience in collaboration with autistic adults and children. So you can feel every single sight, every single sound, every single stare they endure on a simple trip to the shopping centre* (The National Autistic Society, 2016a).

Though the video is only a little over two minutes long, it creates a very intense experience. NAS hopes that the experience can make viewers understand parts of autism and help them to not judge situations too quickly, as maybe autism plays a role in that situation (The National Autistic Society, 2016b).

<u>Immersion and perspective</u>

In *Autism TMI*, the sensory and information overload is portrayed in a very realistic manner. Seeing everything from a first-person perspective creates a strong sense of immersion, especially because you are immediately addressed as a person, instead of taking on a 'fly on the wall' perspective as you do in most scenes of *Clouds over Sidra*. Even though the body might not resemble your own physical body, it can still add to this emotional immersion. It can make you feel as though you are an actual person experiencing all of this, rather than a

floating set of virtual eyes. Having this embodied experience can increase realism and feelings of presence, which again can increase immersion. The body in the experience shows the behaviour and coping mechanisms that someone with autism can have, such as the fidgeting of the stuffed dinosaur. Embodying someone else can therefore almost literally put you in their shoes and view the experience as the person you are embodying, rather than as yourself.

However, the fact that the body in the experience can be different from the body of the user in terms of appearance (e.g. gender, age and ethnicity) and behaviour (e.g. movements) and the lack of ownership or agency over the body (the Swayze Effect) might decrease feelings of realism and presence for some people. Relatively few research has been conducted on this topic. Research that has been done is often ambiguous, introduces further questions and mostly focuses on avatars in highly interactive VR environments, where users can explore the environment and narrative with an avatar, rather than less interactive 360-degree film environments, where interactivity is limited to looking around in 360 degrees at a storyline that has already been determined (Garau et al., 2003; Latoschik et al., 2017).

Though there are of course differences in interactivity and agency between VR games and 360-degree film, it can still be valuable to look at the results of studies on the effects of avatar realism for immersion. This research is often still experimental, as there are many factors that need to be taken into account, such as the subjectivity of the word realism. Various research has shown that seeing a realistic looking avatar that is similar to the user's self can increase accurate judgements of environment, more so than if the user would not have an avatar at all (Mohler et al., 2010; Latoschik et al., 2017; Garau et al., 2003). Having agency over the avatar would then further increase these accurate judgements, though this is unfortunately not (yet) possible for 360-degree film (Mohler et al., 2010; Latoschik et al., 2017; Garau et al., 2003). An avatar that is randomly assigned or that is not necessarily similar to the user, as is the case for *Autism TMI*, can still increase accurate judgements of environment in comparison to not having an avatar at all, like in *Clouds over Sidra*, though not to the same extent as having a realistic and similar avatar (Mohler et al., 2010). Whilst emotional immersion in *Clouds over Sidra* is mainly generated from the almost conversational storyline, in *Autism TMI* it is evoked through this 'embodiment' and the first-person perspective. This does not mean that *Autism TMI* necessarily has a higher level of

emotional immersion, it is mainly that the filmmakers have used ways of immersion that fit the experience and its topic.

Though the setting in which *Autism TMI* takes place only changes once (from shopping centre to parking lot), there are still a lot of changes within these settings, especially in the setting of the shopping centre. These changes, such as the flashing lights, the loudness of the people walking by and the general noises, are not always real, but rather a psychological reaction to the environment itself. By imposing the viewer to these reactions to what would normally be a 'simple' shopping centre, they can experience what someone on the autism spectrum might feel in this situation. This creates a high sense of spatial immersion as well as temporal immersion. No matter where you look, something is going on that shows the intensity of the situation. You start to react to everything that is happening in the setting you are in and may even subconsciously respond to this in real life, by for example starting to breathe faster and getting generally overwhelmed by everything that is happening around you. Various commentators of the YouTube video as well as reviewers have stated that they experienced levels of anxiety while watching the video and that they feel for the person you embody in the video, as it is a highly intense experience (Figure 8) (The National Autistic Society, 2016a; Wilson, 2016).

Rachelle H. 2 weken geleden
damn there isn't even scary music and i'm getting anxious

👍 2 👎   BEANTWOORDEN

rebecca finn 2 jaar geleden
I have autism and trying to watch this nearly set me off, especially when the store alarm went off. This is very accurate, at least for me.

👍 👎   BEANTWOORDEN

Figure 8: *YouTube comments of Autism TMI (The National Autistic Society, 2016a)*

Critique

Though the 360-degree video of course received some critique in the YouTube comments, most of this critique was focused on it not portraying a 'true experience' of autism. These arguments were often refuted by reminding the commentators that autism is a spectrum

that real life experiences of can vary along this spectrum. For some it may be completely different, though for others (parts of) it may be very similar.

