



Filmmakers' interpretation of Environmental Science Fiction

– An exploration of how movies can be used for change making

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Filmmakers' interpretation of Environmental Science fiction – An exploration of how movies can be used for change making

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Abstract

We are now living within the reality of the worst environmental crisis mankind has ever seen and some modes within environmental communication are struggling to help us create change. In recent decade, there has been a growing interest in using storytelling for sustainable change. Science fiction is seen as a genre of great possibility, and filmmakers and writers within this field have long known of the possibilities provided within this medium because of its ability to travel in time and space. Some scholars and writers argue that storytelling is a powerful way of communicating but the stories are not living up to its promise as they keep telling the same old stories. In this thesis I turn to the filmmakers themselves to ask them about the possibilities and limitations of science fiction storytelling that can lead to behavioral changes and attitudes about the environmental future by researching the following questions:

- How do filmmakers understand the influence of (their) Sci-fi movies on the audience's expectations of the future?
- What stories about our socio environmental future do filmmakers see being told, along with the limitations or obstacles - and why?

To better understand why certain stories are told and others not, the results of this thesis are based on a qualitative research approach by conducted interviews with six filmmakers working within the field of environmental and/or science fiction movies. The thesis departs from Artur Banduras 'Social Cognitive theory of Mass Communication, to investigate filmmakers view on the possibilities and limitations of Sci-fi storytelling for our environmental future. Doing so, contributes to the understanding of how science fiction movies can be used for change making.

The results indicate that the filmmakers see a need for new stories and that the filmmakers are interested in exploring new ways of telling them. However, when wanting to do so they struggle with norms, dramaturgical obstacles, prejudices and funding which often leads into either compromising their story and telling it with limitations or simply not telling it at all. In conclusion, one can say that if cinematic storytelling is to be used for change making there are some things that needs to be considered. It is important to understand what it means to tell certain stories and how they can affect the audience as well as understanding what discourse lies behind the stories – why they are portrayed in certain ways. This thesis presents the insights of the filmmakers interviewed, which is a start of understanding the context of storytelling as a way of environmental communication to enable more successful communication for environmental change.

Keywords: environmental communication, science fiction, cinematic storytelling, storytelling, futuristic science fiction, environmental science fiction, social cognitive theory of mass communication, Albert Bandura

Prologue

As students within Environmental communication we learn a great deal about the difficulty of communicating wicked social issues such as climate change and the future that stands before us. In our first course of the program we had an assignment where we were divided into groups and were asked to make a short film within the frames of a given genre. At the end of that week we had a short film festival with a panel who commented and discussed the movies we made. At that point one of the members commented on the fact that all movies made were very dark and dystopic, it seemed like we, the filmmakers had lost all hope. It was pointed out that this movie festival was the darkest one so far which made me think: Why did we all choose to tell this kind of story? Are we influenced by the representation of movies regarding this topic that was already made? Or is it in fact a result of how we look at our future? If this is a mirror of where we think we are heading and we, the future communicators of environmental communication have already lost hope, we have a problem.

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Abbreviations

To make it easier for the reader, you can make a list with common abbreviations in alphabetical order. Here you have a table you can use to make your list. See example below:

Cli-Fi	Climate fiction
EC	Environmental communication
PreTSS	Pre-traumatic Stress Syndrome
Sci-fi	Science fiction
SCtMC	Social Cognitive theory of Mass Communication

1. Introduction

“We are in trouble just now because we don’t have a good story. We are between stories. The old story, the account of how the world came to be and how we fit into it, is no longer effective. Yet we have not learned the new story.”

(Berry in Stibbe, 2015)

“Science fiction has always asked the great and profound questions: What is it to be human? What is our place in the grand scheme of things? Are we alone in that vastness or part of a great community? What does it all mean? What will happen next? Are we doomed, or destined for greatness? It’s a genre that is not afraid of the deepest philosophical abyss.”

(Cameron in Frakes & Peck, 2018).

1.1. The problem formulation

The two quotes used above lay out the dilemma that forms the background of this thesis. The first quote is from Wendell Berry, who is a novelist and environmental activist. Berry states that our stories, guiding our action, are not effective for meeting the current (socio-ecological) trouble. The second quote is from James Cameron, who is a science fiction (Sci-fi) director and screenwriter. He situates Sci-fi as a genre that poses existential questions and as such provides opportunity to tell stories that other genres cannot. Bringing these two quotes together, Sci-fi appears to behold the opportunities needed for telling good stories. This thesis is aiming to investigate filmmakers view on the possibilities and limitations of Sci-fi storytelling for our environmental future. Because of that I will work on the edge of both art and scholars, both equally important for understanding this theme.

Previous research focus on how environmental storytelling and dystopia affects people and societies as well as how it can be used within the environmental communication field. This thesis contributes to that research (see e.g. Bulfin, 2017; Sakellari, 2015 & Weik von Mossner, 2012) by turning directly to the filmmakers, hence getting the perspective of creators of such stories in order to understand why they choose to tell them.

Stories are important for our relationship with the environment and Berry (in Stibbe, 2015) argues that it is through language stories take form. Stibbe (2015), a

professor in Ecological Linguistics, suggest that all things happening with our planet and ecosystems today are happening because of the language used before, and how that language is what we need to change when the systems we live by no longer seems to work. He further suggests certain stories to be something he calls the 'stories we live by' and explain them as stories embedded in the minds of many people sharing the same culture. These are stories that surround us every day, the suggestions that underlies messages and the different ways of interpreting them depending on people's individual understanding. The 'stories we live by' exist deeply in the mind of individuals and appear indirectly and are understood because of a pre-understanding within e.g. different cultures and societal groups of people.

Where some modes within environmental communication (EC) might struggle to reach out with touching stories, we see that Cameron suggest above, that Sci-fi film is a genre where all stories are possible. Cinematic storytelling offers an opportunity to connect the story in many ways at the same time and is argued to help improve social interaction, increase the willingness to help and understand each other as well as across ethnical groups (Kubrak, 2020). This can be further by choosing a specific genre, for example **fantasy**, **Sci-fi** and **climate fiction** (Cli-fi) genres have the potential to portray real stories but set in very different setting, e.g. another time or place.

Returning to the quotes by Cameron and Berry above I wonder if Sci-fi indeed helps and can help to convey the urgency of societal transformation for the environment. Sci-fi storytelling is said to provide the opportunity of telling brave and complex stories, thus the need for understanding if the right stories for our environmental future are being told.

Research aim and questions

In this project I **aim** to investigate filmmakers view on the possibilities and limitations of Sci-fi storytelling for our environmental future. This aim can be fulfilled in different ways and in this thesis, I focus on filmmakers and their understanding and experience of environmental storytelling within Sci-fi. I focus on filmmakers because to this end, an interview study with filmmakers allows for a better insight in their storytelling practice where they are allowed to explain and reflect upon the reasons why stories about our environmental future are shaped in a certain way. The following **research questions** are formed to contribute to the aim:

- How do filmmakers understand the influence of (their) Sci-fi movies on the audience's expectations of the future?
- What stories about our socio environmental future do filmmakers see being told, along with the limitations or obstacles - and why?

1.2. Outline of the study

In this last part of the introduction I want to guide you through the rest of the thesis. In chapter two, the background, I will present what the academic community already knows about this theme. Chapter three presents of the theoretical approach. For this thesis I depart from Artur Banduras '**Social Cognitive theory for Mass Communication**' (SCtMC). In chapter four, I will present the methodology and explain and how interviews have contributed to the understanding of the problem. The interviews have been the most important resource for this thesis because of the experiences and understandings shared by the filmmakers. In chapter five, you will find the result and analysis collected from the respondents and connected to previous research. Chapter six and seven consists of a discussion and conclusion.

2. Background

2.1. The importance of stories

“Better storytelling can overcome our deepest barriers, particularly the barriers of denial and identity.” (Stoknes, 2015 p. 149)

Stories are argued to influence our societies and according to Stibbe (2015), ‘the stories we live by’ can easily be overlooked by people living within these stories because they do not realize that they live according to certain assumptions. To overcome this, there is often need for someone to expose and critically analyze them to stop from potential harm, since they influence our actions. He uses the example of how, when nature is seen as a resource, we are more likely to exploit it and while focusing on economic growth we might overlook the health of our ecosystems, hence the importance of surrounding us with the right stories. Furthermore, he suggests that shedding light on these ‘stories we live by’ is important because it gives us the opportunity to reveal however the stories are working or if we are in need of new stories.

