ETHICAL SUPPORT FOR THE DESIGN PROCESS OF PERSUASIVE TECHNOLOGY

A SECOND ORDER RESPONSIBILITY FOR DESIGNERS OF MEDIATING PERSUASIVE TECHNOLOGY

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Master Thesis in Applied Ethics

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"This type of design is in fact an 'active philosophy' dedicated to making space for life. Why should not design be a love for life?"[1]

[1] Marc Stickdorn and Jakob Schneider, *This Is Service Design Thinking : Basics—Tools—Cases* (Amsterdam: BIS Publishers, 2010) p 323.

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Abstract Not all designers take ethical considerations into account during the design process. Especially for persuasive technology this could be important because these are products that actively persuade their users to change their attitudes or behaviour. To help designers take ethical considerations in the design process of persuasive technology, a framework is developed based on the work of Berdichevsky & Neuenschwander. Built on that framework, an exploratory integration of two theories, based on the work of Verbeek and Illies & Meijers, that explain the influence on users of persuasive technology are combined. Although a theoretical difference between the theory of Verbeek and Illies & Meijers could not be solved, the examination of designer's responsibility in this combined framework resulted in three guidelines that could be integrated into a design process. The first one is concerned with the designer's intention to create persuasive technology. The second guideline is to incorporate a second order persuasion in the product to steer the user towards the intended use of that product. The third guideline is to change the scope of usability research to anticipate on different contexts in which persuasive technology will be used.

Keywords Ethics, Design, Persuasive Technology, Philosophy of Technology, Influence of Behaviour, Mediation theory, Design Process, Moral Responsibility.

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1. Introduction

Designers create products that will become a part of other peoples' lives. The designer's acting i.e. creation of product, has a certain influence on the people who use that product. This implies that there are ethical issues that are evoked by the design process. This could involve creating a sustainable product that is not overly harmful to the environment, designing a product for a multi-cultural society, or creating it in such a way that there are fair trades between all the people that are involved with the product. This thesis however, is concerned with a different aspect of ethics in design, which is the design process of persuasive technology (PT) and the influence a designer has on an individual user.

Someone who persuades has the motivation to change someone's behaviour.[2] When you persuade someone, there is an interaction between the persuader and the persuaded. As a designer of PT, this interaction of persuasion is channeled through a product. The product attempts "to change attitudes or behaviours or both."[3] One of the contributors to the literature in this field of PT is B.J. Fogg. Fogg assumes that you can change someone's attitude or behaviour when you increase his motivation or make an act easier to the degree that someone is more likely inclined to perform it. Different insights from psychology can be used to persuade users through PT. The way users are persuaded to change their behaviour is based on intentions, not on outcome. As Fogg states, it does not include unintended outcomes, but focuses on the change in behaviour in the user that is intended by the designer.[4]

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[2] Daniel Berdichevsky and Erik Neuenschwander, "Toward an ethics of persuasive technology," *Communications of the ACM 42, no. 5* (1999), p 52.

[3] B.J. Fogg, *Persuasive Computing: Technologies Designed to Change Attitudes and Behaviors,* (San Francisco, Calif.; Oxford: Morgan Kaufmann; Elsevier Science, 2003), p 15.

[4] Fogg, *Persuasive Computing: Technologies Designed to Change Attitudes and Behaviors,* p 17.

The designer hereby imposes his moral norms on the user and tries to change his or her attitudes and/or behaviour towards his idea of what is good. For a designer, it is inevitable to impose his moral norms via the PT on the user. The PT is designed to change the attitudes or behaviour of the user. This implies that, although they could be (at best) in line with what the user itself believes is right and the user agreed to this behavioural change, PT is created from the designers point of view. Therefore, a designer cannot really (realistically) change the behaviour of the PT in such a way that it is completely in line with the moral beliefs of all the users.

By creating PT, the designer imposes his moral norms of what is the right way to act on his users. PT can never be 'morally free', since it is made in order to change behaviour, which is directly linked with our moral values.

The form of PT this thesis is concerned with are PT's users choose to use freely. Users know in advance that it is designed to help them change a certain behaviour. I will not discuss products which people are forced to use for reasons other than their own desire.

When you design PT, you contribute to the life of the users and their wellbeing. If you want to do this in a correct way, I will argue that ethical reflection should accompany the design process. In doing so, we can create a more holistic process, which helps to create PT that improves the user's life. With this holistic approach, I believe that even designers who don't have a background in ethics, can improve their regular design process with only some minor changes.

1.1 Ethical reflection during the design process

A protocol study performed by Lloyd et al. shows that not all designers incorporate ethical deliberation in their design process. This is because the design process focuses on creating a product that suits the wishes and demands that are stated in a design task. In their research Lloyd et al. gave fourteen designers the task to create a toy gun for children.[5] The group of designers was divided into seven groups each consisting of two people. The

[5] Peter Lloyd, Willem van der Hoog and Ibo van de Poel, "Ethical aspects of the product design process: A protocol study," in *Studying Designers 05, 17-18 October 2005*, Aix-en-Provence, France, p 57-70.

design brief contained three key elements for the toy gun. Firstly, the gun should look as realistic as possible, since children see realistic guns on television and want to play with guns that look like what they see there. The second requirement was that children should be able to play in a system level, therefore a laser technology should be developed in order to be able to keep score etcetera. Finally, the target group had to be children, boys and girls, of 8 to 14 years old. The researchers thought that the design task contained a number of obvious, though implicit, ethical issues. They expected questions like: whether it is good to let a child play with a gun toy, if it is ethically correct to make the gun toy as realistic as possible, or whether we should be stimulating children to shoot one another. However, in their research, they found that only a minimum of ethical questions was raised by the designers. They concluded that "it seems that industrial design engineers are able to identify and adequately discuss the ethical aspects of their design activity, but not in a highly sophisticated way, and often in a surprisingly cursor manner."[6] The way designers apply ethics i.e. moral judgements in the design process rely on a kind of "folk ethics together with an intuitive aesthetic 'feel' for situations and solutions."[7] In which folk ethics means that ethical guidelines come from social norms in a group. Designers combine these norms with what they feel is right by intuition. The observation that designers do have a sense of an ethical feeling for the products is reassuring. However, it seems worrisome that they think so lightly of ethical issues during the design process of making such consumer products. Precisely because their products could have a substantial impact on the world, moral deliberation should be an important component of the design process. Even though this research only consisted of fourteen designers, it shows, at least, that not all designers use moral deliberation in their design process.

"Ethics is the area of philosophy that inquires into morality,"[8] it is concerned with what is morally right or wrong to do. Creating a product that is good for people does fit in a

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[6] Lloyd, van der Hoog and van de Poel, "Ethical aspects of the product design process: A protocol study," p 69.

[7] Peter Lloyd and Jerry Busby, "Things that went well—No serious injuries or deaths," Ethical reasoning in a normal engineering design process," in Science and Engineering Ethics 9, no. 4 (2003), p541.

[8] Mark Timmons, *Moral Theory: An Introduction*, 2nd ed. (Maryland: Rowman & Littlefield Publishers, 2013), p 16.

thought of doing good for people. However, within the theory of design processes itself, no explicit moral deliberation is integrated. "Designers respond to the emergence of new environments and needs."[9] By responding to these environments and needs, designers participate in the way people organise their life. Hopefully, this participation will influence the user's life in order to make it better.

I believe that by creating new products, designers have the opportunity to improve the world we live in. Having an opportunity to do good often also comes with a possibility to do the opposite i.e. doing wrong and therefore implicates responsibility.

1.2 Research Question

The question this thesis is concerned with is: How do we design a framework that helps designers take ethical considerations into account? The goal is to create guidelines that designers can incorporate into their design process to ensure their responsibility for the PT they create.

The starting point of this thesis is a framework developed by Daniel Berdichevsky and Erik Neuenschwander. They created a framework for morally responsible design that is especially made for PT. They argue that the intentions a designer has to develop PT are important as well as the outcome of the persuasion through the product itself.

This framework provides a possibility to analyse if the PT that is designed is correct on a moral or ethical level. I see this framework as a blackbox for moral design, which can be used to analyse ethical responsibility for designers of PT. The framework shows when the outcome of the persuasion is morally right or wrong, but does not explain how this persuasion works. Knowing how PT influences its user seems to be necessary for accurate ethical reflection on PT.

By building on their framework, I will extend their view with a philosophical theory on how we are influenced by the products we use. If we can examine how the influence of PT on its users works, we can determine if the PT is right or wrong.

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[9] Stickdorn and Schneider, *This Is Service Design Thinking : Basics—Tools—Cases*, p 57.

This, I believe, is necessary to examine if designers create PT responsibly. When a designer can analyse what his influence on someone's behaviour will be, he can analyse if that influence is morally right or wrong.

In this thesis, two theories will be used to address the way in which products influence the users. Throughout this thesis they will be referred to as the mediatorialist view and the schematisist view. These two theories are based on the works of Peter-Paul Verbeek and Christian Illies & Anthony Meijers, respectively. I coined these two novel names in order to clearly separate the two theories in this thesis. The mediatorialist and schematisist theory are based on the work of these philosophers.

The mediatorialist theory states that we form a relationship with the technology that we use. In that relationship, a technology mediates the way in which we experience the world, form intentions and upon which we act. Together with the technology we co-shape our actions. This mediation is active and therefore a technology plays an active role in its relation with the user. In doing so, the technology itself can be seen as a form of moral agency that, together with the user, arranges the world around us. I have called this view the mediatorialist view, since their theory is based on the idea that technology mediates us in our acting.