Besides this, there do seem to be some controversies surrounding *Autism TMI* as well as disability simulations in general as introduced by Musser (2018). Though they do show a possible part of what a person experiencing the disability can feel, it can and does not capture that what often comes with the disability, such as social isolation, bullying and communication difficulties (Musser, 2018; Göbel et al., 2018). In the same article, Musser also asks the question of *"whether subjective experience is something that can ever be shared"* (2018). Following Musser's critique, it seems that he would argue for the use of the term 'radical compassion', rather than empathy, like some critics do for *Clouds over Sidra*.

Influence and success

Though this critique is valid, *Autism TMI* still has the power to help people understand why daily activities, such as going to the shopping centre, can be difficult or overwhelming for those with autism by making them experience it themselves. Even though watching this experience does not immediately make you an expert on autism and all the different forms there are, it can help you understand why these 'simple' tasks can be difficult and overwhelming and it can in this way prevent negative judgement as well as increase support and awareness. Alex Marshall, the 10-year old main character of the 360 video, who actually lives with autism himself, said:

> *I've loved being part of the National Autistic Society's film, it was like winning the lottery twenty gazillion times and I'm really excited about the VR so I can show my friends how things feel for me. It really helps when people understand things, and this is a really cool way to do it – you can just show someone the inside of your head!* (Hearon, 2016).

A YouTube video by Counselling Directory (2017) shows three people watching the experience created by the National Autistic Society. They view the experience with a VRHMD as well as a set of headphones. All three described the experience along the lines of 'intense', or even 'freaky' and 'horrible'. They all stated that the experience made them think and realise what someone on the spectrum might be going through. When being asked

the question if they would be more likely to help or understand someone with autism after experiencing the video, they answered the following (Counselling Directory, 2017):

Person 1: *"Absolutely, yes, definitely. It is quite scary to see what it is really like from the side of somebody who has autism."*

Person 2: *"Yes,* […] *I think I'd understand it more. So I think if I saw like maybe a child screaming, like out in town or something, rather than just assuming 'oh they're just a kid having a temper tantrum' it might be like 'oh okay they might actually be experiencing something scary, really scary, to them'. So it's not jumping to conclusions."*

Person 3: *"Yes definitely.* […] *Well, I feel more aware of it, definitely. Again, it's like you can't know something like this until you see it through someone else's eyes. And seeing it like that, it's just, so daunting."*

The effects that the video had on these people evidences that there is definitely value in creating more of these sorts of experiences that focus on mental health and disabilities, as there is often a lack of understanding from those who do not experience these issues or disabilities.

Besides this, it can also go the other way around, by for example making virtual environments that can be challenging for autistic people, such as the shopping centre, and helping autistic people 'practice' being in that environment by immersing them into it with VR.

Empathy

According to the National Autistic Society, *"over 99% of people have heard of autism, but only 16% of autistic people feel the public understand them"* (National Autistic Society, n.d.-a). This explains the necessity for a film like this.

By watching *Autism TMI*, you can see and feel the effects of autism on simple daily tasks. Slowly but surely, you see how everything becomes too much to handle. You simulate the main character's psychological state, by watching everything from his perspective and seeing and feeling his response to the situation he sees happening in front of him. This is augmented by 'your' mother constantly addressing you and talking to you in a worried

manner. The information overload gets increasingly hard to handle, which you see the main character respond to, and can even start responding to yourself by using your personal coping mechanisms for stressful situations like this.

The combination of this can definitely increase understanding for autism and those living with it. Even though Musser's (2018) point about how subjective experiences cannot fully accurately be shared is valid, this does not mean we cannot try to come close to it. *Autism TMI* has the power to help family members of people on the spectrum; those with autism, as they might feel more understood; and outsiders, who can now understand the reason why someone might act in a certain way.

Clouds over Sidra and *Autism TMI* represent the misunderstood and prejudiced. Though they differ in style, point of view and storyline, both use 360-degree film as a way to increase understanding and empathy.

Climate change: *This is Climate Change*

<u>Origin and context</u>

Climate change has been a recognised problem for many years. Ever since the 1950s, the ice has been melting, sea levels rising, and drought and deforestation have increased, because of the way humanity treats the Earth (NASA, n.d.). There is clear proof in great numbers of studies on climate change and its negative effects on the Earth (NASA, n.d.). The streets of numerous cities around the world have seen protests and climate change activists willing to fight for a healthy planet. However, there are still various people who do not believe in climate change and its devastating effects, who carry the title of climate change deniers and group together in denial networks and forums, such as 4chan. When the people who do not believe in climate change are placed in important political positions, they can impede and obstruct the fight against climate change and leave those who are trying to help the Earth to be a minority group.