Looking towards Sci-fi movies, we have learned about the almost unlimited opportunity of portraying wicked problems such as climate change and other socially and culturally complex problems that seems difficult to solve. Can this genre be the place where new, better stories come from? However, Ghosh (2016) claims in his non-fiction book, that Cli-fi, a sub-genre of Sci-fi, is not telling the right stories, hence not living up to its said potential. Cli-fi, is often limited to disaster stories set in the future and that the Anthropocene, the time period where human activity as affected our planet and environment, that the writers are trying to portray consists of much more, most importantly the recent past and the present. He suggests that the Anthropocene is not an imagined other world but instead closely connected since it is not located in another time or dimension, thus creating an uncanny feeling about these stories in connection to the transitions we are living through today. He believes that this is one of the reasons why global warming seems a complex theme to tell stories about. Furthermore, he suggests that most stories that occur in this type of publications are non-fiction. He means that when a book deals with climate change it is almost by definition categorized within the Sci-fi genre and the urgency of the topic is not at all taken into the account when judging its seriousness. Literature and many other branches of culture has been dealing with wicked problems such as war and other crises many times before throughout history so one can wonder why climate change falls out of that box.

Ghosh (2016) further argues that there is a friction between Sci-fi and mainstream literature which started when Mary Shelley wrote *Frankenstein* (1818). It would become the first great novel of Sci-fi and at the time there was no indication that this novel would not be a part of mainstream media. However, it later turned out to be separated as Sci-fi. At the same time Lord Byron wrote a poem called *Darkness* (1816);

The world was void,
The populous and the powerful – was a lump
Seasonless, herbless, treeless, manless, lifeless –
A lump of death – a chaos of hard clay.
The rivers, lakes, and ocean all stood still,
And nothing stirred within their silent depths.
(Byron in Ghosh, 2016)

The same story that Byron told is told in almost every post-apocalyptic Sci-fi movie made in recent decades. This indicates that storytellers keep telling the same story over time and further emphasizes how Sci-fi might not live up its imaginary potential. Furthermore, Ghosh's description of Climate Change literature can be translated into Sci-fi movies where the same friction between Sci-fi and other more 'serious' genres such as drama exists. The similarity seen over time within apocalyptic Sci-fi stories make me wonder how much of the future we see before us today, is influenced by stories told in the past. Hence, being a 'story we live by'. It raises a question posed by both Ghosh (2016) and me of however Sci-fi is better suited for telling stories about the Anthropocene than other genres. If they are, it might be wise to ask if we are using them to its full extent. Ghosh (2016) further claims that Cli-fi is mostly stories about a disastrous future but excludes other important parts of the Anthropocene such as the recent past and the present.

2.1.1. Storytelling and sustainability research

In recent decades, researchers working in sustainability have increasingly put forward storytelling as an important tool or obstacle for change. Stenmark (2015) focuses on the social impact of scientific data and argues that scientific discourses alone cannot help understanding the meaning of scientific data, neither can it mobilize us to action. Instead she argues, that to deal with wicked problems and mobilize towards them, we are in need of storytelling and those who insist that facts are the solution are heading in the wrong direction. She claims that stories are the only thing complex enough to address the multiple dimensions of the complexity these problems entail, something that is needed for solving them. Furthermore, since stories are ambiguous and open-ended, there is always more to a story where new perspectives can be identified or new stories found, hence helping us deal with our own ambiguities. Stories help us consider alternatives and she argue that while reading about fictional characters, you do not have to defend your own perspective but instead focus on understanding others without undermining your own, an opportunity that non-fiction cannot provide.

Similarly, Stoknes (2015), who is a psychologist with a PhD in economics as well as a writer working with understanding green growth, points out that every

fact scientists are presenting tells a story. He further suggests that we are in need of a variety of stories that resonates with and creates engagement across different groups of people. However, he claims that there is one story that has become universal and has been used without reflecting on the impact considered in regard to climate communication. It is the story of the apocalypse which evokes fear, guilt and helplessness among the receivers sparking hope. He argues that there are so many other stories that we can tell such as stories about scientific breakthroughs, cities turning into green hot spots and damaged land turned back to forests and wetlands. He posits that we are in need of these stories to make sense of the transition towards a more sustainable future. Therefore, he sees the need of integrating science and storytelling so that the information can have more impact on people's behavior. Henceforth, he proposes that stories emphasizing how we need to change our lifestyle and identity quickly gets refused and what we need are new stories. Presenting a story differently provides for new ways of interpreting our reality and the apocalypse story is doing the opposite.

Indeed, researchers (e.g. Sakellari, 2015) have shown that the fear and catastrophe framing of climate change movies is unable to inspire change and engagement towards climate crisis. Furthermore, it can rather lead to apathy toward the future consequences our planet is facing due to climate change. She suggests that people who are already concerned about our future are expecting the consequences to be dramatic. In line with Sci-fi movies; viewers of *The Day after Tomorrow* (2004) find that despite the exaggeration of the story, expect such a scenario for our future (Sakellari, 2015). Therefore, she proposes to use emotional and moral framing climate change storylines in climate change communication, for empowering people to address environmental issues, such as climate change.

Another researcher, Bulfin (2017) has through her work showed how Sci-fi movies, can work as a guiding force when communicating climate change and how storytelling and narratives are needed for effectively communicating environmental issues. She further emphasizes the clear evidence of how popular culture can help shape public opinion and the possibility of reaching large audiences with fictional popular culture, something that non-popular science (e.g. documentaries, articles and news) have a hard time doing.

Weik von Mossner (2012) follows up and claims that 'fiction of climate change' and popular movies in particular, with its imaginary narratives are effective while engaging with emotions. Environmental film critics have asked themselves if a fictional film within the blockbuster category is fit to contribute to the building of a sustainable relationship between human and nature (Weik von Mossner, 2012). Looking at Bulfin (2017) it seems they are:

"The Day after Tomorrow provoked five independent, international reception studies into its potential effect upon its audience. All of these concluded that the film was to some extent effective in raising public awareness of and changing public attitudes to climate change, at least in the short term and this despite the scathing response of scientists to its preposterous scenario of rapid climate change." (Bulfin, 2017 p.143)

One of the first climate change disaster movies that made a huge impact was *Day after Tomorrow* (2004), a movie that opened up the stage for many more climate disaster movies to come. Many of these movies have the same dramaturgical build

up where the planet is destroyed and it needs to be fixed, whether the problem is food or water shortage, zombies or AI.

Sci-fi movies have been telling stories about the future for a long time and has enabled us to imagine our potential futures more than any other cinematic genre, maybe even more than science has. Some might argue that Sci-fi has helped scientists imagine possible outcomes to research. To illustrate that, we are now looking towards Mars and the possibility of one day inhabiting it which has been portrayed in e.g. *Flight to Mars* (1951) and more recently in *The Martian* (2015). The special effects team of *Interstellar* (2014) teamed up with scientist to portray black holes as it would be seen from somebody nearby (James et al, 2015). Another example is that after creating the Power Loader used for battling the Alien queen in *Aliens* (1986), James Cameron got a call from a major hydraulics company interested in manufacturing a commercial version of the Power Loader unaware of it being just a special effect (Frakes and Peck, 2018). These are examples of the impact Sci-fi imagination and storytelling can have.

Stibbe (2015) has developed a method to think through the stories and their framing on a detailed level. He highlights the power of metaphors. A metaphor is used by describing a situation and identifying it through something else, making something unfamiliar relatable. Furthermore, he claims that metaphors can create understanding by being framed in other familiar areas known from our everyday life. However, the wrong choosing of metaphors can lead to critical consequences and he problematizes many of the metaphors used for describing nature (e.g. as a *machine*, *spaceship*, *library* and a *storehouse*) because of the different terms the metaphors lay out for successful communication. He claims that calling nature 'a storehouse' creates a clear separation between humanity and nature, where nature exists for human exploitation. This narrative is closely related to dystopic Sci-fi stories. However, describing nature as 'a web' as well as 'a community' suggests that humans are a part of a wider ecological system, hence are responsible for the impact on the same system.