The schematisistic view disagrees with the mediatorialistic view that technology can be seen as a form of moral agency. According to the schematisists, we should see artefacts as part of our action scheme. Our action scheme is a system that consists of all the influences that we experience when we act. In this action scheme an artefact also influences our actions. However, a product is a mind dependent artefact i.e. the way we interact with it depends on the user. We can choose to use a certain artefact when we think that that is the best possibility to act among the other opportunities in our action scheme. Within an action scheme, different responsibilities can be ascribed to an act. A first order responsibility is ascribed to someone who performs an act. Designers have a second order responsibility for changing someone's action scheme and therefore influencing an act via PT.

This view I called the schematisist view since it is based on the idea that our acting is influenced by an action scheme in which we form our intentions to act.

These two theories of the mediatorialists and the schematisists have different implications for how a designer is responsible for the products that he creates. I will discuss these implications for both theories.

I believe that combining the mediatorialist and the schematisist ideas into one view would provide us with an answer as to how designers are responsible for the mediating PT they create. This is an exploratory integration of the two views. This should provide a view of mediating PT within an action scheme, in order to change the user's behaviour. Therefore a designer has a second order responsibility for changing that behaviour. I will not develop a new theory, but will contribute to the discussion of how designers are responsible for the PT they create and in what way they should take ethical considerations into account. That can be built into the framework of Berdichevsky and Neuenschwander in order to analyse the moral aspects of PT design.

The attempt to combine the mediatorialist and schematisist views has a negative result. This is because their metaphysical premises contradict one another. Therefore, I will discuss a more practical approach for designers who have a second order responsibility for the mediating PT they create. I will propose three guidelines that can accompany the design process of PT for a morally good design. This is not a normative statement, but a possibility for designers to create good PT on an ethical level.

Finally, I will conclude how I believe that these guidelines could work in practice and discuss the complexity of moral responsibility of the design of PT.

A fictive product will be used as a guiding example throughout this thesis. Let's call the product 'Sleeper App Pro'. Sleeper App Pro is a fictive application on your mobile phone that will help you to change your behaviour in to achieve a better sleeping pattern. For instance, if someone has a problem getting to sleep, this product can help them change their sleeping pattern. If someone wishes to change a sleeping pattern, he or she could download the application. Downloading this application is a free choice for the user and he or she is aware that it is PT. This means that the user isn't forced to use this PT due to circumstances. During this thesis, the Sleeper App Pro will be continuously 'reinvented' to illustrate different aspects of PT design.

2. Ethics in design of persuasive technology

In the study of Lloyd et al. mentioned previously, designers were asked to create a realistic toy gun for children. In the study, it was noticeable that not all the designers had ethical questions about whether or not children should play with a realistic toy gun. Here, I do not wish to argue whether or not a toy gun is wrong for children to begin with, but I believe that when creating such a design it would not be wrong to ask moral questions. The researchers believe that an intention to create a toy gun is at least a moral grey area. For instance, the designer's intention might be to let children shoot at each other. Also, the consequences of creating a toy gun as realistically as possible could be wrong, since children could get used to guns. In time they might use real guns, because they could think that it is normal to have them. This could have serious consequences for their safety, due to a pre-learned false sense of security from interacting with toy guns. I do not believe that only the intention for an act or only the consequences of an act is what counts on a moral level. Both should be taken into account during the design process of PT. Although, as a designer, one's intentions might be good, this does not necessarily mean that the consequences are good, or vice versa.

If we want to incorporate moral reflection into the design process, it could be useful to do this systematically in a framework. A framework that is concerned with the intention of a designer as well as the outcome of the persuasion is the framework of Daniel Berdichevsky and Erik Neuenschwander. This framework takes both the intentions and the consequences of a design into account. It is developed especially to anticipate the designer's responsibility for creating PT. In this chapter, I will discuss the framework of Berdichevsky and Neuenschwander. Later on, I will build on this framework to develop guidelines for ethical reflection during the design process of PT.

2.1 An ethical framework for design of persuasive technology

Berdichevsky and Neuenschwander break down the persuasion that occurs through technology and analyse it on an ethical level. The importance for them in this analysis is 1) the motivation of the designer, 2) the persuasive method that is used and 3) the outcome of the persuasion. They argue that technology only recently emerged to actively persuade its own users to change their attitudes or behaviour.[10] Persuasion, as they define it, is the intentional effort to change attitudes or behaviours. Technology is used as the directed application of abstract ideas. It is the bearer of the designer's persuasive method.

A persuader has motivations to change someone's behaviour or attitude. To reach this goal the persuader can use persuasive methods. A persuasive method can be used directly towards someone or mediated through, for instance, technology. By doing this, a person is persuaded and there is an outcome of the persuasion done by the persuader. In the case of the Sleeper App Pro, the application is used on a smart phone. Many such products can be used to persuade someone. However, most products are not created with the intention to persuade. A smartphone is not created with the intention to persuade, although it can be used to do so. The Sleeper App Pro, which is installed on the smart phone, is designed to change a behaviour or an attitude of the user of that smartphone. In this case, the smartphone is the only the carrier of the PT, but the intended persuasion is done by the application. Persuasive products interact dynamically with the object of their persuasion i.e. the user of that product.[11] Therefore, the persuasive situation for PT is somewhat different from the general persuasion as described in chapter 1. Persuasion through technology is not directly done by a person, but outsourced to the technology. Because the act of persuasion is outsources, there is no direct interaction between human agents (when are being persuaded) and the persuader. The persuader is not present while the persuasion is happening.

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[10] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 51.

[11] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 54.

In the next paragraph I will explain the framework by Berdichevsky and Neuenschwander. This framework can be used to evaluate the more complex interaction of the persuader, PT, and the persuaded.

As mentioned, the first part of this framework focuses on the motivation of the designer to change someone's behaviour or attitude. To reach this goal the designer creates PT. In doing so, a person is persuaded and there is an outcome of the persuasion done by the designed product. Berdichevsky and Neuenschwander argue that the technology cannot be seen as a moral agent, because it is not free (at least up until today). It can't think freely because it is made to act in a certain way and is not conscious. Therefore, the difference between a normal persuasion and persuasion through PT is not the intention grounded to the act of persuasion. The "persuader still intends to persuade."[12] This shows that the person who persuades is responsible for his deeds, which in the case of PT is the designer of a product and not the product itself. "The motivations underlying a persuasive act and the intent of that persuasive act are not the same."[13] Although someone can persuade with the best intentions, the method used to persuade (the second focus of their framework) could be immoral i.e coercive or manipulative. In such cases Berdichevsky and Neuenschwander reject the PT, even though that product might be needed to help someone.

Berdichevsky and Neuenschwander "assert that designers of persuasive technology should be held responsible only for reasonably predictable outcomes."[14]

Four outcomes (the third focus of their framework) can be discriminated that require different evaluations for the responsibility of the designer: 1) intended and ethically right, 2) intended and ethically wrong, 3) unintended and ethically right and 4) unintended and ethically wrong. The outcome of a persuasion could be intended or unintended by the designer. If the outcome is intended, it could still be ethical right or wrong. They argue that it is praiseworthy if the outcome of the persuasion through PT is ethically right and

[12] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 54.

[13] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 55.

[14] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 55.

intended (1). However, if the intended outcome is unethical, or ethically wrong, the designer is responsible for that wrongdoing and is at fault (2).

However, if the outcome of the persuasion is unintended, another question is raised. Namely, the question whether or not the unintended outcome is reasonably predictable by the designer.

Products will always be used in ways that are not in line with the intention of the designer. For instance people sit on tables, while they are designed to sit at. The improper use of products is something a designer has to anticipate. In the case of the Sleeper App Pro, the app is designed to help people to obtain a healthy sleeping pattern. For instance, the application gives the user credits if the user goes to bed an hour earlier than normal. However, if someone wants to get more credits and goes to bed at midday, he misuses and defeats the purpose of the product. In case an outcome is unintended but reasonably predictable, the persuasion could be ethical or unethical. If the outcome is ethical the designer is not responsible and if the outcome is unethical, the designer is responsible and at fault (3). For Berdichevsky and Neuenschwander, the designer is never responsible if the outcome of the persuasion is unintended and not reasonably predictable (4). Although a designer is not morally responsible for unintended and not reasonably predictable outcomes, this option should be reduced as best as possible. If the PT has an unpredicted outcome by the designer, while the outcome is actually reasonably predictable, the designer acted irresponsibly.

Berdichevsky and Neuenschwander state that PT with an intended and morally good outcome is praiseworthy (1). A morally praiseworthy product is what a designer should strive for. This means that a designer should make sure that the persuasion by the product works as intended. This is, also on an ethical level, not as easy as it sounds.

2.2 The influence of persuasive technology on the user

The framework of Berdichevsky and Neuenschwander for ethical analysis of the design of PT shows designers how to take their intentions into account on a moral level. The framework also creates an opportunity to take the consequences of the persuasion exited

by the PT into account. Their framework can be seen as a blackbox for ethical decision making during the design process. To foresee the consequences of the persuasion the designer needs to know how the PT actually persuades its user. I believe framework of Berdichevsky and Neuenschwander should be complemented with a view on how PT influences the user. This way, designers can accurately analyse what they need to do to create a responsible design. This can directly show what they are actually responsible for in designing PT.