However, climate change is very real and life-threatening. The VR documentary series *This is Climate Change* by Participant Media and Condition One shows the destructive ways of climate change, by placing the viewer in some of its critical areas. The documentary series, which is currently free to watch on the Within website and app, consists of four parts: *Fire*, *Feast*, *Famine* and *Melting Ice* (Dennis & Strauss, 2018a). Each part is about 10 minutes long and focuses on a different part of the world, with a diversity of climate change induced issues.

> *They are really meant to be experienced as parings. So, we have fire and melting ice; and feast and famine, to really show you these contrasting examples of where climate change is having direct and immediate impacts on the most vulnerable people and ecosystems* (BUILD Series, 2018).

The series has been filmed in the United States, Brazil, Somalia and Greenland. The first episode, *Melting Ice*, aired in 2018 at the Sundance Film Festival. The other three episodes were launched a while later at the Tribeca Film Festival. For this analysis, I will focus on the first pairing, that of *Fire* and *Melting Ice*.
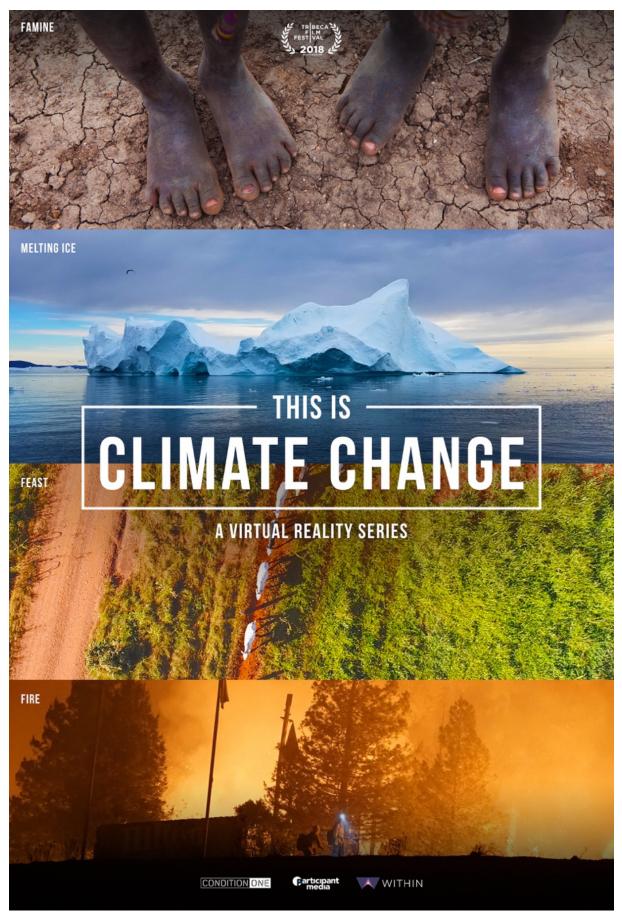
Figure 9: This is Climate Change (Dennis & Strauss, 2018a)

The story: *Fire*

In *Fire*, you join California's Department of Forestry and Fire Protection in fighting some of the violent Californian wildfires, that have taken many people's homes and lives over the years. In the last thirty years, the land burned by wildfires in the western United States has doubled because of the effects of climate change, and they only keep getting worse (Dennis & Strauss, 2018b). In this part of the series, you see how these firefighters risk their lives to save others, as well as the devastating effects of the fire.

By using a 360-degree camera, the firefighters take you along with them in their daily routine, mainly consisting of highly dangerous situations. When you are at their base, you hear the sirens going off and feel the adrenaline rush, as if you know you are going to have to risk your life at that point. You accompany the group on their way to the fires, by joining them on the aircraft as well as on the ground. Once you are there, you can almost feel the heat of the fire.

As you look at the burning fields and a destroyed neighbourhood, the news about the North Bay Fires of October 2017 is discussed. You watch everything burn down right in front of you as you hear about the deaths and losses. The next day, you are in the middle of a destroyed neighbourhood. The fires have stopped. A man talks to you:

> *It's really difficult, uhm, a lot of stuff, you know, can't be replaced. The old barn and stuff like that. And the old home my wife grew up in is right behind you, or well, it was. It's, uhm, it's gone* (Dennis & Strauss, 2018b).