In the book *Climate Trauma: Foreseeing the future in dystopian film and fiction* (2016), E. Ann Kaplan, a professor of English and cultural analysis and theory, situates the condition of 'Pretraumatic Stress Syndrome' (PreTSS). In opposite of the more well-known 'Post-Traumatic Stress Syndrome', PreTSS portrays the evidenced severe anxiety that comes about because of the futurist dystopian worlds presented within movies. She argues that trauma can derive from possible future catastrophic events. This means that Sci-fi movies portraying dystopic futures can spread anxiety and trauma within the society without being true. She further expresses her concern about how depression and denial can be the result of extreme anxiety. She presents the idea of the apocalypse and Armageddon as something that can be traced back to biblical history, hence what Stibbe (2015) might call a story we live by. The scale and level of concern is played out in another matter, where media and the academy provide us with a regular reminder of the urgency of the climate crisis and how anxious and scared we should be.

When trying to achieve environmental change through stories, Grusin (in Kaplan, 2016) argues that media, as a result of the events of 9/11, works to prevail a low level of anxiety to keep people from experiencing that amount of shock if ever a similar traumatic experience would occur. However, Kaplan argues that this type of low anxiety, for some, leads to PreTSS. This indicates that if Sci-fi movies

are portraying stories that create PreTSS, it might lead to people becoming unable to act upon the changes society needs to make, in order to create change. Furthermore, she suggests that the awareness of a traumatic past that is shaping these dystopian stories is lacking the consideration of how these futuristic imaginaries shape the construction of the present and the past. Margaret Atwood (in Kaplan, 2016) invented the term 'ustopia' to describe what lingers in-between the utopia and the dystopia, meaning that within every utopia there is a hidden dystopia as well as a hidden utopia in every dystopia.

In this section I have meant to put forward the importance of storytelling and have presented a variety of scholars and their ideas about storytelling. The ideas have influenced me to take an interest in the importance of stories while trying to create change and how they are portrayed can either benefit or overturn the cause. As seen in this section, storytelling is complex, and I will bring with me this knowledge into the discussion.

3. Theory

3.1. Albert Bandura and Social Cognitive Theory of Mass Communication

The theoretical point of departure for this thesis is the Social Cognitive Theory of Mass Communication (SCTMC) which derives from the sociopsychological tradition. The theory I will use is based on Albert Bandura's article *Social Cognitive Theory of Mass Communication* from 2001. The theory provides for an opportunity to understand filmmakers' view on environmental cinematic storytelling. It also allows for comparing it to the mechanisms of symbolized modeling and observational learning that helps us understand, evaluate, adapt and possibly change our behavior. Further, it will help me understand why the respondents tell me the things they do.

However, the sociopsychological field is known to face some challenges such as limitations within its predictive power because of how effects are based on certain situations. Furthermore, it reflects ideologies of individualism, because the communication is seen as interaction between individuals as well as a process of symbolic interaction that is culture bound (Craig & Muller, 2007). This means that the result of the study can only be understood from the point of view of the interviewees and not as an absolute truth. Instead the result is to be understood as an indication towards understanding what the filmmakers are saying and why they say certain things.

Bandura (2001) claims that mass media play an influential role while trying to understand the psychosocial mechanisms in society. Further, it is helpful to understand how symbolic communication is embedded in social systems through humans' capability to adapt, change and work with self-development. Bandura further explains how this psychosocial functioning is dependent by a so-called triadic reciprocal causation, with which he means that personal determinants (e.g. personality and cognitive aspects), behavioral determinants (e.g. how we act) and environmental determinants (e.g. situational things that surround us) interact and influence each other as shown in figure 1. This could for example mean that how we act in a certain situation is dependent on our own character, who is with us and where we are at the moment, and how we usually behave, motivates the action we decide to take.

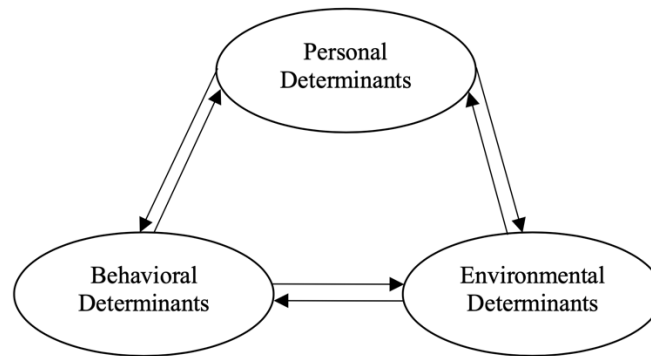


Figure one. Inspired by Albert Banduras triadic reciprocal causation

Bandura (2001) further explain how humans form an understanding by the use of symbols and symbolism from previously learned information about our surroundings and experiences. Symbolism also helps by creating environmental events to help us give meaning, form and continuity to our experiences. Bandura claims that people have capabilities that are all rooted in the capacity for symbolization and the social cognitive theory means that it functions and exerts through mechanisms of social factors where personal agency and social structure set the rules together for e.g. understanding and affecting social problems such as climate change. The three capabilities are explained as:

Self-regulatory capability

- Motivation by setting personal goals
- Using existing resources and skills to fulfill these goals
- People's moral compass works as standard to guide self-regulation

Self-reflective capability

- Forethoughtful perspective
- Being helpful when choosing direction in life
- Create meaningfulness and coherence
- Enable future motivation and action

Vicarious capability

- Understands learning as observational
- Enables learning from other people's experiences

Within the frames of this theory people are acting as agents of action as well as self-examiners, The capability to reflect upon our thoughts an action means we can not only generate ideas but also act upon them an predict outcomes. However, beliefs created from social environments can be understood differently and the need for social verification can also produce faulty thinking where distorted media

versions of social reality, such as in movies, can foster misconceptions within groups (Hawkins & Pingree, 1982).

Historically, this has been important because of the need for rapid learning, which has enabled our survival in a world where errors might kill us. Much of this social learning is conceived by watching models in our immediate environment, such as those presented in media and movies. However, the symbolic environment of mass media is also providing us with information about our values, our thoughts and our behavior. The technological advances within communication has increased the power of observational learning and the powerful role that symbolic environment plays in our lives today. Symbolic modeling, which is taking place in the symbolic environment of mass media, hence reaching out to massive amounts of people, provides for tremendous reach and psychosocial impact where observational learning can take place in larger groups using the same model for communication. People create images of their reality by using vicarious experiences such as seeing, reading and hearing, thus creating a reality framed by the small sector of physical and social reality that they are a part of (e.g. work environment, travel routes, groups of friends and colleagues, movies and tv-series they watch). Technological advances enable new ideas, values, social practices and behavioral patterns to travel and spread worldwide, hence can help foster a global consciousness of our social reality (Bandura, 2001).

In the context of cinematic storytelling this means that if the goal is to create change, it is important to tell stories that engages people so that they get motivated to actively regulate their behavior and put use to their newly adopted skills. To make the stories understandable filmmakers are in need of leveling the stories with the targeted groups knowledge and understanding of moral dilemmas. By anticipating likely consequences of our actions, we cannot only predict desired outcomes but also avoid the opposite. The self-reflective capability is important when it comes to the choices made while telling stories. Engaging and motivating stories taking place in a distorted reality can affect ideas and beliefs regarding reality we live in, hence creating misunderstandings of what the world really looks like.

3.1.1. Observational Learning

Bandura (2001) claims that to fully understand the effects of mass communication, such as movies, it is important to look into symbolic modeling through observational learning because watching movies is all about learning through observation. Further, there are four subfunctions governing observational learning;

- **Attentional processes** are known by what is selectively observed and the information extracted from the modeled events influenced by our cognitive skills, preconceptions and value preferences as well as attractiveness and functional value of the model we observe.
- **Retention processes** involves the transformation and restructure of information that helps us remember it. We use retention by symbolic transformation to turn the information into memory codes and cognitive rehearsal to remember it, which sometimes mean reconstructing the information.

- **Production processes** are where we translate the symbolic conceptions into a suitable course of action by matching conceptions into construction and execution to create balance between conception and action. This is an adaptive performance which requires constant adjustment to certain situations because of the many variations of skills we can produce to each activity.
- **Motivational processes** are influenced by three major incentive motivators such as direct, vicarious and self-produced motivators. We are known to more willingly change behavior if the outcome is proven rewarding rather than leading to a bad outcome, meaning we look for others similar to ourselves who succeeded, hence motivating us to follow the same course.