Two theories that are concerned with the way products have influence in the world around them are, as previously mentioned, the mediatorialist view and the schematisist view.

The mediatorialist view is represented by Peter-Paul Verbeek. He argues that technology should be seen as a moral agent that mediates the user's acting. This view will be elaborated in chapter 3. As a critique on the mediatorialist view, the schematisists argue that artefacts should not be seen as moral agents. This view is represented by the work of Illies and Meijers, who argue that artefacts influence someone's actions because they give them new acting possibilities. This view will be discussed in chapter 4. In chapter 5 I will combine these two views to have an extended framework to ethically examine how PT influences its users.

3. Mediatorialist point of view towards ethical design

The framework developed by Berdichevsky and Neuenschwander gives a good insight that helps towards creating persuasive technology (PT) in a morally responsible manner. The framework explains that the intentions of the designer and the outcome of the persuasion are important for morally responsible design and how the designer is responsible for his PT. However, their framework does not explain how products influence the user's behaviour. The way the product persuades the user to change his or her behaviour seems to be the whole reason that designers should consider our moral responsibility. Therefore, it is likely that there is more to responsible design for PT than just the designer's intention or the outcome of the persuasion through technology. A framework that does include the function and influence by products is the mediatorialist framework. The mediatorialistic point of view focuses on how technology, such as PT, mediates the attitude and behaviour of a user. This view, together with the schematisist view (discussed in the next chapter), will be used for an exploratory attempt to create a holistic framework, that can fully explain the implications of the outcome of persuasion.
First, I will explain the mediatorialist framework based on the work of Peter-Paul Verbeek. Secondly, I will examine what the implications for that point of view are for the design process regarding the designer's moral responsibility for the PT that he or she creates. Finally, I will discuss what these implications mean for a morally responsible design of PT.
The mediatorialist is not a direct explanation of the work of Peter Paul Verbeek, but inspired by his view on technology mediation. The mediatorialists view, as described, will be used to build an exploratory philosophical view that could be used to analyse the influence of PT on its users. With this view, ethical considerations in the design process could be taken more carefully into account when designing PT.

3.1 The mediatorialist framework

According to Peter Paul Verbeek, our lives and technology are thoroughly interwoven to the degree that we can no longer think of a life without it.[15] Almost every act we perform and every thing that we see around us is influenced or even accompanied by some technology. We are at all times surrounded, accompanied or guided by technology throughout our lives. We could say that technology is no longer simply a set of neutral tools that we use to accomplish a goal. The technology that we use form the way we live our lives.

Because our lives are so interwoven with the technology, the mediatorialist argues that technology partially forms who we are and how we define ourselves. The technology directly changes our attitudes towards the world. It mediates our beliefs and therefore the behaviour and actions we perform. This mediation is seen as part of the aesthetics of technology. Mediation, for Verbeek, means that technologies are not neutral, nor determinant. Technologies actually mediate in a relation between the human and the world around him.[16] In an ethical analysis, a designer should see that the technology is acting as a form of moral agency. As this form of moral agency, it participates in the act that is performed by the human agent in tandem with the technology. The technology acts with and towards the human agent, which makes the behaviour of the technology a moral endeavour. Adding the mediating role to the aesthetic interpretations shows that products have a moral dimension that should be taken into account during the design process.[17] When we analyse user products, we need to take the moral aspects of them into account as well. There exists a sliding scale for aesthetics. For a painting, only the visual aspects are important. For a product, however, also the way we use it and how we feel it is important. All artefacts change our attitudes, but user products more so than a painting. PT is made to explicitly change an attitude, which we can examine as an aesthetic element. Therefore,

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[15] Peter-Paul Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving* (Amsterdam: Boom, 2000) p 11.

[16] Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving*, p 22.

[17] Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving*, p 234.

ethics is especially important for the design of PT. According to the mediatorialist, ethics is concerned with the question of how to act in life. Products have a mediating role in human acting. By performing that mediating role, products give a material answer to the ethical ground question of how to act. By creating those products, designers partake in ethics. Their created products co-from our moral deliberation, which is the ground of our moral acting and thus shapes our view on how we want to live.

According to the mediatorialist point of view, we do not merely interact with the technology that we use. We actually form a relationship with it. We are in constant interaction with a product, which excites a certain experience in our consciousness that we would not have without that product. Because of excitation, Don Ihde states that the technology directs our actions.[18] Consequently, technology has a certain intention when it interacts with the world and its user. A human being also has certain intentions towards the world and the product he uses. The interaction between these three results in a certain relation between the human being, the product and the world around them. Different kinds of human - technology - world relationships are possible depending on the intention which a certain technology has towards its users.

Verbeek argues that technology co-shapes the relationship between a human and their environment by mediating their contact with the environment.[19] Mediation is not a determined feature of the technology itself. It can only arise from a specific context and the way we use the technology. The technology is therefore not a neutral actor between a human being and the world around him. It mediates the relation between the user and the environment in an active manner.[20] Technology can be seen as actors that we are involved with. We form a relationship with the technology when we use it. The way the technology acts in different kinds of relationships is as the role of a mediator. Technology could be seen as mediators for our decision making, acting and the way we experience the world around us. This means that our actions are not only performed by ourselves, but in combination with the mediating role of the technology that we use. The role that products

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[18] Don Ihde, *Technology and the Lifeworld : From Garden to Earth*, Bloomington: Indiana University Press, 1990.

[19] Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving*, p 22.

[20] Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving*, p 131.

play in our acting and decision making is an active form of mediation. Our experience of the world is even co-shaped by the relation that arises by using a product. Without using a certain technology we would not have the same experience of the world around us. According to Verbeek, this directly shapes the way we act.

How we act is based on our beliefs of right and wrong. These beliefs are influenced by our experience of what happens around us and how we interact with our environment. Therefore, our acting is co-shaped by the products that we use and enable us to interact with the outer world. Hence, questions on how to act or live do not only apply to the person that acts, but should include the products that he or she uses. If ethics aims at answering the question of how we should arrange our lives, and products do co-shape our actions, products seem to be involved ethics in a certain way. They seem to actually act in that manner. This means that products could be seen as moral actors and therefore should be held responsible for co-shaping our actions. A mediatorialist argues that technology can be seen as a form of moral agency that co-shapes actions together with the human moral agent that is using it. Being a moral, or at least part of a moral, decision maker seems to imply responsibility for an action. Responsibility for an action seems to imply accountability for that action. This means that technology should be partly liable for an action that it co-shapes.

Although one could argue that moral responsibility implies that an actor should have at least some form of intentionality and freedom to act, Verbeek argues that this is not necessarily the case.

Being an intentional actor implies the ability to form intentions. Verbeek does not state that technologies form intentions. Although technologies do not have intentions similar to humans, they do seem to actively steer the formation of our intentions (and consequences) whenever we use a technology to reach a certain goal. This means that technology has a material form of intentionality. This form of intentionally does not work on its own, but arises from the interaction between human and technology. The intentionality that is needed for an action is partly a human intentionality and partly non-human (i.e. the technology's) intentionality. Besides the ability to form an intention, there should be an ability to form the intention personally i.e. the intention should be formed by the actor

itself. Verbeek argues that this again is a process where intentions arise from the combined action of human and technology. A hybrid intentionality is formed which can lead to an action.[21] For the mediatorialist, humans do not really form intentions by themselves, but always co-form them together with the mediating products.

Next to intentionality, the mediatorialist continues, an actor needs freedom to be held morally responsible for its deeds. Verbeek argues that we should not exclude technologies from the realm of freedom.[22] The actions of humans are not completely free, because it is influenced by the world around us, like the material infrastructure around them, such as useable products. Human acting, for Verbeek, is actually always restricted. Therefore, full freedom and autonomy is not really possible and not a strong demand for moral responsibility. Again, our freedom to choose is inter alia co-shaped by the technologies that we use. A hybrid form of freedom is constructed by human actors, mediated by a technology.[23]

Technologies are active mediators in the relationship that we have with the reality around us. They help us understand, see differently, shape and create our actions in the context we find ourselves. ”Technologies can mediate between humans and reality, by establishing specific relationships between both.”[24]

When analysing the mediating role of a product, there is uncertainty about the surroundings and the eventual effects of PT. Mediatorialists state that the intrinsic properties of the technology seems to be multi-stable. This means that products can behave differently in different contexts of use.

Since technologies can behave differently and be used in different contexts and for multiple goals, it is a complex endeavour to anticipate on their mediating role. Technologies have no real essence, their essence depends on the context the product is used in. The role a technology has, is not a feature of the product itself, but arises from the

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[21] Peter-Paul Verbeek, “Ethiek en technologie: moreel actorschap en subjectiviteit in een technologische cultuur,” *Ethische Persepctieven 16* (2006), p 273.

[22] Verbeek, “Ethiek en technologie: moreel actorschap en subjectiviteit in een technologische cultuur,” p 275.

[23] Verbeek, “Ethiek en technologie: moreel actorschap en subjectiviteit in een technologische cultuur,” p 278.

[24] Peter-Paul Verbeek, “Persuasive Technology and Moral Responsibility,” Paper for conference Persuasive Technology 2006, Eindhoven University of Technology, The Netherlands (May 18 2006) p 3.

relation that the user has with it.[25] The role that the PT will have in people's lives should be explicitly analysed during the design process. That way, the different outcomes of the persuasion can be predicted more precisely. The multi-stability makes prediction of the PT's outcome difficult. The technology can be used in unforeseen ways.