This is just one of the people who has lost everything but their life in the fires. One of the firefighters warns for the future:

> *I think in the future; we're going to experience a lot more of these catastrophic fires. It is personal, and you wish you could do more, but we come back to base and restock, refuel, train, and we're ready for the next* (Dennis & Strauss, 2018b).

The story: *Melting Ice*

Melting Ice focuses on how the increasing temperatures allow the ice to melt and the sea levels to rise. In this part of the series, Al Gore, former US Vice President, and glaciologist dr. Konrad Steffen discuss the dangers of climate change for future generations and the necessity of action. Al Gore states:

Rising seas from the melting ice are already producing climate refugees and the problem is expected to get a lot worse, with an increase in this century of up to 2 meters, or 6.5 feet, with tens of millions, maybe as many as a hundred million climate refugees. We have simply got to rise to this challenge. Children born in the last few years are going to be facing horrific consequences, unless we act boldly now (Dennis & Strauss, 2018c).

Though it contains a serious warning, it starts off as a calm experience, which shows a beautiful white and blue landscape, until you notice the melting glaciers and icebergs. The ice falling down sounds like gunshots, and fall into a violent stream of brown water.

You see the consequences for the landscape from different angles; from underneath a glacier that is slowly dripping, to watching the iceberg melt with huge amounts of ice dropping down, to being on a boat on the high sea levels as you watch some leftover pieces of ice float by.

Finally, the location changes from Greenland to New Smyrna Beach in Florida. Here you notice the immediate effects of the rising sea levels, as you watch the flooded houses of this neighbourhood in what seems to be an ever-going stream of water.

Placement and characters

Following the firefighters in *Fire* follows a classic story structure, thereby allowing you to see the start, middle and end of the process of fire. You watch a blossoming and green land turn into a sea of fire, with firefighters trying to stop it to protect the land. Eventually, you see the ruins that are left.

In the video, the 360-degree camera is held by one of the firefighters. You feel like you are one of them, as you walk with them and experience everything together. In some scenes, such as the scene where the man talks to you about his old barn, the directors used a standing 360 camera. Though you do not have a virtual body or avatar, you still feel a sense of presence, as the man addresses you directly and maintains eye contact with you, again making you more than just a fly on the wall. You also have the ability to look around and see what he is talking about when he talks about the space where the barn used to be. Therefore, the position of the camera, no matter where it is placed or who it is held by, becomes the viewer's composition (BUILD Series, 2018). This also means that the VR experience can take you to places you would never usually be able to experience, you could

be flying above the burning forests, or standing in between melting glaciers. It almost lifts the viewer outside of their own body with the ability to provide them with any possible perspective, from bird's eye view to frog perspective. Experiences like this can show people the consequences of their actions and what is being destroyed, rather than starting discussions about climate change, such as whether it is real, or who is at fault. Hereby, it can change the way of thinking about climate change as a topic of discussion into a real and global issue that should be acted on, on both personal and global levels.

The main difference in *Melting Ice* compared to *Fire*, besides general differences such as location, is that it is calmer and that there are less people in the video. The only people you see are Al Gore, dr. Konrad Steffen, and a few other characters like the pilot of the helicopter aircraft and the boatman. Besides them, you are mainly accompanied by water and ice. One important similarity between *Melting Ice* and *Fire,* as well as the three case studies in general, is that the camera can again take you anywhere, immersing you into normally inaccessible environments.

Examples of this are the scenes where you are placed almost right underneath a melting and breaking glacier, or next to a river with a current so strong that it could easily destroy anything that it comes across, or in a puddle of meltwater that keeps on growing as the glacier rains down on you. This was of course not without danger, as the directors had to carefully calculate the risks and place the camera at the right place, at the right time. At one point, you are even alone on a little iceberg that has not yet melted away, but judging by the surrounding area filled with tiny bits of ice that are left and a burning sun, soon will. To accomplish this shot, the directors were joined by experts who could point out the more stable icebergs, to then get on the iceberg, place the camera, quickly get the boat out of shot, leave it rolling for a couple of minutes and then hope that the camera is still there and intact when they return (BUILD Series, 2018).

These risks were not just taken for *Melting Ice*, but for every part of the series. Whether it is standing next to a burning neighbourhood, looking a jaguar in the eyes in the middle of the Amazon, or finding yourself in the nothingness left by the extreme drought in Somalia.