Further, we tend to look at how people react to their own behavior, the self-approving and self-censuring reactions. This means that when choosing what activities to pursue, self-satisfying activities add value and self-worth. These processes are all part of cinematic communication, which is a medium that frequently uses symbolism as an important part of storytelling.

When people are socially punished for behavior that they value, conflict arises. Depending on the relativity between self-approval and self-censor the behavior will either be restrained or expressed due to the potential social consequences that might occur. It is common to behave accordingly towards one's own morality, but when being forced to engage and behave against it due to social pressure, they often experience conflicts.

3.1.2. Televised Mass Communication and Social Construction of Reality

Within televised media, such as movies, it is argued that when norms and societal structure, human nature and social relations are presented in a world we relate to, they can appear authentic (Adoni & Mane, 1984 & Gerbner, 1972). The portrayals of e.g. ethnic groups, social and gender roles, minorities and other parts of life can lead to collective illusions of how we see the social reality, because of how stereotypes are portrayed due to symbolic modeling (Buerkel-Rothfuss & Mayes, 1981, Bussey & Bandura, 1999 & McGhee & Frueh, 1980). While exposing ourselves to large amount of television viewing it is proven to shape our beliefs of the reality we live in (Hawkins & Pingree, 1982) and the influence is defined by the content we watch rather than the amount. When people see others react emotionally to certain situations, the vicarious capability helps them develop cognitive self-arousal, hence generating emotional reactions to a models emotional experience (Bandura, 1992 & Wilson & Cantor, 1985). The vicarious influence further teaches how to react emotionally and understand behavioral proclivities, meaning that people learn to fear what they fear, dislike their dislikes and like what they like (Bandura, 1986 & Duncker, 1938). Fears and phobias can be improved by learning how to cope and take control over the fears thanks to coping strategies learned from the modeling influences.

While observing the actions of others, it can inspire performing previous learned behaviors that people have not acted upon before. Further, it can make taking action easier because they do not learn to behave in a new manner, but instead learn that

the behavior is socially acceptable, thus the behavior is ok to perform. Modeling has proven effective when introducing new social practices and behavior patterns because it teaches us about new ways of thinking (Bandura, 2001).

Bandura further explain how media can help when wanting to teach both new forms of behavior as well as creating motivators when trying to accomplish social change, by either implanting ideas directly or through adopters. People who are exposed to these medias become transmitters who can influence others of the new ways they have learned, so that even people who have not been exposed to media can be influenced to adopt the new behavior. When using symbolic modeling the information can be transmitted to large groups of people simultaneously and create transformational change to values, ideas and styles of conduct worldwide.

The mechanisms of mass communication presented in this chapter can benefit the understanding of how cinematic storytelling can be used for change making. If filmmakers are eager to motivate people into adopting new behaviors to e.g. get more aware of environmental problems and other social challenges, it is important to consider how observational learning is understood by the respondents.

4. Methodology

Some communicators of Climate Science have come to an understanding that they have to reach out to the public through new media such as web-based media, films, social media and other digital technologies (Pezzullo & Cox, 2018). To understand how communicators within the environmental field can benefit from movies and tv-series a qualitative research study is required because of how it mirrors experiences from filmmakers in the field. Further, it is appropriate as it explores social phenomena's, such as climate change, in relation to the individual experience of the interviews (Malterud, 2001). Bryman (2016) explains how a qualitative study proposes the opportunity to emphasize a reality based on words and experiences rather than numbers and facts collected by quantitative measurements, to create understanding of the topic.

4.1. Selection

I started my work with an exploration phase to understand the landscape of futuristic environmental Sci-fi. Doing so, I spoke to a lot of friends, colleagues and people identifying with a nerdy interest in Sci-fi. In our discussions we were talking about how stories about the environment and its challenges were told and discussed within Sci-fi movies. While talking, I quickly realized that it was a challenge finding clear examples of Sci-fi movies portraying a positive environmental future. It became clear to me that it is often portrayed in a dystopic way with fear as fuel. This made me interested in how our future is represented within Sci-fi movies and filmmakers view on the possibilities and limitations of Sci-fi storytelling for our environmental future.

Since content analysis can be used for many different types of documents and media (Bryman, 2016), I will focus on finding literature that relates to Sci-fi storytelling, effects of said stories and why stories are important and impactful. This is to help connect the different types of content significant for this research. For this study I made a comprehensive desk-study for research and relevant publications concerning the topic of cinematic storytelling within Sci-fi and environmental issues connected to a futuristic perspective. Doing so I realized that the perspective of the future was broader than just environmental issues and the same patterns could be identified with the portrayal of other wicked problems. Because of that it would be limiting to only look at the sub-genre of climate fiction which led to focusing on Sci-fi.

Last, I conducted in-depth semi-structured interviews with filmmakers who are either writers and/or directors of such movies. The in-depth and semi-structured

interview method provides the prospect of understanding the topic from the interviewees personal experiences and understanding (Craig, Sainsbury & Tong, 2007). Bryman (2016) suggests that when the researcher is more interested in the interviewees view, semi-structured interviews where the interviewee is allowed to depart from the interview guide and bring about their own perspective, the method is useful. Using this method proved useful because it provided for interesting perspectives when the interviewees were given space to explore the questions, which turned out rewarding.

Identifying the interviewees, previous research, other published materials and visual material was an important part to make sure that I, as a researcher, got the best tools for understanding the research problem and topic (Creswell & Creswell, 2018). Furthermore, the selection had to be carefully chosen, to make sure the interviewees were relevant to the purpose of the study and I used criterion selection. This means they had to fit within the frames created in this thesis, to make sure that I found the right interviewees (Bryman, 2016). While contacting potential interviewees I sent out email invites to a big group of filmmakers meeting the criteria's I had, which was filmmakers creating Sci-fi movies with and environmental theme and/or a futuristic perspective. It was hard to engage enough respondents, so I further used my own connections with film colleagues to get in touch with people.

Getting in touch with filmmakers willing to participate in interviews was a tough challenge as many whom I contacted did not answer at all. My initial idea was to interview filmmakers working within feature film in the Sci-fi genre with a futuristic and/or environmental topic, but I later decided on bringing in short films as well, so as to broaden the group of possible interviewees.

The results are based on interviews with six male filmmakers from Sweden, Estonia, France, England and Italy. All respondents have created Sci-fi stories within a feature film format and/or short film format with a focus on social issues such as environmental and cultural challenges, and/or a futuristic theme. One respondent have made feature films, three respondents have made short films and two respondents have made both feature and short films. Five respondents have been working with the environmental futuristic theme and one with focus on other social issues. The reason for only interviewing men is because the genre seems to be dominated by male filmmakers and the few female filmmakers I contacted did not answer my request.

All participants seemed very eager and helpful while talking about this topic, which in my belief shows the importance the topic of this thesis and the need for discussing this.

4.2. Methods

The interviews were conducted by using an interview guide directing the chosen overall topics and questions but with a lot of room left for the interviewee to emphasize their own story and focus on their expertise. While working on the interview guide, I decided to first focus on their background asking them to make a short introduction about themselves and their filmmaking. This was helpful because it worked as an icebreaker as well as giving me an understanding of the

interviewees and their filmmaking as well as a short introduction of who they are. Secondly, I decided on working around three themes connected to my research questions and write some sub-questions underneath in case they needed more guiding in talking about the questions. This made possible for letting them speak more freely and for me to pick up on things said that was interesting but not included in the interview guide (Bryman, 2016). In the end the interviews lasted between 1-1,5 hours, proving the filmmakers had a lot to say about the topic.

All interviews but one took place on an online video call on Zoom, which provided the opportunity of finding the right people to interview and the flexibility of meeting them whenever, even if they only had a short window to spend on the interview. The last respondent asked to answer the questions via email, which was helpful but proved less fruitful due to me not having the opportunity to be a part of the discussion. However, the Zoom interviews made me more flexible, thus not having to travel for the interviews and also opened up for talking to filmmakers from several European countries, which turned out to be rewarding for the study. These opportunities are pointed out in Bryman (2016) and most of my interviews would have been impossible to conduct if not being able to do it online. However, using online video calls might lead to a loss of certain information, e.g. body language and the atmosphere in the room.