The unintentional and unexpected forms of mediation can also appear when the technology is used in the way intended by the designer. This is important for the moral responsibility of a designer, because the use rallies on the user and the context in which the technology is used. Therefore, I believe that all mediations are morally relevant for a designer, not only the intended persuasion through the technology or the different outcomes of the persuasion.

The multi-stability of the technology's mediation causes a difficulty in predicting whether the intended persuasion of the design works. The context in which a certain technology is used can affect the effects of the persuasion on the user. This can result in improper use of that object and an even further differentiation in unforeseeable outcomes. This creates uncertainty for the outcome of the persuasion. Besides that, one should not only focus on the outcome of the intended persuasion as in that case the moral responsibility for unintended outcomes remains under exposed.[26] Yet, those outcomes are highly important. The theory of mediation by all products shows us that unintended outcomes always occur inevitably.

3.2 Implications of the mediatorialist towards the designer's responsibility

The technology is not only something we use, see and feel, but it is something we form a relationship with by using it. This makes a design job an even more complex endeavour. In a way, the relation between users and products is a part of what is designed. By creating a technology, the designer participates in the way users arrange their lives. This means that how a designer thinks a life should be arranged has a far greater impact in comparison to someone who only conducts in human-human relationships. The consequences of your

[25] Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving*, p 240.

[26] Verbeek, "Persuasive Technology and Moral Responsibility," p 2.

design could have the potential to change the intention of everyone in the world and thus a designer participates in the moral life of other people. The designer could thus participate in the life of all the users of the technology he creates.

It is not the designer who co-shapes the intentions of a user, but the technology the designer creates. For the mediatorialist, the technology itself behaves as a form of moral agency. Being a form of a moral actor should give the technology also a form of responsibility for its acting. Having a moral responsibility seems to imply that you can be held accountable for (at least some) actions that you perform. Products carry morality because they co-shape the way we experience the world and how we organise our lives. However, it is the designer that creates the technology. This demands of designers that they produce technology that co-shapes the user's life in the best way possible.[27]

Due to the implicit morality of technology, the mediatorialist view argues that the design process brings forth two moral dimensions. The first moral dimension of the design technology is that the designed technology will conduct a mediating role in human moral deliberation. The second moral dimension of the design process is that during the design process itself moral choices can be made. These choices are concerned with that mediating role of the to be designed technology.

A PT is made by a designer in a certain way and therefore, will behave in a certain way. If a PT mediates a user's action and a designer creates that product, in a way, he mediates the action of the user itself. This makes the designer, for the mediatorialist, indirectly responsible for an act that is co-shaped by his product. He is responsible for the part of the action that is shaped by his PT in a specific relationship. However, to know what that responsibility is, the designer needs to know what that action is. What a designer is creating is a mediating relationship in a multi-stable environment. Therefore, the form of the mediation that is brought by the product could vary. The multi-stable environment in which the technology will be used should be taken into account during the design process.

It is the designer's responsibility to help others shape their own moral life with the technology he creates. During the design process a designer should explicitly anticipate

[27] Verbeek, De daadkracht der dingen: over techniek filosofie en vormgeving, p 240.

the mediating role that the technology will have in the future. It is unavoidable that these products will fulfil such a role and a designer should assess these roles in the multi-stable environment carefully. Technologies by definition co-shape our existence and the way we experience things, the design process is inescapably a moral activity.[28]

3.3 Discussion

A problem concerning designer responsibility from a mediatorialist perspective is that the technology itself, or at least to some extent, is seen as a moral actor. This makes the technology (partly) responsible for an action. Being responsible implies that you can hold that actor accountable for that action. This means that we should be able to hold the product itself accountable for at least part of the action. This is problematic because we cannot (at least effectively) blame a technology for an action. We cannot punish it or even ask the product why it performed an action.

The mediatorialist argues that it is not a fully moral actor, it is combined moral acting together with the human moral actor. Here I can conclude that the technology is therefore not fully responsible. However, the human actor, in case of acting with a product (which is almost always) is not completely responsible for the action.

Furthermore, we cannot say that the technology freely formed an intention to behave in a certain way. As the mediatorialist would state as well, technologies are not intentional and free actors. But, this is not a problem for moral acting according to the mediatorialist. People may not be completely intentional and free in acting either. We can hold a person responsible for his actions nonetheless. If they have the same level of intentionality and freedom to act, we could treat humans and technology the same way at a moral level. However, I do not believe this would be possible. This is especially the case, because we cannot communicate with a technology to get an explanation for the reasons why it performed an act. Nor can we ask if he knew what the consequences would be of that act. Even if intentionality and free acting is not necessary for moral responsibility, one could still argue that a product is unaware of the consequences of his own actions. It might

[28] Verbeek, *De daadkracht der dingen: over techniek filosofie en vormgeving*, p 260.

appear that the technology is a moral agent when it interacts with the user. However, the technology cannot reflect on its own actions and cannot really think for itself. Technologies are made to behave in a certain way, which means that at least most of the mediation will depend on how it is designed. Taking that into account, I do not believe that technology steers the co-shaped action actively. They do not actively form an intention towards the person that is using it i.e. they do not change their behaviour if they have not agreed on a co-shaped intention to act. This means that the product has a certain intention to the world and the user who is using it, however it is not able to react freely to what is happening.

Since technology cannot (at least effectively) held responsible for an action, another actor needs to receive that responsibility for the mediating role the PT performs. A solution could be brought by the schematisists who direct the responsibility for influencing an action though PT towards the designer of that product.

The mediatorialist view does explain how technologies mediate the user in his actions. The technology starts mediating when someone comes into contact with it. I do not believe that only contact is enough for a technology to actively co-shape an action. It seems that, to actively co-shape an action, more is needed. It needs to be actually used to have such an impact on an action. A view that does explain why someone uses a technology is the schematisist view. This view, together with their idea of designers responsibility, will be discussed in the next chapter.

3.4 Recap: The mediatorialist theory

According to the mediatorialist, humans do not only interact with a technology and use it, but even form a relationship with it. In that relationship we co-shape our actions with the technology that we use. Technologies seem to be actors in a certain manner and could be seen as moral agents. Although they might not be fully intentional and free to act, this is not a necessary feature for moral agency. As a designer you create these technologies that are moral agents. In doing so, you participate in shaping the life and acting of the users of that technology and are at least partly responsible for their co-shaped acting. This view

might be overly demanding. It creates a certain situation in which a designer is responsible for actions of the people that use his product.

A different view on how products interact with users is that of the schematisist. They argue that PT cannot be seen as agents. However, they do influence the way we act in a certain manner.

4. Schematisist point of view towards ethical design

As a designer you partake in ethics by creating products. The design process of persuasive technology (PT) could be aided by accompanying it with ethical reflection. A framework that is developed by Berdichevsky and Neuenschwander gives us a good insight in order to create persuasive technology in a morally responsible way. However, their framework does not explain how products influence the user's behaviour. As we have seen, the mediatorialist framework argues that PT influences the user, and behaves as a moral agent that mediate our actions. However, this mediatorialist view on how PT influences the user might be overly demanding. A theory that criticises the mediatorialist point of view is the schematisist idea of how products influence a user. According to schematisist, products cannot be seen as agents, however, they do influence the way we act. This theory shows that a designer is responsible for the influence PT has on its user. This framework, together with the mediatorialist framework, will in the next chapter be combined in an exploratory attempt to create a holistic view on the way PT influences users and the moral responsibility for designers towards the outcome of the persuasion.

First, I will explain the schematisist framework based on the work of Christian Illies and Anthonie Meijers. Second, I will examine what the implications for that point of view are with regards to the design process in the scope of the designer's morally responsibility for the PT that he or she creates. Third, I will discuss what these implications mean for a moral responsible design of PT.

4.1 The schematisist framework

A different view from that of the mediatorialist theory is that of Illies and Meijers. As representatives for the schematisist framework, their theory allows us to distribute

different kinds of responsibilities to actors that participate in the establishment of an action. They disagree with the mediatorialists on whether artefacts should be seen as actors that mediate our experiences. Artefacts are not active moral actors that co-shape our action with a hybrid intentionality, which mediatorialists, at least partly, suggest. To analyse how they influence our behaviour, we have to look at a more comprehensive picture. They argue users do not form a relationship with technology. The user's action is influenced by the artefact, but not just by the artefact. There are more factors that have an effective force on human actions. There is a whole network of forces that have an effect on our acting. According to Illies and Meijers, we can analyse how and by what an actor's action is influenced. They argue that this is possible by analysing someone's action scheme. An action scheme is a scheme that shows all the influences that affect an actor when he is performing a certain action. Within an action scheme, there is a whole set of actions that is concentrated around a certain action.[29] There is more than just an influence of an artefact that mediates an actor's action. An action is established by an actor by having several action possibilities to choose from. All possibilities for an action have a certain attractiveness to the actor. An actor will choose the action that he believes to be the most effective or attractive in a specific situation. The context in which an act is performed is important, since the whole context changes the attitude of someone and the attractiveness of action possibilities. The attractiveness is influenced by multiple factors. There are for instance the direct contextual influences, like his surroundings. Beyond the context of the act, an act will be chosen on the basis of how it corresponds with someone's intentions, beliefs and desires. But also someone's history, talents, character and institutions he is involved with do influence his choice. The action scheme is therefore influenced by someone's intentional framework, social framework and physical framework. These different frameworks are a dynamic context which leads to a deliberation for an action, relative to its framework.