All four episodes of *This is Climate Change* are confronting experiences. Instead of just reading or hearing about a city burning down or a glacier melting, you actually see it happening right in front of you and you see its effects on the habited world. VR's key elements of immersion and presence are exactly what the two directors, Danfung Dennis and Eric Strauss, wanted for their documentary series. By using experiential media, with a focus on emotional response through presence and immersion, they created an experience that would leave people to reflect on what they just went through to possibly starting positive transformative personal moments (BUILD Series, 2018). The evolution of technology has helped immensely in reaching this goal, as the use of 8K video, 60 frames per second and ambisonic (360, 'full sphere') audio all help in the directors' reach for immersion, by being able to distort the viewer's perception of reality with increasingly realistic VR experiences (BUILD Series, 2018). To further analyse this, it is valuable to look at the different types of immersion and how they are practiced in these experiences.

The response to setting, or spatial immersion, in this documentary is very intense. You are present to see the landscapes from different perspectives and watch how they change. You can almost physically feel the heat of the fire, or the water coming from the melting ice. Through educating the viewer with didactic voiceovers and informational texts throughout the experiences, the viewer can understand why the landscapes change the way they do. The response to story, or temporal immersion, in *Fire* is the strongest when you join the firefighters in their work routine; from getting a call at their base and the sirens going off, to going to the problem area, to working in the middle of burning forests, to seeing a burned down land. In *Melting Ice*, temporal immersion occurs mainly when you are transported from Greenland to Florida, and see the effects of rising sea levels for inhabited areas of the world. This is a warning that what currently may seem to be far away, can be a lot closer and more local in the future.

Emotional immersion, or the response to characters, is very strong in *Fire* in the conversation with the man, who stands in between where his old barn and his wife's old home used to be. Him telling the story, whilst keeping eye contact with you, creates an

emotional response within the viewer. The same thing happens when the firefighters talk about the dangers of their work, but how they are still ready to risk it all to save the Earth. *Melting Ice* allows for a strong emotional immersion with the characters of those who are introduced to you by Al Gore, namely those who will have to experience the worst of climate change: the next generation. Through the VR experience you can start to imagine what future awaits them if no action is taken.

Though the episodes of *This is Climate Change* are very intense and immersive experiences, the directors claim this can be further increased with the use of haptics (BUILD Series). Research by Jones & Dawkins (2018a) further acknowledges this by showing that sensory stimuli, such as scent, temperature and 3D audio can be added to 'regular VR experiences' to enhance feelings of immersion and embodiment in a 360-degree film atmosphere. Every VR experience can benefit from the use of haptics, but does not have to rely on it in order to reach immersion.

<u>Influence and success</u>

There are numerous films and documentaries about climate change and there are still many people who do not believe in it, but maybe a medium this immersive and emotional has the power to change people's minds. Danfung Dennis and Eric Strauss cleverly used the characteristics of VR in their advantage. Not only by using presence, immersion and great (and sometimes dangerous) camera placements to create interesting and innovative perspectives, but also by using this to confront the viewer with important global issues and encourage them to act. In an interview, Danfung Dennis discussed how VR differs from traditional film and what this can mean for the future of film, and possibly even the world:

> *I think 'seeing' is sort of what you get from a traditional documentary. What's different about VR is that you're experiencing it.* […] *You're in these worlds, you're in these environments. And you feel it in a very different way. Your body reacts to it as if you're actually there. And so it can leave a really indelible mark on your memory and psyche of… 'I remember being here,' instead of just, 'I watched a film'* (Hardawar, 2018).

One episode, let alone the entire series, is difficult as well as powerful to watch. Not only do you see how the Earth is getting increasingly difficult to inhabit, you also start to think about

who is guilty and what should be done. Even though you might currently be far away from these places, the future will look very different. You do not only feel empathy for the people impacted, but also for nature itself and what we have done to it.

Empathy

This is Climate Change is different from both *Clouds over Sidra* and *Autism TMI* in the sense that there is no main character to empathise with, but rather the consequences of our own actions. One could argue that the main character is the climate, or nature, itself, or the billions of people who are or will be affected by it. Because of this, and the huge entity of the climate itself, it is difficult to say how this experience invites empathy. You cannot simulate the Earth's situated psychological states, so in that sense Coplan's definition would not be fitting for this experience. However, you can feel empathy for the man with the old barn that got destroyed by the fire, the firefighters who risk their lives, the people who have lost their houses to the sea in Florida, or anyone affected by climate change, through watching this documentary, or even humanity and all living creatures at large.

Education plays an especially important role in this, as many are not aware of, or (purposely) ignoring climate change, its effects and what the future can look like if we do not take preventative measures. Many do not know what climate change looks like, and see it as something that is 'far away' in both time and space, for which strong visual experiences like this can help to increase awareness.