Being a filmmaker myself allowed for a good pre-understanding of the topic and made it easy to connect because of how we relate to one another. It was helpful when discussing the topic and further ask relevant questions, in order to better understand what the interviewees meant by their explanations. Further, it made the interviews more laid back because of my understanding for technical terms and things related to filmmaking. However, it was important for me to conduct the interviews from a researchers' point of view, rather than a filmmaker.

4.3. Data analysis

The method for data analysis used was a qualitative content analysis. Coding the interviews dependent on narratives gives not only an opportunity to connect the identified narratives from the interviews to the theory but also to create an understanding because of the research and experiences presented in the background. When an interview had been conducted, I transcribed it directly and as accurately as possible, while I had the interview close to mind. I then read the transcribed interviews several times to make sure I had understood them correctly before I started the process of coding.

Next I identified meaning units, e.g. the words, sentences and paragraphs related by content and context (Graneheim & Lundman, 2004). This means that they were sorted into condensed meaning units and later to codes which allowed for getting a good overview of the themes that seemed important to the respondents. The identified themes will be presented in the results. These steps are important to successfully shorten the important parts of the interview but still staying true to the core (Graneheim & Lundman, 2004).

4.4. Ethical considerations

Every interviewee was informed beforehand regarding the purpose of the research. The integrity of the study is important and Gibbs (2007) suggests that there are five things to consider; informed consent, anonymity, access to sensitive data, transcription of the material, and feedback from the participants. To further honor the research integrity, I sent out information regarding the study, ensuring the anonymity of the study, my expectations of the study and asked them if they needed something to be clarified. This was to make sure the interviewees feel safe in the given setting. At the time of the interview I once again reminded them about the information previously provided, how I would handle the data and made sure they were comfortable in that setting. I also pointed out that they were free to cancel the interview at any moment or refuse to answer certain questions.

4.5. Validity of research

In my research I have worked with validity in the following ways. A first important dimension of validity is researcher reflexivity. I reflected on my own experiences, background and biases in relation to the study, the interviews and interviewees, and returned to these thoughts when I was analyzing the result. Secondly, an important dimension is to link the findings from the interviews to the theory and background. Doing so creates credibility to the final result and conclusion and gives an opportunity for critical reflection between the different material and findings collected (Bryman, 2016). Third, transparency allows the researcher to be as neutral as possible towards the study and making sure own experiences, background and biases are reflected upon and taken into account when analyzing and presenting the result (Graneheim & Lundman 2004).

5. Result and analysis

In this section I will present my findings from the interviews conducted with the six filmmakers and analyze them accordingly to Banduras (2001) Social Cognitive Theory of Mass Communication. The theory will be used throughout the presentation of the findings when relevant. Even though this section provides answers to the research questions I have chosen to structure it according to what seemed important to the respondents. During the interview study I could rather quickly map out a few recurring themes that seemed relevant to the filmmakers. They will be presented within three themes that seemed relevant for everyone:

1. How environmental stories are used within science fiction
2. The (im)possibility to predict an unpredictable future
3. The hindrance of telling the story you want

5.1. How environmental stories are used within science fiction

This first theme relates to one of the first questions posed to the respondents. The question was asking them to identify what kind of stories they see being told within the environmental Sci-fi genre today. In this section you will read about dystopia and environmental communication, the impact of movies and how these stories and narratives can help create distance to problems we are facing today.

5.1.1. Dystopia and Environmental Communication

The respondents claim that there are many stories taking place in a dystopic future after some kind of apocalypse where resources are scarce. They present how dystopic stories are strongly connected to stories about climate change, hence being a key concept in the environmental Sci-fi genre. Further, several respondents claim that the choice of telling these stories is to make an example, warning people and society as a whole about a potential future.

While some mean that telling these stories effectively can lead to us creating a sad and more dangerous future, others argue that humans are inherently hopeful and will not follow the path towards the dark future these movies portray. Further, it is argued by the respondents that even though humankind might face some of these problems they will not play out the same way as the stories that have been told.

Further, these stories can also be an opportunity to inspire people to take action, hence providing a spark of hope. It is suggested that these movies can work as preparation for the future so that when similar things happen, we have seen them before and therefore will not go into absolute shock when they occur.

The want and need for using media, and certainly televised media as a tool for mass communicative changemaking is considered helpful while trying to portray people, nature and social structures. But Bandura (2001) is also claiming the importance of being aware of the social reality created because of how our self-reflective capability have the possibility to lead us into trusting distorted realities, understanding it as the reality we live in. Using dystopia as a tool for warning people, hence being forethoughtful about our future might cause an untrue picture of how we see real life and the challenges we face because of our vicarious capability to observe and learn from other people's experiences.

This is further touched upon by two respondents claiming that these dystopic stories, that seems to be a sort of standard today, are connected to the story of Armageddon. A biblical connection might further imprint this story as truth when we look towards our reality in the future because of the number of times the story has been told in different cultures. According to Bandura (2001), when several capabilities are present within the learning process, the narrative becomes even stronger. In the case of dystopic Sci-fi stories, the self-regulatory capability is represented by a story that is deeply rooted within our cultures, the self-reflective capability in the forethoughtful perspective while trying to motivate a change of behavior and the vicarious capability because of how we learn by seeing others do on the screen. Further, this means that if filmmakers can find another kind of story that strongly relates to the audience internal standards and beliefs, the use of all capabilities can be a powerful tool when trying to create change.

Mechanisms of social factors such as personal agency and structure is helpful for understanding e.g. climate change. However, they can just as well create challenges while communicating it, depending on what the personal, behavioral and environmental determinants look like (Bandura, 2001). One respondent claim that the environmental theme itself proposes an easy target for eye-rolling and while scrolling through the commentary fields of movies with a climate theme, it shows a lot of negative comments, suggesting how tired people are of the environmental warning theme within movies. The filmmakers agree that being too preachy while telling these stories, hence being too forward with the message can be off-putting for the viewer. However, several respondents mention *Avatar* (2009) as a movie about climate issues and indigenous people but also as one that is considered very cheesy. Even so, the movie is on top of the box office list.

It is suggested by several respondents that to make a positive environmental Sci-fi movie you have to deliver it with confidence, discretion and be clever with how you use the narratives (e.g. presenting leads towards narratives, making the audience feel smart). However, if the morality of the story is not compatible with the audience's attentional processes, Bandura (2001) claims it possible that the information is not restructured and remembered as intended. This leads to a disinterest of adapting and changing behaviour which is presented as one of the reasons for telling these stories.

The respondents present the importance of using metaphors to tell stories about wicked problems while keeping enough distance which enabling the audience to

embrace the message. In line with Bandura (2001) it appears important to utilize the right symbolic model in order to inspire people to adapt previous learned behavior and instead learn from the characters and their experiences through observational learning processes. Through Bandura's (2001) vicarious capability people can learn how to cope with complex situations while observing others. However, two respondents highlight the lack of imagination when it comes to the use of metaphors. Sci-fi is perfect when you want to use metaphors and nature provides inspiration to spark that imagination. But in recent years, metaphorical identification have turned into recognition and it is argued that there is a big risk of losing the power that cinematic storytelling can achieve. This means that the danger of losing that symbolic connection can lead to a loss of self-reflection, hence losing the perspective needed for future motivation and action (Bandura, 2001).

Does that mean we learn from these stories and unconsciously head towards a dystopic future? It is an intriguing thought and most respondents think that it is highly possible that dystopic movies can influence us towards that direction. However, some respondents think that this could be, but it works for other kinds of stories as well. It is suggested that dystopia would probably sneak up on us even without these stories and that there is always a risk for contra intuitive effects with every story you tell which is presented as one of the risks with mass communication by Bandura (2001). One respondent explains their view of how stories influence people:

“When you're creating dystopian movies, you're creating a dystopian future but when you're creating love stories, you're creating a love future”

5.1.2. The impact of movies

Narratives are considered a very powerful tool coherently within the respondent group and is understood as something that can be used for good things as well as for harmful things. Further, the huge power within the cinematic medium is explained by how movies are made with a combination of several mediums such as photography, performance and music among others. These are all very powerful on their own and when combining them in a movie, you can change people's lives. Several of the respondents talk about the power to connect people around stories and universes presented within cinematic storytelling. Many people are identifying themselves with characters and cinematic universes so much that there are special conventions for it.