For the schematisist, artefacts influence mainly the social and intentional framework of an actor. Objects are not simple physical objects or, neither as the mediatorialist suggests, intentional objects. 'They can be seen as mind-dependent objects, as objects made for

[29] Christian Illies and Anthonie Meijers, "Artefacts Without Agency," in The Monist 92:3, p 427.

action.'[30] The artefact's (i.e. PT) influence is established by the new action possibilities it gives to the actor. These new action possibilities can be more desirable or less desirable in a situation and therefore they change the possibilities for deliberation of the user. This means that what an object does and how it influences a user depends on the mind of the user. The mind of the user itself is out of the reach of the designer. Although he should take it into consideration, he cannot design the mind of the user.

What is in reach of the designer is the artefact itself which influences someone's action scheme. An actor will choose the most attractive action he can think of in a specific situation. Therefore the goal of a designer is to create an artefact that is attractive to perform a certain action. In the case of PT, the artefact should also provide the user with an attractive new behaviour it stimulates. By which I mean that it is helpful and has a positive effect on possible action schemes of users. As the context in which an act is performed is also important for a schematisist, the different contexts should be taken into account.

A designer's moral responsibility for changing someone's action scheme with a PT can be analysed through an action scheme. According to Illies and Meijers, an actor is morally responsible for its deeds when it is in control of his actions and foresees the consequences. The action scheme can be used to gain insight into responsibility and to what extent someone is responsible for a certain action. 'Action Schemes are particularly useful for ethical analyses because they allow us to conceptualise moral differences.'[31] For designers, the action scheme could be used as a tool for the design process. It could be useful to apply ethical theory to the practice of product design. This could be a solution for designers, who do not have much experience in ethical deliberation, to systematically analyse what the consequences of the influence of their products are.

Within the action scheme, two orders of moral responsibility can be distinguished. The first order of moral responsibility refers to direct specific actions. The second order responsibility is concerned with influencing the action of the person who has a first order responsibility. This second order of responsibility could for instance be granted to designers. Designers influence the actions of the users of their product. This second order

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[30] Illies and Meijers, "Artefacts Without Agency," p 430.

[31] Illies and Meijers, "Artefacts Without Agency," p 431.

responsibility of designers does not imply that the designer is directly responsible for the action of the user of his product. However, a designer is responsible for influencing that action. This second order responsibility is not weaker than the first order of responsibility. It influences the choices of others and therefore influences a person's autonomy. As such, it might be argued that this is even a stronger responsibility. Especially since a single product design can influence the lives of many people. A designer intervenes in someone else's action scheme. The actor for a deed is responsible for an action as is a designer for influencing that action through its artefact. This in contrast to what the mediatorialists argue. An artefact is in no sense seen as a moral actor.

This does not, as I see it, mean that a designer has no first order responsibility. Next to his second order responsibility, he has first order responsibility for his own act to create an artefact. The designer is responsible for his own actions, as every human actor is. The act of designing an artefact itself should be ethically correct as well.

Although artefacts, as Illies and Meijers argue, should not be seen as moral agents, they do influence our acting. This means that a designer is someone who influences the action schemes of others by creating tools that can be used to achieve certain goals. According to the schematisist, intentions are formed by seeing different possible actions in an action scheme. If an action appeals to the actor, his intention will be formed to perform this action. The designer influences the intentions and choices that people make, by creating new action possibilities with his artefact as well as influencing other possibilities. These choices are still made by the user itself, however indirectly influenced by you as a designer. This means that they do influence our deliberation on what action we choose. Having this second order moral responsibility, designers should be aware that their artefacts have an effect on its user and the consequences for their behaviour. By creating PT, a designer deliberately effects someone's behaviour i.e. he is aware of the causal consequence of his action that changes the behaviour of a user.

4.2 Implications of the schematisist towards the designer's responsibility

According to the schematisist, the user of an artefact is the one who is acting on its own and has a responsibility for his own actions. He is only influenced by the artefact that the designer created. The user has a first order responsibility for his actions, whereas the designer has a second order responsibility for those actions.

The second order responsibility is concerned with influencing the actions of a person with first order responsibility. This order of responsibility could, for instance, be granted to designers. Designers influence the actions of the users of their artefact. This second order responsibility of designers does not imply that designers are responsible for the actions of users of his a product. However, a designer is responsible for influencing those actions. This second order responsibility is not weaker than the first order of responsibility. It influences someone's choices and therefore influences someone's autonomy, it might even be a heavier responsibility. A designer intervenes in someone else's action scheme. This view of first and second order responsibility in an action scheme has some implications for designers. Say you design the Sleeper App Pro. You are creating a PT that persuades users to change their sleeping pattern. Creating the artefact alone does not mean that it influences someone's action scheme, maybe other than your own. However, when someone else does come into contact with the Sleeper App Pro, the application does influence his action scheme immediately, creating a new acting option that appears within his action scheme. It could be that a consumer chooses not to use the artefact, but chooses a different action instead. However, the action scheme will still be influenced by your artefact. As a designer you have a second order responsibility for that influence on someone's action scheme. When you only influence the action scheme of an actor when the actor does not choose to use the PT seems as less responsibility than when he actually uses your artefact. When you influence the action scheme of someone, his intentions and the experience someone has could already be changed. That is part of your responsibility as a designer. However, the act being performed itself is still the responsibility of the actor.

When the actor does choose to use the Sleeper App Pro, it means you do not only influence his action scheme, but also participate through the product in his action. This action,

however, is again the responsibility of the user i.e. it is the action he performs and he has a first order responsibility for that action, provided that he is free to act and is aware of the consequences of his action.

4.4 Discussion

The schematisist theory of first and second order responsibilities in an action scheme might be a bit too narrow. As a designer you create PT that is meant to change the behaviour of the user. That means that it is designed not only to change someone's action scheme, but to change the actual behaviour of someone. This, as I will discuss in the next chapter, can be shown by the view of mediation by PT that works in an action scheme of a user. For the schematisist, the user of an artefact is responsible for his own actions. However, these actions are influenced by the artefact.

As discussed, the second order responsibility is about an influence that an artefact has on someone's action scheme. This seems to imply that a designer is not responsible for the actual working of the influence the artefact has on the user. In my opinion, other aspects should be included in the designer's responsibility, such as whether the artefact works as intended and how it influences the action scheme. Products can have a huge impact on someone's intentions, or even on someone's life. It could, as for the mobile phone, change someone's whole status in society and the way others expect him to act. Also, the Sleeper App Pro directly persuades you to change your sleeping pattern.

If agent one uses the Sleeper App Pro and changes his sleeping pattern, agent two could be influenced by that as well. Maybe a partner of an actor is somehow forced to change the sleeping pattern as well so that it is connected with the influenced sleeping pattern of the first actor. The action scheme of the second actor is then influenced by the first actor. This would mean that the first actor has a first order responsibility for that action. However, because this is influenced of the Sleeper App Pro, this hints to a second order responsibility by the designer of influencing someone's action scheme through his product. I do not believe that the schematisists would argue that there is some sort of third order of responsibility that applies to a designer for this sort of second order influence (on

the second actor who is influenced by the first) on action schemes. This would only be the responsibility of the user itself i.e a first order responsibility to be exact.

4.5 Recap: The schematisist theory

According to the schematisist view, a designer is someone who creates a tool that can be used by someone to accomplish a goal. However, the product that he creates influences the choices that someone makes. An action scheme is the network on which an actor bases his decisions for acting. Within the action scheme two different responsibilities can be separated. A first order responsibility for an action (actor) and a second order responsibility (designer) for influencing someone's action scheme. This second order responsibility can be ascribed to designers for the PT they create. The PT influences the action scheme of the user by giving him new possibilities to act. However, the schematisist seems to not take the actual influence of PT on an act into account with this second order responsibility for designers. In the next chapter, a combination of the mediatorialist framework and the schematisist framework will be discussed and argued that a designer has a second order responsibility for mediating PT he creates.

5. Second order responsibility for mediating PT

Berdichevsky and Neuenschwander developed a framework for moral reflection during the design process of persuasive technology (PT). Their theory shows in which ways a designer is responsible for the PT he creates. However, to analyse the consequences of the actual persuasion in their framework, the designer needs to know how persuasion (by his product) takes place and how he is responsible for its consequences. I believe that the idea of mediation of the mediatorialist view and the schematisist's second order responsibility should be combined into one framework to analyse these consequences and the designer's responsibility properly. Although combining the schematisist and the mediatorialist views might be problematic, I believe that it would give a more broad view of persuasion by products and the designer's responsibility for creating PT.

First, I will discuss which aspects of both views are necessary to wholly judge a designers responsibility and how they can complement each other as a combined mediatorial-schematisist framework. This will provide a framework to fully analyse the outcome of a persuasion.

Second, I will show that the combination of the mediatorialist and schematisist view has problematic aspects, due to opposing premises. As we have seen, the mediatorialist argues there is a co-shaped action by two forms of moral agents i.e. the PT and the user. This means that no single person is responsible for an action. The user in itself is responsible who has a first order responsibility for an action. However, that action is mediated by the PT being used. I believe PT cannot be a moral actor and not be effectively responsible for the action. Therefore, I argue that we need the schematisist second order responsibility that can be ascribed towards designers of the PT. The designer is responsible for the mediation of the PT towards the user. As this is the PT he created to change the attitude or behaviour, in other words steering of an action, of the user.