Because climate change is less concrete than the refugee crisis or autism, it is unsure if education itself is sufficient to prevent the downfall of our planet. Truth is, most of us are climate change deniers in one way or another, as even out of the people who are educated on climate change and how their actions can impact the environment, there are only very few people who have fully acted on the science behind climate change (Walker & Leviston, 2019).

You will always have people who do not believe in climate change and those who deny it for personal reasons, in favour of their own wealth and businesses. However, by confronting people with their impact on the climate in a very real and visual way, they might start a personal change and reconsider their actions. This can be taken even further by creating VR experiences that show a future if we do not act, as many are currently doing, to confront individuals with the need for change.

Experiment and interview

As an addition to the analysis of three case studies, one of the case studies, *Clouds over Sidra*, was viewed by nine individuals. Each of these individuals was interviewed about their experience and their thoughts about *Clouds over Sidra* (Appendixes 3 to 10). This section focuses on the question: *'how do individuals experience Clouds over Sidra?'* and analyses the participants' thoughts about VR's role as the ultimate empathy, specifically for *Clouds over Sidra*.

During the experience, it was very clear that each participant had their own way of experiencing VR. Whereas some would sit very still and would not look around much, others would almost constantly be moving around to experience the full 360-degree environment. Some would quietly watch and others would comment on everything they saw and express their opinions on the situations with clear facial emotional expressions. Similar differences among participants can be seen in the results of the interviews.

The experience

All participants enjoyed the experience of *Clouds over Sidra*, though some more than others. Eight out of nine participants stated that they felt the experience was better than if they would have watched it in 2D on TV.

> *I think the experience is better with these VR goggles than if you were to see it on a screen. It is more intense, and you feel like you are actually there, instead of just looking at a screen, which, in my opinion, really improves the experience* (Appendix 7, Interview 5, 19th of January, 2020).

The one participant who disagreed stated that it does not make much of an impression anymore, because she has already seen many other 360-degree videos, thereby decreasing the impact of *Clouds over Sidra*.

Many of the participants recognised the advantages of VR, stating it made them feel as though they were actually in the virtual environment, that it gave them a more personal and realistic insight into another world, that it made the story more intense and that it made them feel more involved. It can take you into a different world:

> *I think it gives people an opportunity to get even more experience with certain activities at a distance, it can give them virtual mobility* (Appendix 4, Interview 2, 18th of January, 2020).

Because they could look anywhere they wanted, they felt as if they were more than just a spectator:

> *You just want to see reality and not have the cameraman decide for you what you are going to see, that makes it too fixed* [...]*, so in that regard, 360-degree can be a solution, because you can see everything* (Appendix 8, Interview 6, 19th of January, 2020)*.*

Clouds over Sidra is a very descriptive video and therefore has a lower temporal immersion. It does not necessarily focus on the negative sides and situations that many refugees face, but rather on the daily lives of Sidra and others in the refugee camp, which makes it more relatable and personalised. However, some participants stated that by showing more of the negative sides of the camp, the experience would become more intense, which might collect more donations.

Empathy

Almost all of the participants clearly stated that they did feel empathy for the people in the video. Four out of the nine participants stated that they felt a stronger sense of empathy than they would feel if they watched a similar experience in 2D. Participants believed that this was mainly achieved through the key elements and advantages of VR, such as bringing the story closer than if you were to watch the same experience in 2D. Besides this, participants also recognised that one of the goals was to give refugees a sense of humanity, as they are usually seen as a group with bad connotations, and that this helped in the generation of empathy, because it made the story more personal and relatable and therefore easier to empathise with for most participants.

Almost all participants did see potential in VR to be an ultimate empathy machine, but stated that it was very dependent on the story and the audience's relation to the topic, which will be further elaborated on below.

Influence on (political) opinion

The thoughts about VR's influence on (political) opinion were widely varied among participants. Four out of nine participants did not believe that VR, specifically *Clouds over Sidra*, has the power to change someone's political opinion on refugees. One participant stated that a political opinion is *"already strongly shaped by how you are raised, where you stand in life and how you refer to your own culture"* and that it would be too difficult to change that with one 360-degree video (Appendix 3, Interview 1, 17th of January, 2020). The other five participants did believe that *Clouds over Sidra* can change someone's political opinion on refugees, because it can confront people with the reality of refugee camps and the humanity of refugees. Thereby it can change their perspective and help them nuance. However, some do believe that the experience would need to be more intense in order to have more of an impact, as it would then be more likely to simultaneously have an impact on someone's opinion or perspective.