Large amount of tv exposure is presented by Bandura (2001) to influence people collectively and even shape the beliefs of our social reality depending on the content rather than the amount of exposure. Hence, the narratives we choose and especially while portraying something as dark as a dystopia, can lead to a collective truth of that story being the expected future. Consequently, it indicates that it is important to create a broader understanding for cognitive mass communication and to start following other narratives so that stories can help us create new views of social realities and motivate adaption and change.

It is suggested that stories are about how we see things, about narratives. When you tell a story from your narrative, your point of view, the receiver will interpret it from theirs. This further enhances the previous mentioned effect of how messages within Sci-fi movies can be interpreted in the 'wrong manner'. This can be

problematized as having to choose between either being too clear, hence losing the audience or presenting the story in a more unclear way with the risk of misinterpretation. With this in mind it seems important to find a way of telling stories where they inspire new social practices and we learn how to transform the skills and knowledge gained into a production process where we get motivated to act upon them (Bandura, 2001).

This means that movies can be used to inspire new social practices. Some respondents claim that Sci-fi allows portraying settings and narratives that could help people interpret real situations and problems, showing new narratives that the audience can align with. Furthermore, several respondents propose using storytelling metaphorically as when growing a seed into a plant, where the dramaturgy gives the audience the possibility of solving the puzzle themselves. One explains that:

“Christopher Nolan does this very well. I feel he makes the audience feel good about themselves. Like if you figure out the film, like I know what's going on here. And like I feel superior to you because you haven't got a clue what's going on. So, it makes them feel good about themselves and I feel it's very rewarding for a viewer to piece together the puzzles.”

This is strongly connected to the four processes (attentional, retention, production and motivational) described by Bandura (2001) where acknowledgement of a situation leads to retention starting a productive and motivating process of self-reflection and acting upon it. It is argued that this method (see quote above) makes the audience invested and loyal towards the story because they help drive the message home. The method also offers a way of proposing certain topics without pointing fingers, even though the narratives can differ.

Despite that, most of the filmmakers leave out the perspective of how one story can be interpreted differently depending on where in the world it is being screened due to e.g. different cultures. In some places, certain stories are impossible to tell because the theme or story could be frowned upon or even illegal. Effectively this means that people around the world are being presented to many different narratives. Telling different stories about environmental issues such as climate change, being a global problem, might lead to people around the world understanding it in many different ways, however good or bad.

5.1.3. Science fiction can help distance social issues

“There is a theory going around about the black president in America, how science fiction in the 80's started portraying black presidents to show that this is the future... and how science fiction made that possible”. (translated from Swedish)

Several of the respondents claims cinematic storytelling within Sci-fi to be a genre providing opportunity while portraying a story about wicked problems (e.g. climate change, racism and poverty). Futuristic Sci-fi can further help by creating distance in time and place. The distance enables an opportunity to not be too direct with the communication, hence leading to people feeling assaulted.

One respondent says that when working with young people in the suburbs where there is a known feeling of alienation among the youth, it is almost impossible to

not offend them since everything can be interpreted in a personal matter. Using *District 9* (2009) as an example, being a movie with many similarities to refugee camps with e.g. alienation and racism as themes, where extraterrestrials portray the alienated population. The respondent argues this as one of the biggest strengths with Sci-fi, hence a good example of when the distance is helpful in understanding what is wrong. Sci-fi helps raise the complexity of a social problem without blaming someone directly.

SCtMC teaches how it is easier to act on previously learned behavior if we can observe someone else doing it. This means, that if people see things that they morally connect to and know to be possible, even though not approved in their social practices, they can be motivated to act upon it. Hence, distancing with help from Sci-fi can make people see possibilities that they consider self-satisfying and therefore act upon it even with the risk of being socially punished. However, in the example of working with young people above there is risk of self-censuring with the result of restraining their moral ground. This might leave them feeling forced to engage and conflicted in matters that are not socially approved.

5.2. The (im)possibility of portraying an unpredictable future

In this section you will read about how the filmmakers interpret stories about the future.

The filmmakers identify a challenge with portraying stories about the future in regard to the many potential threats that we might face in the future. Further, telling these stories is a lot about speculating. The respondents agree that the need for stories in order to understand the future is further complicated due to the impossibility of predicting it. It is also proposed that storytelling needs to be used in a sense where the story is built around a problem, nerve or conflict in order to become interesting for an audience to follow. They mean that dystopia has a lot to offer when it comes to creating drama.

“I’m as fascinated as frightened by these stories because they might be real in near future... So I keep telling and playing with these kinds of stories, but with a little bit of fear in my heart.”

Several of the respondents specifically say that no one wants to watch a movie where everything is nice and uncomplicated. They agree that the trend of telling dystopic stories is a reflection of the fears regarding e.g. the social problems we are facing today. One respondent argues that since these stories represent our fears for the future, we should be worried once we stop telling them. Further, it can mean that people are so comfortable with their own lives, so they do not even imagine these things anymore.

“Movies are in a way a collective nightmare, or a collective analysis so we might have to share our concerns about what we fear and feel hopeless about and that’s why we have movies. But they need to take place within a conflict, and I consider Star Trek hopeful but bordering towards boring because everything is nice and solved... the tricky part is that you need that nerve.” (Translated from Swedish)

SCtMC further enhances the importance of portraying our social reality to keep humans from creating our own illusions of our reality. Televised media, such as movies, can be used for the social reality we live in as well as distorted realities, depending on the content people watch. However, if the story about our future is almost exclusively portraying a dark and dystopic future, our illusion of what the future will look like might turn out to be that story. It is possible that dystopia is now agreeable with our moral high ground because that is the narrative we have learned to live by. A narrow representation of stories might create that narrow illusion, hence not motivating people to adapt, reflect upon or change their behavior.

Telling these environmentally conscious stories is presented to help us lean into the anxieties that we deal with at the time. Many of the respondents claim that these stories will be told for a long time forward. It seems that while arguing that these stories will be told in the future, and how they reflect our fears, it is said that the collective illusion for the future is that we are going to be afraid of the same things. This indicates that humans have not been able to solve the problem.

5.3. The hindrance of telling the story you want

In this section I will present the findings of what is stopping filmmakers from telling other kinds of stories. The result indicates some obstacles such as dramaturgical challenges, disagreements with financiers about what story to tell and how to find new ways of portraying their story and how new ways of watching movies can help the genre.

5.3.1. How can filmmakers tell another kind of story?

“Do we need to tell sad stories to make people change? Or do we need to tell happy stories because we are in sad times? Do we need to deliver what people want or what they need?”

The filmmakers agree that a positive climate story is challenging to tell. This is partly because of the need for conflict needed when creating drama, but also because of other obstacles standing in their way. However, many of them see possibilities with finding new ways of portraying more positive stories about our future. There are great stories to be found within utopic stories and the respondents pose several suggestions for how this can be done, such as using the narratives wisely and implement clues towards a more sustainable world and two suggests:

“Hands-on, we can take our responsibility as filmmakers and give people clues towards the world we want by using electrical cars as a natural thing, so people start normalizing when someone gets out of a car and connects the electrical cord. So, when we start seeing this in the popular culture... the use of environmentally friendly solutions, then we can absorb it” (Translated from Swedish)

“The war in Syria... the Parliament said that the reason for the great number of refugees from there, because they mostly bomb the central areas, is often because of

their need for moving closer to the cities to be able to farm because of climate changes... not science fiction but a story we can tell.” (Translated from Swedish)

These examples allow the creation of other environmental narratives. Using symbolic modeling to create new narratives, hence enabling observational learning, makes it possible for the audience to align with the new narratives, extracting and restructuring it into a suitable course of action while being motivated to change their behavior (Bandura, 2001).

Several respondents suggest that Sci-fi is a genre that is not always taken seriously. It is argued that the genre almost always is directed towards children and young people. If you go to a bookstore looking for Sci-fi or fantasy books you have to look at the young adults section and most stories are framed within the fairytale format. It is further reflected in the fashion world where larger clothing brands sometimes campaigns e.g. Star Wars clothing, always branding it for kids. This view of what Sci-fi is, affects the narratives, hence limiting filmmakers possibility to tell the stories they want. It further creates a narrow representation of stories made for a certain target group.