To contribute to the discussion, we might consider to have a look at the problem of PT and the way it influences us from a different angle. An angle which does not revolve around the metaphysical differences of the two frameworks. This will provide a more practical solution for designers to take their second order responsibility for mediating PT. This angle will take the design process as a starting point. This idea can be integrated into the blackbox framework of Berdichevsky and Neuenschwander to give designers a framework to create a morally responsible design. I will develop three tweaks to the design process of PT, which I believe could help designers create PT in a morally responsible manner.

5.1 Mediatorial-schematisisism

On the one hand, we have the mediatorialist point of view. They argue that technology should be seen as a form of moral agency. This view argues that technologies, and therefore PT, should be seen as intentional actors that mediate the way we experience the world and how we act. The problem with this view is that the product itself is seen as a form of moral agency. However, we cannot hold that PT (realistically) is responsible for its actions. The PT does not know what he is doing, nor can it know the consequences of its own actions. It is designed to 'behave' in a certain manner and it cannot change that. Therefore I believe it is problematic to see PT as a form of moral agency. Apart from the problem of moral agency of technology, this view does not really explain how the mediating role of technology comes to be.

On the other hand, we have the schematisist view. They argue that artefacts cannot be seen as moral actors. This view argues that products, and therefore PT, should be seen as artefacts that influence someone's action scheme. When people act, they choose the option that is most attractive to them in their action scheme. A PT could influence that action scheme by creating new options for acting or by changing the value of existing options. However, this view alone might be too narrow to anticipate on the actual influence a PT has on users. The schematisist view shows how someone's action scheme is influenced and therefore how it changes someone's intentions. What precisely happens when

someone uses the product or when someone comes into contact with the PT is hard to derive, as an action scheme has many interacting influencing properties. Since the mediatorialist argues that technology should be seen as a moral actor and the schematisist argues that artefacts are not a moral actor, the two theories are in conflict with each other. To combine the two would leave us with this logical fallacy. An entity cannot be a moral actor and not be a moral actor at the same time. This problem will be discussed in more detail later.

Although these theories seem to contradict each other, they are both right in a way. As I see it, PT does influence the action scheme of people in the way the schematisist argue. PT gives new acting possibilities which might cause a user to act differently. When he actually uses the product, the PT starts mediating the user's actions and perception of the world around him. I believe that the idea of mediation can be implemented into the framework of second order responsibility for designers who create PT which mediates the user's actions. A mediatorial-schematisist combination is an exploratory attempt to create a view where a second order responsibility for designers and a mediation theory can coexist. I believe that the combination of the two will aid to develop a framework that takes ethical considerations into account during the design process and fully incorporates the moral aspects of persuading users with PT. The mediatorialist argues that, although PT is not completely free and intentional, a PT should be seen as a moral actor. But PT does not form these intentions itself. The intentions are programmed or created by the designer. The PT is designed to behave as the designer intended. Therefore, the designer creates the intentional mediating role of a PT. A human actor might not be completely free and intentional, but the intentions they have come from within them. The human intentions could be influenced or even co-shaped by an external force, but they are not created solely by an external force i.e. a designer. The intentions of PT however, are completely created by a designer and therefore completely controlled by an external force. I believe PT can therefore not be seen as a form of moral agency, since it cannot form its own intentions or change them.

Although I do not believe PT should be seen as a moral actor, as the mediatorialist suggest, I believe that PT does mediate human intentions towards the world. An analogy that could

be made is that of the nature-nurture debate on how human beings develop. Humans are born with a certain genome (nature) that for a large part determines what people look like and how they react on certain stimuli in their environment (nurture). However, their environment and previous experiences are also very important (nurture). Both influences eventually determine the way someone looks, behaves, what he believes and so on.

This fits in the schematisists thinking. Intentions are formed by a human actor, but the action scheme from which the intention is formed is influenced by certain PTs. In this case, the 'nurture' i.e. environment of the human actor is influenced by the PTs he/she owns or comes in contact with, furthermore PTs which have influenced the actors actions in the past will be a part of the actors memory and will therefore further influence the actor's decision making in the future.

The idea of these two influences on our behaviour also suits the mediatorialist view. An intention is partly formed by humans and partly by PT. There is an interaction between the nature and nurture parts that together form who we are and how we behave. For the mediatorialist this would be an interaction between the human actor that forms an intention together with the intention of the PT. Together they merge into one intention, which is co-shaped.

Since this suits both theories in a manner, I believe that this is how technical mediation within an action scheme can be integrated. A human being can form his own intentions to act upon. However, these intentions are mediated by his environment and therefore also by the PT that is part of his action scheme. The intentions cannot be developed solely by either the human actor or PT alone. The intention is a merger of an actor's intentions together with the mediating role that PT has on his intentions. If so, PT does not mediate a user per se, but it is in a constant position to mediate a user if he chooses to use a PT. The human actor is the one that can choose to act upon the mediation of the PT.

If a PT enters our action scheme, we are already influenced by it. It provides us with new possible acting options. These acting options give the user new possible intentions to act. When we decide to use the PT, it starts mediating our experience of the world around us. This mediation is not an active form, but when we use PT, or encounter it, our intentions are again influenced by the intentions of the PT. The PT mediates how we see and

experience the world, but it does not actively steer it. Such as in the nature-nurture debate, we have our own intentions, which are complemented by the intentions of a PT. They merge into one intention on which we act. This all happens in a multi-stable environment. Just as the nurture influence on someone is determined by his personal environment and all his personal experiences in the past, the mediating role of PT changes in every environment and is different for each person.

For instance, when someone wants to change his sleeping pattern, there are several options in his action scheme to act upon. One possibility is that the actor just goes to bed every day at twelve o'clock. Other options are: he can ask friends for help, go to a doctor or buy a new alarm clock. He can also choose to use the Sleeper App Pro. The Sleeper App Pro is then one of the many possibilities to choose from in his action scheme. Once he chooses to use the Sleeper App Pro, the mediation of the PT starts. The intentions to act by the user are mediated by the Sleeper App Pro. By interacting with the PT, the user changes his attitudes towards the world and acts upon his intentions by changing his sleeping pattern in a way so that he is hopefully better rested in the morning.

5.2 Combining the frameworks on a theoretical level

Combining the two frameworks appears to be problematic on a theoretical level. This is because these theories are based on different premises. It is likely that at least one of the theories is not completely right in the matter of what PT is. If we state that a PT is an agent, we could argue that the schematisist is missing that essence of agency in how a PT works. If we change that premise, the complete argument mediatorialists state not logical derivable and the mediatorialist theory would not be defendable. However, within an action scheme there could be room for moral agency of PTs. Bruno Latour argues that there is a scheme in which actions are performed in ways that allow us to state that products have agency that mediates us.[32] This is not the action scheme which the schematisist had in mind, as described above. It is a script of actions that needs to be fulfilled to perform an action. These action scripts seem to have some resemblance with

[32] Bruno Latour, "On technical mediation," In *Common knowledge 3, no. 2* (1994), p 35.

action schemes. Through different connected action scripts, a whole network of arises. This network can be examined on how the different elements within that network influence each other. In such a network, the PT influences the way we act in our lives. As Latour argues, products have an attitude towards their users, which influences the way we act and articulate ourselves.[33] Products follow a script that we interact with. During this interaction between user and PT, the user is being influenced by the script of the PT. At the same time, the script of the PT is influenced by the users' actions. The mediating roles arise from the interaction between humans and technology. This idea by Latour could, at least partly combine the two theories. As he argues that the technology functions as a mediator to accomplish our goals. If a human actor has a certain goal, but does not see an opportunity to reach that goal, he can use PT. That PT mediates his action so that he is better able to perform that action.

Latour leaves space for an action scheme in which products act as mediators. However, these products still do not have properties "such as empathy or the ability to reason."[34] Which the schematisists argue PT could never have. However, the mediatorialist could see this as something that can be assigned to PT, as a form of moral agency. Although the mediatorialist would not go so far with technological agency, they do compare it to human agency, which does have these properties.

If we agree that PTs are indeed not forms of moral agency, the mediatorialists would be wrong on this premise. However, their framework is constructed on this premise. They argue that we form a relationship with the products that we use. In that relationship, the product has a certain intention and mediates the way we experience the world around us. Action scripts as a way of acting by products is true for mediatorialists, however this is a mediating action script. The interaction between humans follows the same sort of scripts which also arise in the interaction between humans and technology. It is also more of a passive form of mediation as I described above, which a true mediatorialist would disagree with. This could mean combining the two theories would only be superficial.

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[33] Latour, "On technical mediation," p 38.

[34] Illies and Meijers, "Artefacts Without Agency," p 425.

Since the ideas of Latour are not sufficient to combine both viewpoints, a different approach is needed. The combination on a theoretical level is necessary, because both theories have important aspects that explain the influence that PT has on its users. I believe this would be possible by incorporating the idea of mediation into the schematisist view.