Key elements

To find out more about the relevance of certain key elements such as perspective and interactivity, participants were asked if they saw value in having first perspective in the video and in adding more interactivity. Two participants did not see an added value in having a first perspective and two other participants were not sure. Five other participants saw an added value in having a first perspective, stating that it makes you even less of a spectator or a 'fly on the wall' and because it further personalises the experience. One of the participants even suggested an added value in being able to choose the perspective yourself, so you can experience the camp from different people's perspective (Appendix 4, Interview 2, 18th of January, 2020).

Four of the participants saw an added value in adding interactivity, as increases personalisation and lessen limitations. However, one of these participants did state that it might take away from the realism of the video by making it feel more like a videogame (Appendix 10, Interview 8, 20th of January, 2020).

Two of the participants did not see the added value in adding more interactivity in 360-degree film and three others did not really have an opinion.

Critics and critique

Though participants did see many advantages in VR, some did have certain points of improvement or critique. One of the participants agreed with Bollmer's (2017) statement that the experience does not generate empathy, because you do not have the same experiences or feelings as Sidra and can therefore not empathise with her. Other participants did not go as far, but five of the participants agreed that it the experience was too hasty to make a lasting impact. One of the participants stated:

> *In that moment you see it* [the video] *and you think 'oh yeah, I'll take this into account', but then you fall back into your old habits* (Appendix 10, Interview 8, 20th of January, 2020).

Another participant agreed:

> *Yeah, and uhm, with empathy you can have that, that one moment you look at it* [the video]*, and* [...] *the next moment it evaporates, because you continue what you were doing* [before the video] (Appendix 6, Interview 4, 19th of January, 2020).

However, not everyone shared this opinion:

> *Well, I don't really see the problem* [...] *in showing a snapshot. What I would like,* [...]*, it would be better to not just see one moment, but to have a broader view, for example by being able to see the full day, or by viewing it live, that would be even better* (Appendix 4, Interview 2, 18th of January, 2020).

Level of impact

An interesting point that got mentioned in numerous interviews is the importance of the impact of the video. As mentioned above, *Clouds over Sidra* is a relatively calm video if you compare it to other images you see of the refugee crisis. Numerous participants saw a value in this, as it made the video more relatable:

> *If you see someone on the street here that you might think or know the be a refugee, then it is often, well, it is not weird, or different or anything, but you do think like 'oh, it is a refugee'. And now* [after watching the video] *you have the thought that they are also just normal people and that that girl* [Sidra] *is also just thinking about 'oh*

would my kite still be stuck in the tree', you know (Appendix 9, Interview 7, 19th of January, 2020).

However, other participants thought that making the video more impactful, by upping temporal immersion and for example by adding more of the negative and intense side of the story, would be more effective in generating both awareness and empathy. Especially for categories like younger generations and those who are widely familiar with VR, this might add to the experience of 360-degree videos such as *Clouds over Sidra*. One of the participants, an 18-year-old woman with much experience with VR, stated the following:

> *I think that in order to really reach such a target group* [youth]*, you sometimes have to show more intense things to really keep their attention* (Appendix 5, Interview 3, 18th of January, 2020).

That same participant gave the example the experience she had viewing a 360-degree film of a man with schizophrenia that had a big impact on her:

> *And then you hear* [the man with schizophrenia telling himself] *'don't get the mail, don't get the mail, don't get the mail', and then he went to go and get the mail and you felt like you were going to die. So then you feel a strong sense of empathy, because it is* [...] *intense, and because we rarely ever see a correct representation of it* [schizophrenia] (Appendix 5, Interview 3, 18th of January, 2020).

Even one of the older participants, a man in his 80s, agreed that VR becomes a habit, it will have less of an impact.

The future of VR

The thoughts of the future of VR for consumer usage are widely different among participants. Four out of nine participants do not see VR being used in the future for consumer usage, except maybe for gaming or for those who are strongly into gadgets. The headset was often described as uncomfortable, too expensive and not accessible or usable for everyone.

Four other participants do see a future for VR for consumer usage. Two of them even stated that everyone would have a VRHMD in their home in the near future. One other participant was not sure, but did recognise that it needs to become more comfortable to use.

What all participants did agree on is the value of VR for science, education and training in different fields besides entertainment, such as the health care industry and the military.

Though it would first need some improvements in accessibility and usage, various participants do see potentialities in 360-degree film and do see ways in which it can have a stronger impact on viewers. Participants felt that this can be achieved by showing more recent situations, by visualising stories or information that have not often been visually represented before in a similar way, such as climate change, and by showing something that the target group of viewers is familiar with, but not yet fully aware of or has difficulty imagining.

> *I think that the lesser you have been in contact with something before you view the*
> *video, the more impact it makes* (Appendix 5, Interview 3, 18th of January, 2020).