5.3.2. What is stopping us?

There are some obstacles identified when posing the question of when and where the filmmakers feel like they cannot tell the story they want to tell. The respondents mean that financiers have to always be taken into account and one of the bigger obstacles the filmmakers have to deal with while trying to tell their story. It is my understanding that all of the respondents have had, either personally or through colleagues, bad experiences with financiers barging in with their demands of what the story should contain.

“The companies have so much money and so much power and it’s so polarized what is right and what is wrong... today everything is directly broadcasted on social media and other medias looking to accuse someone, so I can imagine that’s why so many more interesting films were made in the 70’s when we dared criticizing society and that is not done today.” (translated from Swedish)

Sci-fi movies with a dystopic theme are said to be a narrative that many agree upon and this is usually a genre that works well with the audience, hence a good investment for a financier. When you start looking towards new ways of telling that story it is presented that many financiers are not eager to invest in those ideas and making movies, Sci-fi movies in particular, are quite expensive and/or demanding when it comes to creating it. One respondent say that he imagines that there is a lot of filmmakers who have pitched these stories for financiers where they want to show how our planet is being destroyed and that we have to stop it before it goes to hell. However, the financiers say that those stories will not sell and the audience do not want that story. Instead, they keep financing the stories about deserted landscapes or super modern cities where the story of how we ended up there is lost. Further, the audience is described as an obstacle and one respondent explains:

“And you’ve got the vocal naysayers. But their voice is loud. I feel potentially that the numbers are lower, but their voices louder. So, you know, how does that inform the

decision-making process of making films like this? Because like would a studio want to back a film with such an overt environmental message knowing that people are going to roll their eyes, but yet, they do well.”

The discourse filmmakers need to follow as portrayed above relates to the triadic determinants model where personal, behavioral and environmental determinants affects each other. It is possible that filmmakers, financiers and audience all live by their own determinants and that these are not necessarily the same. If the three groups live by different determinants, the filmmakers end up in the middle trying to adapt to both the financiers needs and demands, as well as the audience. Where does that leave the filmmakers? According to both the respondents and Bandura (2001), it seems they have to adapt too much to others, instead of creating the movies they want due to their own determinants, hence ending up in a self-conflicting situation. Furthermore, it is possible that the financiers are focusing on financial goals rather than motivational goals. However, in order to use Sci-fi movies for changemaking the filmmakers might need more support enabling them to tell stories that can create environmental change.

Effectively it ends up with a lot of filmmakers in need of making short films to prove themselves and the respondents highlights some issues with that. It starts with how stories about the future and e.g. our climate is very complex and with short films it becomes even more challenging since you are given a very limited amount of time. The effect of that is not being able to present the whole picture and you often have to lose the background to quickly get to the story. They argue that it can lead to you having to make creative choices that you do not really agree on, such as using an intro text to explain how the characters ended up where they are instead of being able to explain that throughout the story.

5.3.3. Science fiction without compromises

Not being able to finance your movie and turning towards short films, is challenged by how in many countries there is rarely any financial support to apply for. Consequently, filmmakers need to look for new ways to finance their projects, e.g. paying for them yourself. For those who can afford that it seems they feel more free to tell their story, one explains:

“I’m paying for the damn thing like I’m gonna do whatever the hell I want but based on the experience of my friend who has a manager/agent. Oh my God he tells me the full experience that he has and there is obstacles, you know notes, notes, take out this remove that and this in... he is giving me an insight as to like how hard is to stick to your vision when someone else is paying for it”

Several respondents claim it more important for them to tell the story that they want and when financing their own movies, they do whatever they want and push as hard as they can. One admits to gladly going bankrupt if he can tell a story that makes a difference. Another one argues that things might be changing with the increasing amount of streaming services because the financiers no longer live by every movie. Some believe that the bigger streaming services have the opportunity of making the safer stories to keep their monthly paying streamers as well as trying new things because one unsuccessful movie is not ruining the income.

However, some of them suggest that this new, rapid way of watching movies with access to an endless amount of titles and the opportunity of watching them wherever and whenever can also be a hindrance. They mean that the audience is not watching movies the same way as they did 30 years ago when they sat down in a big room with a big screen for two hours, only watching a movie. Today, many people watch movies on their phone, and people are consuming more televised media than ever but the backside of that is a loss of commitment.

However, Bandura (2001) claims that televised media is not only helpful when learning and adapting for the audience watching the movie. The receivers turn into transmitters, who can influence others into adopting new behaviors. This means that the information being consumed by some can be transmitted into large groups, hence achieve social change. SCtMC also suggest that the content consumed are more influencing than the amount, proving the importance of telling stories from many perspectives.

Conclusively, the findings indicate that environmental Sci-fi movies often are limited to dystopic stories. The respondents imply that they want a more diverse selection of stories being told. However, when trying to tell another kind of story they face obstacles such as financial and dramaturgical challenges.

6. Discussion

In this section I will discuss the findings from the interviews in relation to the presentation of scholars and researchers in the background. While the discussion answers the two research questions, I have chosen to structure it into the themes of ‘How Science fiction can contribute to change making’ and ‘What people and society can learn from these stories’.

6.1.1. How Science fiction can contribute to change making

As presented in the findings it is clear that the filmmakers see a lot of potential within Sci-fi movies but often feel that they are limited by the genre’s discourse. Sci-fi movies are able to create narratives that impact our expectations of the society and the future, using the example portrayed by Cameron (Frakes & Peck, 2018) where people believe that a non-existing product is not only possible but is in fact something that should exist. Sci-fi movies made people believe that space travels are possible and might have influenced how a black person in a country strongly imprinted by slavery can become the president. It is reasonable to assume that by portraying stories about a functioning future, with an obvious every-day symbiosis with nature, can create hope for something better. When the first Star Wars movies were released, the applications to Nasa’s space program increased as a direct impact of the inspiring medium of movies. So how can a narrative that functions as not only an inspiration for creating awareness but also inspiring change towards a more sustainable future be found?

The opportunity Sci-fi movies relating Sci-fi and science is not only presented by the filmmakers but is also portrayed by Ghosh (2016) and Cameron (Frakes & Peck, 2018) in the background. It seems that Sci-fi is not only able to imagine the future but in return influencing science. Some trends within science today are AI, space travels and investigating if Mars is a planet that humankind can inhabit in the future, all stories that can be found within earlier Sci-fi movies. Further, this shows the importance of the narratives which filmmakers choose to tell in their stories today. Stenmark (2015) explains that scientific discourses need help to explain their scientific data and the use of stories is the only way to address the complexity these problems entail.

The results imply a difficulty with portraying environmental issues in a utopic setting because of the need for conflict. However, many people today are challenged by climate change, and the effects are spreading worldwide. It is possible we are now living in a time where the story about what is going on is now possible to tell. A common saying is that everyone can make a movie today, something that is presented by one of the filmmakers – but is that really true? Those most affected by climate changes today are indigenous people and people living

outside of the modern societies, who lacks electricity and running water. These people are not given that opportunity, but if they were – what stories would they tell? Are the people affected by these changes the only ones who have the opportunity of portraying stories about the changes our planet is, not only facing but actually battling today. If, as the filmmakers suggest, the futuristic and dystopic theme is a reflection of our fears today – what fears would be portrayed by those who currently face the climate crisis? Furthermore, the western world is starting to become afflicted by climate changes and I wonder how that might change Sci-fi storytelling in the future.

The filmmakers consider the challenge with preachy themes as being too forward, which relates to research presented by Sakellari (2015) who points out that this type of narrative seems uninspiring and become indifferent. However, when looking at the example of *Avatar* (2009) it is suggested that the movie is looked upon as cheesy with a preachy message. Nevertheless, it is on top of the box office list. This means that preachy might work if disguised good enough in the narratives surrounding the story, thus a proof of how stories can portray complicated themes. In line with the question of however a blockbuster film should be used for EC (Weik von Mossner, 2012) it is clear that even with a cheesy story you can reach a huge audience.