I do not believe that the premise of the mediatorialist that PT has moral agency is correct. Because PT is not conscious, cannot change their own intentions and of most importance, their intentions are created by a designer, furthermore, PT cannot be held accountable for its actions. However, I believe that the schematisists are not entirely correct in how they argue that PT changes the intentions of the user. Their view needs to be extended. It seems that when someone actually uses a PT, his intentions are influenced in more ways than only by a new possible action. The actual act the user performs is steered by the PT. It persuades you to perform an action by mediating it. This interaction shapes the way the user acts in the present but also how he thinks permanently, because, if someone uses the PT his memory of and relation with a product will influence new choices in the future as is seen in the nature-nurture debate. In this debate we also see that the behaviour of a human is permanently influenced by previous experiences. The schematisists do not deny the influence of previous experiences that influence that action scheme. However, I believe that these are caused by the mediating role PT performs on someone's behaviour. The schematisist theory might not do justice to the impact that PT can have in direct use of it. The schematisist theory could therefore be complemented by this idea of mediation. This way we might be able to incorporate the idea of mediation (by the mediatorialist) into the theory of action schemes of the schematisist.

If we can incorporate the mediation into the action scheme (which gives a second order responsibility to designers), we can have a holistic view on how products influences the user. However, to fully develop this theory is beyond the scope of this thesis.

5.3 Towards a practical solution

In my opinion, the combination of the two theories is important to create a holistic view on the outcome of persuasion. In the sense that the PT mediates the user in an action scheme. When the mediatorialist view complements the schematisist view, the logical problem could (at least partly) be bypassed. One complete view will only be complemented with an idea of the other. The foundation of this view is the schematisist idea of an action scheme. This view shows the way someone comes to an act. The whole network of influences are taken into account. Besides that, the responsibility for persuading someone via a product can be ascribed as a second order responsibility. I believe, we need to ascribe this second order responsibility towards designers.

The designer forces his moral beliefs on the user by persuading him into a certain behaviour. Creating the PT changes action schemes of others and his impact is intended. However, after creating the product, the designer looses most of the touch with it, therefore he must act on his second order responsibility before the product persuades the user. Although this user has his own responsibility for his acting, the designer created the circumstances in which the act is performed and influences the act itself.

However, as I see it, the schematisist view needs to be complemented by the mediatorialist view. The schematisist view does not completely do just to the extended influence the PT has on users. The mediatorialist view shows the impact products, and especially PT, have on the user's acting. This immediately shows why it is important for designers to take moral considerations in their design process. The PT's intention towards a user co-shapes intentions to act. This way of complementing the one view with the other can provide a practical solution for designers.

Designers influence the action scheme of people with the PT they create. They are responsible for influencing someone's actions and are therefore responsible for interfering in the first order responsibility this person has for his acting.

The designer is not only responsible for influencing someone's actions by the PT he creates. He is also responsible for the mediating role the PT performs by influencing the user's action. This is caused by the attitude the product has towards its user. The designer is responsible for the attitude that the PT has itself. It is a form of acting that is created by the designer. During the design process of PT, the designer should create a morally good

mediating role. While creating mediation he should anticipate on the multi-stable environment the PT will be used in. To anticipate on the multi-stable environment, it is the moral duty of the designer to research possible environments in which the PT will be used and which acting possibilities this creates for users. This allows designers to design a product in a way that prevents possible morally wrong outcomes of the persuasion.

When we build this second order responsibility for mediating PT into the framework of Berdichevsky and Neuenschwander, we see that a designer's moral responsibility is two sided. As discussed, a designer is responsible for 1) the intention to which he creates PT and, the 2) outcome of the persuasion through its product. The view on mediating PT in an action scheme is of importance here. We need to know how the PT actually influences people to analyse the moral consequences.

As a designer this gives you three important guidelines that should be taken into account during the design process. By including these three aspects in the design process, designers can ensure moral responsibility for the PT that he/she creates. That is: 1) to create PT with a good intention, 2) ensure a positive outcome of the persuasion, meaning, 2.1) the designer has to make sure the persuasion works as intended and 2.2) the designer takes the multi-stable environment into account. These last two guidelines (2.1 and 2.2) can be analysed by how the PT changes a user's behaviour from the perspective of mediating PT within an action scheme. In the following paragraph I will propose three guidelines that could be integrated into the design process of PT to ensure morally responsible design.

This practical approach is not a solution for the metaphysical (logical) problem that a combined mediatorialist-schematisist view faces. Therefore, this solution is limited. The theoretical ground on which these guidelines are based is thin. However, it could be a step to combine the two views. Also, they allow designers to take their second order responsibility for the mediating PT they create, not with a background of theoretical consensus, but in the practice of designing. They can apply the guidelines into their design process and take their ethical considerations into account. By doing so, they can take their responsibility and create morally good PT. However, to fully develop these guidelines for

the design process of PT, further research is needed. Not only, as discussed, to develop the theoretical background, but also for the practical outcome of such a theory in the form of a design process that is focused on the ethical implications.

5.4 Guidelines for responsible design of persuasive technology

To ensure moral responsibility for the PT you create as a designer, I propose three additions to the design process. These additions can be incorporated into any design process and are focussed on the three pillars discussed in the last paragraph: 1) create PT with a good intention, 2.1) make sure the persuasion work as intended and 2.2) take the multi-stable environment in which the PT persuades its user into account.

5.4.1 The first guideline: the designer's intention

If a designer is going to create the Sleeper App Pro for instance, he already knows that the application will strive to change the behaviour of the user. When the user uses the Sleeper App Pro after it is made, the user is aware that it is PT.

Before the designer starts the actual design process of the Sleeper App Pro, the designer should reflect on the role the PT will play when it is created. The designer knows that he will influence the action scheme of a user and that the PT will mediate the user's behaviour. His intentions for creating the PT and thus changing a user's behaviour should be morally good.

Berdichevsky and Neuenschwander propose that designers should use, what they call, the golden rule.[35] This is a thought experiment developed by John Rawls. In order to see what would be right or wrong, one should imagine himself behind a veil of ignorance. Under that veil of ignorance, you will find yourself in the original position. In the original position, you do not know where you are in society, what resources you have, what background you have and so on. In the original position one can examine if an action is right or wrong. In this case, the designer would be behind the veil of ignorance judging a

[35] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 58.

certain PT. A designer could ask himself if the PT and the persuasive method would be good for him in any given situation or position in life, whatever the circumstances. A designer can then start "creating guidelines for an act of persuasion without knowing whether you were the persuader or the person being persuaded, the designer would then want to make sure the persuasion would benefit both sides—in case you turned out to be the person being persuaded."[36] The intentions to create PT and the way the user will be persuaded, can be thought of through this thought experiment. A designer can then examine if he would want to be persuaded by this product and in this specific manner.

Although this veil of ignorance is not especially developed by John Rawls to secure moral responsibility for PT, I believe that it works well. The designer can put himself in the shoes of a user that at one point in his life chooses freely to use the product. If this leads to an undesirable consequence (i.e. because of a manipulative aspect of the PT) the designer knows. Another perspective could be for the designer to be in the area of users of the PT. One could for instance think of a game that is super fun and healthy for the user but so addictive that the player will eventually neglect his friends. Or even broader, by thinking of a world where the product is used a lot, but the product is very toxic the environment.

By applying the golden rule, the designer can analyse and reason whether his intention to create a certain PT is good (1). Not only can the designer assess his intentions to create PT. He can also elaborate on the persuasion method he is going to use. That is the persuasive method he intends to use to change the user's behaviour.

The intention to which a designer creates PT does not fully cover the moral responsibility, however, I think it is a good starting point for the design process.

This moment of moral reflection is iterative, whenever a new concept for the application is chosen, one should ask these questions again and apply the golden rule.

5.4.2 The second guideline: a second order persuasion

The second guideline we focus on is 2) the outcome of the persuasion of the PT a designer creates. The responsibility for the outcome is divided into two guidelines. The first of these

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[36] Berdichevsky and Neuenschwander, "Toward an ethics of persuasive technology," p 58.

two is 2.1) a moral responsibility of a designer to create a product that persuades the user as intended. A persuasive product's goal is to change the perception, intention and/or behaviour of the user of that product. Persuading users can be seen as morally problematic, because it intervenes with someone's freedom to choose an action for themselves. However, persuading someone to change his behaviour has potential to be good, or even praiseworthy, as Berdichevsky and Neuenschwander pointed out. The view of a second order designers responsibility for mediating PT is important here. This combined view makes it possible to analyse how the persuasion works and whether this outcome of that persuasion on the user is good.

Even when a designer creates a persuasive product with the best intentions, he should make sure that the product's persuasion works as intended. If the persuasion does not work as intended, the behavioural change could have a negative effect.
The Sleeper App Pro should help the user to achieve a better sleeping pattern. However, it also changes the action scheme and mediates the way the user acts. This persuasion can lead to many possible outcomes for the user. The PT will mediate different users in different ways because this is context dependent.
To realise a situation where we can create a minimum of unintended outcomes of the persuasion, a designer should create a product that steers the user in its use. Next to a persuasion through the product, a second order persuasion could be incorporated into the mediating role the PT performs. This second order of persuasion would steer the user to use the PT as intended by the designer. Even though unintended outcomes are inevitable, designers should try to create a situation in which unintended outcomes are less likely to arise. By doing so, the chance to create an ethically good and intended outcome, which is praiseworthy, is higher.
The designer can reduce unexpected use of the product and reduce the chance of different forms of mediation in a multi-stable environment. The user will be guided to use the PT in such a way that he will be persuaded as intended.