Interestingly, four of the participants provided the same idea of what an example of this could be: a video about the effects of climate change on the place of residence of the target group. A more specific example would be a 360-degree film for residents of The Netherlands, about how The Netherlands will look in a certain amount of years if we do not act on the facts about climate change. This fits Shin's (2017) research outcomes that the more you feel connected to a story, the easier it is to imagine yourself in that situation and to feel empathy.

Participants

One might expect there to be strong differences in results between the different age categories and gender, thinking that for example the older generations might be more impacted by VR as it is newer and more impressive to them. Interestingly, the differences in opinion among participants of this research were mainly related to factors such as their previous experiences with VR and the topic as well as their personality, rather than their age or gender. Participants who did not see themselves as very empathic were less likely to have a strong empathic response to and general enthusiasm about *Clouds over Sidra* and VR. Those who have had multiple previous experiences and have already been exposed to similar (and especially more intense) environments seem to be less likely to have a strong (empathic) response to *Clouds over Sidra*.

Conclusion and discussion

Conclusion

In this section the results of the literature review, analysis and experiment and interview are used to answer the research question: *'how does virtual reality encourage immersion in the other's experience and thereby invite for the viewer's feelings of empathy?'*

Throughout this research, it has become clear that opinions on whether VR can be described as *"the ultimate empathy machine"* widely vary. The thought behind the claim that VR is the ultimate empathy machine is clear: by going beyond the limits of the 2D film frame and giving viewers a different sense of perspective and interactivity, VR can immerse viewers into previously inaccessible environments, whether that is a refugee camp, remote places or bodily experiences of a person living with autism. By letting viewers almost literally walk in someone else's shoes, VR can give viewers a better understanding of the other's situation. Besides this, 360-degree film often attempts to invite empathic response as seen in the use of certain film strategies, such as by adding first perspective and by directly addressing the viewer in different ways. These factors combined lay the groundwork for the ultimate empathy machine.

However, numerous critics disagree, stating that it is not empathy that is generated, but rather what Bollmer (2017) terms as radical compassion, because the experience is too hasty and undetailed for it to generate empathy. Another critic, Hassan (2019), stated that VR can never be the ultimate empathy machine, as environments could never correctly be virtually replicated and because the environment cannot respond to the viewer in any way, making VR more of a digital spectacle rather than an empathy machine.

Most participants of the interview agreed that this critique was inappropriate, as empathy is not about fully understanding someone, but rather about, as Coplan (2011) describes it, simulating another's situated psychological states while maintaining emotional regulation. One does not need to be in a perfectly replicated virtual environment or completely understand another to feel empathy. Though participants did strongly vary in opinion about the different aspects of *Clouds over Sidra* and VR, all participants did see some field where VR and its valuable key elements could be put to use. What has become clear is that VR can definitely generate feelings of empathy, but that this process strongly differs per person, because of personality traits and personal preferences in factors such as the topic of the

story, the relatability of the experience (specifically of the environment and characters), the intensity of the story, the viewer's perspective in the experience and how exactly the viewer is immersed (e.g. emotional immersion). A correct combination of these factors for the viewer can make VR to be an empathy machine, maybe even the ultimate empathy machine.

Limitations and further research

In the span of this research, there were some limitations that should be taken into account. Firstly, the quality of the VRHMD used for the experiment was relatively low. This means that the experience of *Clouds over Sidra* could have possibly been more immersive or realistic for participants if another VRHMD was used, which again could have influenced the results of the interviews. Secondly, the statement that VR is the ultimate empathy machine is currently only five years old, meaning there is relatively little research on the matter, and because researchers have disagreements on the definition of empathy, this research is disjointed in focus.

Besides this, the research would have benefitted from a multitude of participants that would be divided in three groups, so each group could watch and be interviewed about one of the case studies for comparison. That would however make this specific research too extensive.

Future research could apply a mixed method of qualitative and quantitative methods to research the effect of VR on feelings of empathy, by for example also measuring biometric data of participants when showing a 360-degree film. In this way, one can measure physical response to VR and possibly even empathy, thereby adding to the qualitative data. It would also be interesting and valuable to focus on the different fields in which VR can be used and how the relation between VR and empathy would be propitious, so that VR can be integrated into these fields as a valuable asset.

Besides that, many of the participants in this research stated that they would be likely to feel the most empathy for a more recent, impactful 360-degree film about a topic that they are familiar with, but that they had not come in contact with much before. This can be tested by showing a bigger group of participants a 360-degree film that fits these standards. It would be interesting to compare the effects of different 360-degree films, or to compare 360-degree film to other media, such as text and 2D visuals, to measure differences in empathy.

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