Further, whether a fictional blockbuster movie can contribute to a more sustainable relationship between humans and nature has been debated between film critics (Weik von Mossner, 2012). The results indicate they can. Considering Bulfin (2017), it is safe to say that movies can have a huge impact which is proven by how *The Day After Tomorrow* (2004) led to five studies being conducted, proving that the movie influenced the researchers into conducting a study. She claims that there is clear evidence of how popular culture can help shape public opinion and when connecting it to what the respondents say about narratives the findings indicate that a narrow representation of stories might lead to narratives getting lost. This is supported by Stoknes (2015) who emphasizes the importance of telling different stories due to people understanding stories differently, because of their more or less unique narrative. Furthermore, filmmakers can help by implementing new narratives within the stories that are being told. Instead of being forward, hence telling people what to do, stories can guide people into new narratives becoming the new stories we live by (Stibbe, 2015).

Indeed, it is possible that we are in need of telling more stories from the everyday person point of view within Sci-fi storytelling, as suggested by one respondent. It has certainly been done many times before, but furthermore, I believe that there are more, and maybe more importantly, other stories to be found if we look for them inside of the people. If filmmakers start telling stories about e.g. climate change in real time, showing what is happening within the characters rather than what is going on outside, instead of portraying the chaos and disaster it leads to, it provides for a more relatable story. Further, this can lead to a more impactful story when it comes to changing the future narratives of people.

Similar to what Bandura (2001) say about mass-communication, the filmmakers argue that Sci-fi movies teach us about situations we might have experienced but more often never have and never will. Sci-fi movies give us an opportunity to relate to problems and experience them in a fictive place, some more relatable than others.

So, what if we start implementing the successful stories happening here and now, is it possible to inspire change and help people imagine a brighter future?

Emphasizing the impact that these stories can make, I want to address what stories can become. It is my belief that as soon as you share your story with others, that is the start of the story becoming alive in the sense that other people now get the chance of interpreting the story due to their own narratives. I imagine that we focus too little about what will happen with these stories in the future. Furthermore, I think that while Sci-fi movies is a great way of portraying climate change and other environmental issues it is also of importance to reflect upon what these stories will mean today and for the future.

6.1.2. What people and society can learn from these stories

The poem by Byron (Ghosh, 2016) in the Background (see Part 2, p.15) is telling the same story about the apocalypse that scholars, researchers and filmmakers argue is being told in Sci-fi movies today. That story is deeply rooted within us and certainly a logical place to go to when we hear researchers and media talking about how our planet is being destroyed and how the resources we need to stay alive are going to run out. It seems reasonable to me that people learn to understand what to expect and maybe even feel so helpless within the situation that we simply do not know what to do to stop it.

The filmmakers describe narratives similarly to how Stibbe (2015) explains ‘The stories we live by’. Both are suggesting the stories or narratives as agreed upon living conditions, often based on the stories that becomes the truth we live by. Furthermore, Stoknes (2015) argue that the story of the apocalypse is not motivating change, but rather the opposite. However, the filmmakers say that these stories are told in order to warn people. Researchers and media further put gas on the fire by sharing facts and selling headlines. It is indeed possible that people are highly influenced by that picture while imagining the future, consciously or unconsciously. Kaplan (2016) explain her concern of how the constant reminder of the anxiety these stories provide and how scared we should be, causes PreTSS, hence leading to depression and denial. It seems to me that what is learned from futuristic Sci-fi movies is that everything has to be ruined first, then we might be able to change things to the better. Further, the results indicate that the stories told is not providing the call to action that they intend to, but rather the opposite.

What research has learned about space today implies that it is very much inspired by Sci-fi movies. Indeed, it indicates the power of movies presented by the respondents. Researchers were quite recently given the opportunity to watch actual footage from space and it is possible that Sci-fi movies inspired the opportunities to explore space. The story about the apocalypse is and has been told for over 2000 years. The findings indicate that it is likely that this story has affected humankind for a very long time and people might, consciously or unconsciously, expect the world to end up there. However, it is important for filmmakers, financiers and researchers to ask themselves how they can talk about the urgency of the matter, to warn people, when it seems that warnings itself are off-putting.

There are movies representing the struggle right now, e.g. *Okja* (2017) but in these movies we never face the consequences of the choices made to improve our situation. The future perspective of what happened when we did change for the

better is not portrayed. *Avatar* (2009) differs when compared to other environmental Sci-fi movies because it is taking place now, but somewhere else. This means the characters can still do something about it. Most stories take place in the future when it is already too late to go back, so they teach us how to solve the situation they are already in. Most environmental Sci-fi movies tell stories about what to do when everything is lost. However, the filmmakers argue that stories about where humankind is now, and what people can do to make the future brighter to prevent the apocalyptic/dystopic future is rarely portrayed.

Filmmakers have the opportunity to fantasize about a more optimistic future and portraying these stories, but they do not. The filmmakers argue, that a story needs to have a conflict, nerve or problem to be good, but maybe we are so privileged that we don't understand the conflict or nerve in being exposed to climate change. Our lives might be so comfortable that we cannot imagine being exposed to it today, but instead only in the future and are therefore afraid to "open that box". Because of this, these movies might guide us towards a more apathic approach because we assume that someone else will solve our problems in the future. However, Stoknes (2015) explains that there are many other stories possible to tell about e.g. scientific breakthroughs and damaged lands turned back to forests and wetlands. He further argues, along with Ghosh (2016) that we need stories that help us transition into a more sustainable future rather than stories pointing out how we quickly need to change our lifestyles because they get rejected. By changing the narratives and using metaphors wisely, we can stop the increasing separation between humans and nature (Stibbe, 2015).

It is clear that the filmmakers are eager to tell new stories, but in order to do so they need more support. It is also clear that science and researchers need help getting their knowledge out there, to the people and Sci-fi can provide that. However, Ghosh (2016) and some respondents claim that science fiction is not looked upon as a serious form of storytelling. It makes me wonder if Sci-fi movies can be used to its full extent, however big of an audience, if not taken seriously? Bandura (2001) claims that what we watch is more important than the amount, hence taking the Sci-fi genre seriously is important. If Sci-fi movies are to be used in the most effective way towards change making, filmmakers, financiers and researchers need to start by trying to find a way to collaborate and look for new stories together. The place of 'ustopia', somewhere in the middle of today's utopia and the day after tomorrows dystopia (Atwood in Kaplan, 2016) might be a good place to start.

7. Conclusion

This thesis has investigated filmmakers view on the possibilities and limitations of Sci-fi storytelling for our environmental future. The conducted interviews contain a small representation of the film industry and the result of this thesis should be looked upon as a start of a future discussion and potential further research. The thesis prevails that cinematic storytelling and especially environmental science fiction movies tend to imagine and portray a one-sided, environmentally dystopic future instead of using the opportunity of portraying a variety of socio-environmental futures, a representation that could possibly limit our futuristic imagination. Sci-fi is imagining future scenarios and inspire the future that science in return can realize. Using Sci-fi movies for telling stories that are helpful to the scientific advances needed to protect our planet from further climatic harm, is truly an opportunity that EC can benefit from. New narratives and a different type of storytelling might lead to another type of narrative within the research community, as well as among the public.

It is clear that science fiction as a genre has a lot to offer while communicating wicked problems such as climate change. However, if we want to use Sci-fi movies for creating change towards a more sustainable future, we have to take these findings into consideration. It is important to think about the ways of how to communicate environmental struggles and challenges, as well as having a clear idea of what the message is about while portraying a story. The thesis also touches upon some of the pitfalls with Sci-fi movies. There seems to be a struggle with narratives where financiers seem unwilling to try out new stories and filmmakers eager to try but having a hard time finding the right stories. Furthermore, it is clear that we are in need of new stories and that the filmmakers need support while both finding them as well as being able to tell them. The findings in this thesis indicates that it is important to start telling other stories about environmental issues and that filmmakers within the genre of Sci-fi movies can contribute by bringing these stories to people everywhere. Furthermore, even though Sci-fi is used as a model for this thesis, I strongly believe that what I have learned can be beneficial within other fields of EC as well.

7.1. Further research

It is my hope that this thesis can contribute to further research being done on the topic. However, more research is needed and below I will suggest some topics that did not fit into the frames of this thesis:

- A comparison between Western cinema and Asian cinema and our different approaches and relations to nature. What does it do for the storytelling?
- What impact has Sci-fi had on the scientific research done today (e.g. going to the moon, Mars and inhabiting Mars, AI), by comparing trends within Sci-fi stories and scientific advances. How are they connected?
- Look towards the audience and financiers and ask similar questions to better understand the whole picture.
- Investigating why the audience are eager to watch dystopic movies even though it portrays a fearful future.

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