As mentioned, persuaders have always stood on uneasy ground. Because of this, someone could ask if an added layer of persuasion could lead to a slippery slope of changing user behaviour. This second order persuasion however is not a real persuasive method like the first order of persuasion. The second order will help people who already agreed to the first order persuasion to use the PT the way it is supposed to be used. If the first order persuasion is good on a moral level, the second order persuasion will only help the user to be persuaded in the right way. If someone gets persuaded in a non-intended manner by the designer, one cannot know how someone's intentions towards the world will change. As Berdichevsky and Neuenschwander argue that a designer is responsible for that change of intention by the user, as long as this outcome is reasonably predictable. Therefore, to ensure a good outcome, to fulfil their responsibility, a designer should make sure that the persuasion works as intended.

5.4.3 The third guideline: focus of usability research

Designers have a second order responsibility for changing the user's action scheme. They change that action scheme with PT that mediates in a multi-stable environment. To take the multi-stable environment in which the PT persuades its user into account (2.2) I suggest that the designer employs usability research. Usability research is already often a part of design processes. I suggest that the moral aspect of the PT should also be included during this research. This is not a real change to the process, but the focus of the research changes partly.

Although it is impossible to exclude all unintended outcomes of persuasion, I believe that the possibility of unintended outcomes could be minimised. Together with the previous addition to the design process the usability research could guarantee minimal unintended outcomes.

For usability research, designers can use design scenarios. Design scenarios "are essentially hypothetical stories, created with sufficient detail to meaningfully explore a particular aspect"[37] of for instance a PT. Dorrestijn et al. argue that these design scenarios

[37] Stickdorn and Schneider, *This Is Service Design Thinking : Basics—Tools—Cases*, p 184.

should be divide in two separated forms. They separate user scenarios and future scenarios. User scenarios can be used to research how the product will be used. This offers the designer a possibility to anticipate systematically how the interaction between users and the PT works (i.e. the PT's mediation). Future scenarios are used to research how the product can be used in different environments and contexts. This is not a method to predict the future, but a way to analyse how the product can be used in different situations and what happens when it is used improperly. This way the design of persuasive technology can be performed more effectively and in a (morally) responsible manner.[38] By changing the scope of this kind of research, designers cannot only see whether the product functions correctly, but he can also anticipate the effects of a multi-stable environment in which the PT will be used, allowing analysis of the moral consequences.

5.5 Recap: The mediatorialist-schematisist framework

The mediatorialist view and the schematisist view can complement each other. In the mediatorialist-schematisist view, a PT could enter someone's action scheme. If that person decides using the PT is the best opportunity for him to act, he will do so. When the PT is used, it starts mediating the actions of user. Together with the PT an action will be co-shaped. This mediatorialist-schematisist view on how PT influences its users can be used to examine what the designer's responsibility is within the framework of Berdichevsky and Neuenschwander. Although it seems problematic to combine the mediatorialist view and the schematisist view because of a logical fallacy between them, I believe that in practice the two theories can complement each other. When we complement the schematisist view with the idea of mediating PT, we see that there are three main guidelines that should be integrated into the design process of PT. The first guideline is to implement the golden rule to analyse whether the intentions for a design are morally good. The second guideline is to create a second order persuasion into the PT to reduce the chance of unexpected persuasions by the product. The third guideline is to change the

[38] Steven Dorrestijn, Mascha C. van der Voort en Peter-Paul Verbeek, "Future user-product arrangements: Combining product impact and scenarios in design for multi age success," *Technological Forecasting & Social Change 89* (2014), p 287.

scope of usability research to anticipate on the multi-stable environment that the PT will be used in.

6. Conclusion

Berdichevsky and Neuenschwander developed a framework to analyse the designer's responsibility for the design of PT. They argue that 1) someone is responsible for the intention of his design and 2) that a designer is responsible for the consequences of the persuasion through the PT. The intentions to persuade should be good according to them. Besides the intention, the consequences of the persuasion should be good as well. There are several possible outcomes that have different results for the designer's responsibility.

The outcome of the persuasion can be 1) as intended and 1.1) ethical, which is praiseworthy or 1.2) unethical, where the designer is responsible and at fault. The outcome can also be 2) untainted, but reasonably predictable. Then, if the outcome is 2.1) ethical, the designer is not responsible, however when the outcome is 2.2) unethical, the designer is responsible and at fault. When the outcome of the persuasion through PT is unintended and 2.3) not reasonably predictable, the designer is not responsible for an ethical outcome and also not responsible for and unethical outcome (2.4).

Although the framework of Berdichevsky and Neuenschwander explains when a designer is responsible for the PT he creates, it does not explain how the PT persuades the user. I believe that we need to know how the influence of PT works to analyse if a designer is acting responsibly or not. To build upon the theory of Berdichevsky and Neuenschwander I experimented with combining two theories that are concerned with the influence of products on their users.

The first view is the mediatorialist view. This view argues that technology, and therefore PT, should be seen as intentional actors that mediate the way we experience the world and how we act. Thus, as a designer you create a form of moral agency. This means you are responsible for that form of moral agency. However, it co-shapes actions of its user in a multi-stable environment. Therefore, you cannot foresee all the possible mediating roles

the product can adopt in all possible situations. But, you created an object which, in all those many possible mediating roles, co-shapes the user's life.

The schematisist point of view argues that PTs should be seen as artefacts that influence someone's action scheme. When people act, they choose the option most attractive to them in their action scheme. An artefact influences an actor's action scheme by creating new options for acting. Potentially, the best action option is to use the PT and which therefore directly participates in someone's acting. As a designer you have a second order responsibility for influencing the action scheme of others. This is a passive influence that only brings new possible actions into a person's action scheme. However, the schematisist does not take the influence of the PT on a specific act by a user into account.

When we combine these frameworks, it shows that designers have a second order responsibility for mediating PT in an action scheme. We have a theory that can explain how PT starts influencing users and how this influences actually works when in progress. In the exploratory combined mediatorialist-schematisist view PT influences someone's action scheme by creating new acting possibilities. In this situation, someone's intentions are already influenced. When the person decides to actually use the PT, his intentions merge together with the attitude of the PT. This is a mediating attitude that the product has towards its users, however this is a passive form of mediation.

The combination of the mediatorialist and schematisist view is problematic on a theoretical level. Because the mediatorialist view contains a premise that PT is a form of moral agency while the schematisist view argues that it is not. This results in a logical fallacy.

However, I believe that it is important to create a theory which incorporates aspects of both these views. This might be possible by adjusting the premises on which these theories are based or by incorporating elements of one theory into another. This is important because I believe that each theory holds important elements for judging a designers responsibility. When they are combined, the mediatorialist-schematisist view explains how a user is influenced to use PT as well as how he is influenced by the PT when he actually uses it. The user will use the PT because this is seen as the best opportunity to act within his action scheme. When he uses it, the mediating role of the PT influences his actual

actions. This gives a more holistic view on every touchpoint when someone is influenced by a PT.

Because of these theoretical problems, I suggested that a more practical approach would help the discussion. This approach has the design process of PT itself as a starting point.

To create a framework which designers can use to ethically create PT some tweaks are needed in the design process. To this end, I developed three guidelines that designers can integrate into the design process for the PT.

Building the idea of mediating PT within an action scheme on the framework of Berdichevsky and Neuenschwander, this gives a designer three main pillars for his responsibility when designing PT. To 1) create PT with a good intention, 2) make sure the persuasion works as intended and 3) take the multi-stable environment in which the PT persuades its user into account.

The first adaptation to the design process is concerned with the intentions of designers. Using Berdichevsky and Neuenschwander's golden rule, a designer can investigate if his intentions to develop a certain PT are good (point 1). The second adaptation that covers point 2 is a second order persuasion that is built into the PT. This second order persuasion is to persuade the user to use the PT as intended by the designer. The third adaptation to the design process is to take point 3 into account which is to perform usability research that is concerned with the multi-stable environment. This way, unexpected mediating roles of the PT can be discovered.

Although these changes in the design process are also applicable to other views of responsibility, I believe these changes cover the second order responsibility designers have for the mediating PT they create. These changes are also easily applicable for designers in their design process.

This practical approach has limits because it is not a solution for the metaphysical logical problem and therefore not founded with theoretical consensus. However, this practical approach could help designers to take their ethical considerations into account.

In this thesis, the theoretical logical fallacy could not be solved. Therefore more research needs to be done. I suggest that a way should be found to exclude the moral actor-ship

from the combined view, or one of the two views could be extended to make one of them more holistic, which solves the logical fallacy problem. This would mean that the mediatorialist view includes an idea of what happens before the mediating role of the PT starts. In that case the schematisist view would pass. Or the mediatorialist view could be taken out of the picture and the schematisist view could include an idea of what happens when someone choses to use the PT when it is the best opportunity to act in his action scheme. If we solve this problem, a holistic theory would be created that gives designers the opportunity to accurately analyse how PT influences the user. This allows ethical reflection in their design process and to further develop these guidelines for the design process. In a sense this way of design thinking is holistic. Every part of the user experience should be designed. 'Genuinely working in a holistic way is an illusion, it is simply impossible to consider every single aspect.'[39] However, the motivation should always be to see the wider context in which the use of the product takes place.

[39] Stickdorn and Schneider, *This Is Service Design Thinking : Basics—Tools—Cases*, p 44.

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